

# BANASTHALI VIDYAPITH

## Bachelor of Arts



### Curriculum Structure

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## Programme Educational Objectives

The programme consists of Discipline/Core courses, and Foundation courses. The core courses include Applied Statistics, Computer Applications, Dramatic Art (Theatre), Drawing and Painting, Economics, English Literature, Geography, Hindi Literature, History, Home Science, Indian Classical Dance (Kathak), Indian Music, Management, Mathematics, Physical Education, Political Science, Psychology, Public Administration, , Sanskrit, Sociology, Statistics, and Textile Designing. The Foundation courses are of two types-core and elective. These courses are designed in such a way that they help students in achieving their holistic personality.

The comprehensive *Panchmukhi Shiksha* or Five-fold Education model of Banasthali Vidyapith includes physical, intellectual, moral, professional and aesthetic dimensions of human existence. It intends to dissolve all seeming binaries of life so that the students of Vidyapith can nurture a harmonious and holistic personality. It also develops a sense of ethical behavior, nationalism, appreciating Indian culture and ethos.

The main objectives of the programme are:

- To acquaint students with complex textures of Indian culture and ethos.
- To develop students' wide understanding of and on the major concepts, thoughts, and ideas of Applied Statistics, Computer Applications, Dramatic Art (Theatre), Drawing and Painting, Economics, English Literature, Geography, Hindi Literature, History, Home Science, Indian Classical Dance (Kathak), Indian Music, Management, Mathematics, Physical Education, Political Science, Psychology, Public Administration, Sanskrit, Sociology, Statistics, and Textile Designing.
- To hone students' critical, creative, liberal, innovative, and scientific thinking.
- To engage students in self-reflexivity and lifelong learning.
- To help students in integrating different aspects of physical, practical, aesthetic, moral and intellectual dimensions of educations to develop a holistic personality of each student.
- To nurture an effective citizen with a strong value base and ethics.
- To familiarize students with environmental contexts, inclusivity. And sustainable development.

## Programme Outcomes

- PO1: Enrichment of Intellectual and Epistemic Tradition:** The programme develops students' wide understanding of and on the major concepts, thoughts, and ideas of Applied Statistics, Computer Applications, Dramatic Art (Theatre), Drawing and Painting, Economics, English Literature, Geography, Hindi Literature, History, Home Science, Indian Classical Dance (Kathak), Indian Music, Management, Mathematics, Physical Education, Political Science, Psychology, Public Administration, , Sanskrit, Sociology, Statistics, and Textile Designing. It also enriches their analytical, critical, creative faculties.
- PO2: Inculcation of Planning Abilities:** The programme hones effective planning abilities including time management, resource management, delegation skills and organizational skills of students which may develop their leadership qualities. It also prepares students for implementing plans, organizing several cultural and academic activities, coordinating to meet deadlines.
- PO3: Amelioration of Problem Solving Skills:** The programme prepares students to contextualize and to rationalize the principles of scientific enquiry, theoretical and philosophical thoughts, analytical and creative thinking for solving problems and making decision in the socio-pragmatic realities of life. These problem solving skills are instrumental in finding, analyzing, evaluating and applying information systematically so that judicious decision could be made.
- PO4: Appropriate Application of Methodological Tools:** The programme makes a candid attempt of familiarizing students with some relevant methodological tools which help them exploring the underlying ideas, thoughts, concepts and meanings in the available discourses of law, humanities, social sciences, art and aesthetics etc. A text is embedded into a rich cultural, social, pragmatic, and political realities and the apposite application of those

methodological tools may unravel the textual and contextual richness.

- PO5: Development of Leadership and Soft Skills:** Human beings while negotiating with the socio-pragmatic realities face umpteen numbers of challenges which are related to human reactions, motivation, leadership, conflict resolution and team building. All these problems can be responded and resolved with the development of soft skills and the designed programme indeed aims to resolve them.
- PO5: Formation of Professional Identity:** Education intends to develop not only the intellectual and epistemological textures of the inhabitants of the synchronic society but it also hones professionalism among the denizens. Education of the globalized as well as glocalised era focuses on the formation of professional identity among professionals. Thus, the programme intends to develop professional identity among students.
- PO6: Nurturing Ethics and *Dharma*:** The vying competitiveness has developed a great sense of individuality, utilitarianism, and material competitiveness among students. They have impelled the people to ignore honesty, empathy, integrity, and ethical principles and therefore, people are not able to make any ethical interventions. The programme therefore intends to nurture ethics and *dharma* among the denizens of the world.
- PO7: Developing Communicative Competence:** The programme intends to develop grammatical and communicative competence among students and make them aware of the nature, form and function of language. Language is not merely a medium to communicate but is more fundamental to the process of the formation of ideas, thoughts and concepts. The programme therefore nurtures listening, writing, speaking and reading skills of students which allow them to communicate effectively in textual, personal and interpersonal contexts so that the discursive practices

may be enriched and the trajectory of knowledge may get strengthened.

- PO8: The knowledge, knower and Society:** The programme disseminates the fact the conception and distribution of knowledge in any form seems meaningless unless it is seen functioning in a society which is defined by the existence of human beings. The benefit of the common mass is always at the centre of all social, cultural, political, technological, and scientific innovations. Thus, the programme intends to integrate knowledge, knower or the human beings and society so that a sustainable society can be developed.
- PO9: Environment and Sustainability:** The unprecedented growth and development in the world on industry, technology, trade and commerce etc have damaged the balance between nature and culture, Environment, ecology and all natural resources have been exploited to such a level that many of them are exhausted. Looking at these miserable conditions, the programme intends to prepare students to respond to some major issues of environment and sustainability.
- PO10: Lifelong Learning:** A culture is inseparably intertwined into the complexes of its intellectual tradition or the systems of knowledge. The intellectual tradition remains alive when the people communicate and engage themselves with some discursive practices. These practices help one in the identification of some thrust areas on the basis of self-criticality and reflexivity that keep the process of lifelong learning alive and unseasonable. Thus, the programme develops a strong urge among students to strive on the path of lifelong learning.

**First Semester**  
**Disciplinary Courses**  
**Applied Statistics**

**MATH 102 Basic Mathematics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On completion of the course, the student will be able to:

- Understand the basic rules of logic, including the role of axioms or assumptions.
- Appreciate the role of mathematical proof in formal deductive reasoning.
- Distinguish a coherent argument from a fallacious one, both in mathematical reasoning and in everyday life.
- Understand the differences between inductive and deductive reasoning.
- Proficiently construct logical arguments and rigorous proofs.
- Formulate and solve abstract mathematical problems.

**STAT 101 Basic Statistics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On completion of the course, the student will be able to:

- Distinguish between qualitative variables and quantitative variables.
- Differentiate between discrete and continuous variables.
- Construct/draft questionnaire.
- Identify the need of Classification and Tabulation.
- Construct frequency tables, Interprets the data, identifies the importance of diagrammatic presentation of data.
- Explain and evaluate various measures of central tendency.

- Evaluate and interpret partition values – Quartiles, Deciles and Percentiles

## **Second Semester**

### **STAT 107 Statistical Methods**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** On completion of the course, the student will be able to:

- Explain the purpose of measures of dispersion, and the information they convey.
- Select an appropriate measure of dispersion and correctly calculate and interpret the statistic.
- Describe and explain the mathematical characteristics of the standard deviation.
- Apply the definition of independence to attempt to determine whether an assumption of independence is justifiable in a given situation.
- Find probabilities of single events, complementary events and the unions and intersections of collections of events.
- Describe the main properties of probability distributions and random variables.
- Identify the random variable(s) of interest in a given scenario.

### **STAT 107L Statistical Methods Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Make the frequency distribution for inclusive and exclusive type of class intervals on excel.
- Construct the table for given raw data.

- Draw the graphs for the given data like histogram, frequency polygon, frequency curve and ogives.
- Draw the diagrams like bar diagram and pie charts etc.
- Calculate the measures of central tendency and dispersion on excel for given set of observations.
- Fit the curves like straight line, parabola, exponential and power curve by using excel.

### **Third Semester**

#### **STAT 205 Probability Distributions and Numerical Analysis**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** On successful completion of the course, the student will be able to:

- Understand the basic principles of Probability, sample space, conditional probability.
- Differentiate between basic discrete & continuous distributions & how to work with them.
- Understand cumulative distribution function, expectation and distributions for functions of random variables.
- Work with bivariate distributions & basic two variable statistics.
- Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations and apply them to obtain approximate solutions to mathematical problems.

#### **STAT 205L Probability Distributions and Numerical Analysis Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Fit the probability distributions by using Excel.
- Find out the missing values using interpolation
- Get the approximate values of differentiation and integration by using excel.
- Obtain the solution of linear and nonlinear equations and the solution of differential equations and apply them to obtain approximate solutions to mathematical problems.

## Fourth Semester

### STAT 202 Inferential Statistics and Quality Control

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** On successful completion of the course the students should be able to,

- Define estimator, its unbiasedness and efficiency.
- Obtain maximum likelihood estimates of parameters of some simple distributions.
- Perform testing of significance of single mean, proportion, s. d. and difference of two means, proportions, s. d, variances for small and large samples.
- Understand the concept of non-parametric testing.
- Apply the non-parametric methods to test for single population and two populations.
- Understand the concept of statistical quality control.
- Construct control charts for variables and attributes.

### STAT 202L Inferential Statistics and Quality Control Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** On successful completion of the course, students will be able to,

- Test the significance of single mean, proportion, s. d. and difference of two means, proportions, s. d. and variances for small and large samples.

- Understand when and how to use various non parametric tests such as Sign test, Run test, Median test etc. for single population and two populations.
- Plot various control charts for variables and attributes such as  $\bar{X}$ , R, and s charts and determine whether the given procedure is in statistical control or out of statistical control.

## **Fifth Semester/Sixth Semester**

### **Discipline Electives I & II**

#### **STAT 302 Sampling Techniques and Design of Experiments**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** On successful completion of this course, student will be able to,

- Understand the Simple and Stratified random sampling techniques.
- Understand the ratio estimation procedure.
- Apply ANOVA for one-way and two-way classification, fixed effect models with equal number of observations per cell.

#### **STAT 302L Sampling Techniques and Design of Experiments Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On successfully completion of the course, students will be able to:

- The basic principles underlying survey design and estimation.
- How to draw a random sample by using with and with replacement sampling technique in excel.
- Calculate the sampling mean and sampling variance in case of SRSWR and SRSWOR.

- Draw a random sample from stratified and systematic sampling and also to compare the efficiencies of these sampling techniques with respect to each other.
- Analyze the results of a designed experiment in order to conduct the appropriate statistical analysis of the data.
- Compare several means by using the concept of one way and two way ANOVA.
- Compare the three designs named CRD, RBD and LSD in terms of their efficiencies.

### **STAT 301 Applied Statistics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** On completion of the course, the student will be able to:

- Understand the concept of time series data and application in various fields.
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Understand the calculation and interpretation of the principal demographic measures, and standardize these measures for comparison and construct and interpret life tables.
- Understand the uses of index number with their construction methods.
- Understand the concept of demand and supply theory.
- Understand the concept of scaling of scores.

### **STAT 301L Applied Statistics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** On successful completion of the course, students will be able to,

- Find the trend and seasonal components in the given dataset and separate these components on excel.
- Calculate and interpret the basic demographic measures and compare the measure for two different populations.
- Construct the life table with the help of some given life table columns.
- Calculate the index numbers for different commodities.
- Scaling the scores, test the reliability of these scores and compute the IQ of any individual.

### **STAT 303 Financial Statistics**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** On completion of the course, the students will be able to,

- Understand acquisition of financial data
- Describe financial data using distributions
- Find relation between two or more financial series
- Understand the concept of stochastic process
- Apply basic stochastic models in financial data.

### **STAT 303L Financial Statistics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On completion of this course, the students will be able to,

- Understand the behavior of financial data through graphs
- Describe the nature of financial data
- Calculate risk through financial data
- Find relationship between financial series
- Model financial data using some simple stochastic models.

## **STAT 304 Health Statistics and Population Dynamics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:** On completion of this course, the students will be able to,

- Understand different measures related to health statistic,
- Able to calculate morbidity measures,
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Discuss the demographic significance of age and sex structures and the implications of variations in age & sex structure.
- Construct and interpret life tables.
- Calculation and interpretation of the principal demographic measures, and standardize these measures for comparison.
- Understand the components of population change, including the effects of changing birth, death and migration rates, and demonstrate their influences on age structure.
- Estimate and project the population by different methods.

## **STAT 304L Health Statistics and Population Dynamics Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:** On completion of this course, the students will be able to:

- Calculate various measures of morbidity and their accuracy
- Construct population pyramid and identify its features
- Estimate population growth rates and project for future
- Calculate measures of mortality and fertility for a given population
- Calculate simple measures of life table and analyze it.

## Computer Applications

### First Semester

#### CS 106 Computer Fundamentals

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** On successful completion of the course students will be able to:

- Knowledge of component of computer.
- Convert numbers in binary, octal, hexadecimal, and vice versa including binary arithmetic
- Simplify Boolean expression Draw electronic circuits.
- Devise Algorithm and draw flowchart for Searching, sorting, merging through computer

#### MATH 105 Elements of Mathematics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Determine the particular progression work (AP, GP, HP)
- Demonstrate the determinant of a matrix up to third order.
- Identify function and relations, notations, operations and applications of sets.
- Locate the quadrant in Cartesian plain.
- Recognize real-world problems that are amenable to mathematical analysis, and formulate mathematical models of such problems.

### Second Semester

#### CS 110 Computer Programming

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes :** On successful completion of the course students will be able to :

- develop the ability to write, compile and debug programs in C language and use different data types for writing the programs.
- formulate the programs based on structures, loops and functions.
- conceptualize the understating of differentiating between call by value and call by reference.
- develop the conceptual understanding of the dynamic behavior of memory by the use of pointers.

### **CS 110L Computer Programming Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **Third Semester**

### **CS 210 Data Structures**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Choose appropriate data structure as applied to specified problem definition.
- Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- Use linear and non-linear data structures like stacks, queues , linked list etc.
- Understand Internal representation of Linear and nonlinear data structures.

### **CS 210L Data Structures Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Lab no. Problems**

- L1-L4 Programs on Searching and Sorting: Linear search and Binary Search, Bubble sort, Selection sort, Insertion sort, Quick sort, Radix sort.
- L5-L6 Programs based on static implementation of stacks.
- L7-L8 Programs based on static implementation of queues.
- L9-L13 Programs based on dynamic implementation of stack and its applications.
- L14-L17 Programs based on dynamic implementation of queue and its applications.
- L18-L27 Programs based on Singly, Doubly & Circular Linked lists. Operations on linked lists like: creation, insertion, deletion, traversal, searching etc.
- L28-L40 Operations on Binary tree, binary search tree.
- L41-L45 Simple programs on representation of graphs and their traversal.

## IV Semester

### CS 201 Application Software and Visual Computing

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Course Outcomes:**

On successful completion of the course students will be able to

- Exposure of the features of the MS-Word including Editing files, Basic formatting features, Page setup, Inserting and formatting objects, Tables and Mail-merge.
- Hands on features of the MS-Excel including Functions, Formulas, References, Filters, Validation, Solver and Pivot tables.
- Apply MS- Power point including Presentation, Chart, and Data Tables.
- Introduce features of VB.NET supporting visual and object oriented programming
- Explain the relative merits of VB.NET in .NET framework as an object oriented and visual programming language
- Show how to produce software with rich graphics as a user interface using VB.NET.

- Introduce advanced features of VB.NET specifically RAD, ADO.NET etc

## **CS 201L Application Software and Visual Computing Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **V Semester VI Semester**

### **Discipline Electives**

#### **CS 303 Database Management Systems**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Describe data models and schemas in DBMS
- Learn the features of database management systems and Relational database.
- Use SQL-the standard language of relational databases.
- Learn the functional dependencies and design of the database.
- Learn the concept of Transaction and Query processing.

#### **CS 303L Database Management Systems Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **CS 320 Programming in JAVA**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Apply Object oriented features to program design and implementation.
- Explain object-oriented concepts and describe how Java including identifying the features and peculiarities of the Java programming language supports them.
- Use Java to demonstrate practical experience in developing object-oriented solutions using graphical components.

### **CS 320L Programming in Java Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **CS 307 Multimedia and Web Designing**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Design and develop a static and dynamic website
- Use java script to add dynamic content to website.
- Analysis the various latest interactive multimedia devices and the basic concepts about images and image format.
- Discuss various multimedia tools like Photoshop, Flash.
- Students will be able to design interactive multimedia software using multimediatools(Photoshop, Flash) and web programming languages(HTML, CSS, Java Script,PHP)

### **CS 306L Multimedia and Web Designing Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **CS 323 Web Development and .NET Framework**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop working knowledge of C# programming constructs and the .NET Framework architecture.
- Develop, implement and create Applications with C#.
- Build and debug well-formed Web Forms with ASP. NET Controls
- Use of XML in ADO.NET and SQL server.

## **CS 323L Web Development and .Net Framework Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

# **Dramatic Art (Theatre)**

## **First Semester**

### **DRMA 102 History and Principles of Dramatic Art**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the History and Principles of Dramatic Art.
- Contribution of Greek Theatre in the Drama Worlds.
- Role of the Rasa in Social Community and Acting Method.
- Understand the Nature of the Folk Drama of Rajasthan.

### **DRMA 102L History and Principles of Dramatic Art Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the Role of Exercise and Yoga for the Actor.
- Develop the Relationship with the Drama Book.
- Understand the Technical Words of Theatre.
- Process and Maintain a basic Knowledge of the Tradition of Theatre.
- Articulate Theatrical Knowledge of the Basic Areas of Theatre.

## **Second Semester**

### **DRMA 101 Acting and Speech**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop Vocal, Physical and Imaginative Skills to Express the Emotions.
- Understand the Various Acting Theory of the World.
- Understand the Styles of Indian Folk Dramas.
- Understand the Elements of Drama Analysis.

### **DRMA 101L Acting and Speech Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 8 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the rehearsal and Performance Process.
- Develop the Relationship between the Actor and the Director, the Actor and Stage Manager, Actor and Production Crew, Actor and Fellow Actors.
- Understand the Role of Improvisation, Co-ordination and Synchronization in the Drama.

- Understand the Organs of Speech and Respiration.
- Understand the difference between the Dramatic Voice and Normal Voice.

## **Third Semester**

### **DRMA 202 Sanskrit Drama Literature**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop Working Knowledge of the Principle Works, Authors, Genres and Periods of Sanskrit Drama Literature.
- Understand texts in Their Cultural and Historical Contexts.
- Analyze Literature Using Appropriate Terminology and Common rhetorical figures.
- Demonstrate Awareness of Different Critical Approaches.
- Perform Competent Close readings of Texts.

### **DRMA 203L Transformation to an Actor Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 8 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate Technical and Artistic Proficiency in Acting.
- Develop Working Knowledge of the Voice and Speech.
- Understand Technical and Artistic Movements of Theatre.
- Strong Supple Bodies that are Capable of Playing a Variety of Characters with Various Physical Demands.
- Work on the Whole Body/Mind of an Actor.

## Fourth Semester

### DRMA 201 Hindi Drama Literature

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate Knowledge of the History or Culture of the Hindi Drama Literature.
- Apply Critical and Theoretical Approaches to the reading and Analysis of Literary and Cultural Texts in Multiple genres.
- Understand Drama Texts in Their Culture and Historical Contexts.
- Analyze Literature Using Appropriate Terminology and Common Rhetorical Figures.

### DRMA 201L Hindi Drama Literature Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Analyze the Functions of Text and Their Relations with Historical, Social and Political Contexts.
- Familiarity with terms, Practices and Theoretical Foundations.
- Understand Pre-production Process in File work.
- Demonstrate Knowledge of the Character.

## Fifth Semester

### DRMA 301L One Act Play Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the Craft and Technique of the One Act Play.

- Develop the Predicting Skills.
- Understand the Role of Que Sheets in the Production.
- Listening and Connecting emotionally to Multiple Scene Partners.
- Creating Characters and Performances that Serve a Broader Story and Production.

## Sixth Semester

### DRMA 302L Play and Production Lab

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Developing an Extensive Vocal Warm-up Process for Rehearsal and Performance.
- Participating in Crew and Stage hand Responsibilities.
- Carrying out Production Meetings and Marketing.
- Demonstrate Understand of the Social and Artistic Movements that have Shaped Theatre as we know it Today.
- Demonstrate Proficiency in one or more area. Specific Skills Acting, Directing, Choreography, Design, Technical Theatre, Management, Playwriting.

## Discipline Electives

### DRMA 304L Analysis of One Act Play

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate Knowledge of the History of One Act Play.
- Develop Working Knowledge of the Principles of One Act Play.
- Analyze One Act Play Using Appropriate Terminology and Common Theatrical Figures.
- Develop the Specialization Skills of One Act Play.

### **DRMA 303L Analysis of Modern Hindi Drama**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate knowledge of the history of the modern Hindi Drama Literature.
- Analyse full length dramas using appropriate terminology and common theatrical figures.
- Understand the role of drama for community culture and society.
- Familiar with the modern hindi drama writers and his texts.

### **DRMA 306L Rajasthani Folk Drama Jaipuri Tamasha**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

Demonstrate knowledge of the History and Culture of the Rajasthani Folk Dramas.

- Develop the Predicting Skills.
- Understand the Role of Folk Drama for Community Culture and Society.

### **DRMA 305L Radio and T.V. Anchoring**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop Vocal, Physical and Imaginative Skills to Express the Emotions.
- Introduce to Student Style of the Speech, Diction and Modulation.

### **DRMA 308L Technical Knowledge of Costume Design**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- To develop costume design ability through study of elements and principal of design and research techniques.
- To gain and understanding of costume design as an Allied art and essential part of the collaborative theatre production processes.

### **DRMA 309L Technical Knowledge of Make-Up**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop working knowledge of principal to make-up
- Demonstrate technical and artistic proficiency in make-up.
- Understand basic techniques of make-up.

### **DRMA 307L Set Design**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, student will be able to:

- Student will eye cute basic tasks in set construction.
- Student will apply their historical and aesthetic knowledge in set design.
- Student will assess their own performance and the show as a whole.

## Drawing and Painting

### First Semester

#### DNP 105 Fundamentals of Visual Art-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes

**After the accomplishment of the course students will be able to:**

- Know about creative process.
- Understand fundamentals and basic elements of visual arts.
- Co-relate art, nature and society.
- Communicate through art works.

#### DNP 107L Basic Drawing – I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Gain control over the uses of various mediums.
- Apply knowledge in the use of objects, subjects and mediums.
- Understand elements of art and its implementation in their art practices.

#### DNP 103L Basic Sketching and Art Work

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Use all aspects and values of visual arts.
- Appreciate own work of art and others.
- Identify new possibilities in their art works.

## Second Semester

### DNP 106 Fundamentals of Visual Art-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Recognize aesthetic notions and its application.
- Understand principles of visual art used in the creation, presentation and preservation.
- Explain the importance of visual art and its relevance with society and nature.

### DNP 108L Basic Drawing - II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Recognize and draw variety of forms and shapes, their values, texture and chiaroscuro.
- Realize values of different objects and arrange them in making composition.
- Emphasize concepts and the application of various materials and aesthetic values.

### DNP 104L Creative Work and Study

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop observation skills.
- Grow curiosity, interest and enjoyment in own creativity and others.

- Improve ideas about the visual language, concepts and principles of visual arts.

### Third Semester

#### DNP 201 History of Indian Painting and Sculpture - I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know the art history and its existence.
- Understand the theory and its relation with art practices.
- Write, speak and communicate ideas critically.

#### DNP 205L Study from Life - I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Explore and develop personal concepts regarding study from life.
- Cultivate several modes of artistic expression in study from life.
- Handle all the mediums according to requirements.

#### DNP 203L Sketching and Media Exploration – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Execute freehand drawing rapidly.
- Use proper medium for visual communications.
- Draw sketches (Indoor and outdoor) as well as explore possibilities and limitations of various media.

## Fourth Semester

### DNP 202 History of Indian Painting and Sculpture –II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know about Indian painting and sculpture.
- Identify various Indian artist and their contribution in Indian art scenario.
- Ability to link theory with creative practices.

### DNP 206L Study from Life – II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Make free hand structural drawings of human figure.
- Enrich knowledge about various poses of human figure
- Know about the importance of light & shades.
- Get acquainted with the handlings of various mediums used in life study.

### DNP 204L Sketching and Media Exploration – II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Enhance the use of appropriate medium and relate with the concept of art.
- Explore ideas about the language, concepts and principles of visual arts.
- Experiment in their art works and bring about innovations.

## Fifth Semester

### DNP 305L Sketching and Media Exploration - III

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Execute freehand drawing rapidly and recognize the importance of sketching in visual art studies.
- Achieve all learning experiences and create art works accordingly.
- Synthesis previous knowledge with new insights, regarding sketching and media exploration.

### Discipline Electives

#### DNP 303L Portrait Painting - I

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	6	3

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Analyze own problem in portrait painting and solve accordingly.
- Learn proper techniques to create a portrait painting.
- Create aesthetic appeal in a portrait.

#### DNP 301L Pictorial Composition - I

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	6	3

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know subjects and materials used in composition.
- Identify the importance of realistic and abstract subject in composition.
- Realize the aesthetic value of composition.

## DNP 307L Screen Printing - I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Command of the technical aspects of all processes covered.
- Conversant with multiple introductory screen printing processes
- Think critically, communicate clearly and work creatively in intellectual pursuit.
- Explore and develop personal concepts in creative expression.

## Sixth Semester

### DNP 306L Sketching and Media Exploration – IV

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Execute freehand drawing rapidly.
- Know about the new media art.
- Execute ideas through unconventional mediums.

## Discipline Electives

### DNP 304L Portrait Painting - II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know about the role of portraiture in art practices (from ancient to contemporary).
- Understand the anatomy of face, structure, light, shade, proportion and the characteristics of model.
- Develop eclectic and aesthetic knowledge about portrait making

## DNP 302L Pictorial Composition - II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Enrich knowledge about composition based on sketching and drawing.
- Realize the meaning of realistic and abstract value of composition
- Emphasize the significance of colour in composition.

## DNP 308L Screen Printing - II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Command of the technical aspects of all processes covered.
- Conversant with multiple introductory screen printing processes
- Think critically, communicate clearly and work creatively in intellectual pursuit.
- Explore and develop personal concepts in creative expression.

## Economics

### First Semester

#### ECO 106 Micro Economics -I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe nature and scope of Economics.
- Analyze cardinal and ordinal approaches to consumer behaviour.
- Illustrate uses of indifference curvess.

- Discuss various concepts of elasticity and its measurement.
- Analyze short run and long run law of Production.
- Illustrate various concepts related to cost.

## **ECO 109 Money and Banking**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand the role of money in the broader economy.
- Understand the unique role of banking financial system.
- Analyse a Bank's balance sheet.
- Acquire adequate knowledge of theories related to supply of, and demand of money, and its relationship with prices.
- Analyse the role of a central bank and instruments of monetary policy.

## **Second Semester**

### **ECO 107 Micro Economics - II**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe various revenue concepts and explain the behaviour of revenue under different market structures
- Identify structure of a market
- Analyze short run and long run equilibrium of firms under perfect and imperfect competition.
- Discuss various concepts related to profit and to analyse the determination of profit
- Discuss various concepts related to rent and to analyse the determination of rent.

- Discuss various concepts related to interest and to analyse the determination of interest.

### **STAT 103 Elementary Statistical Methods**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe the meaning function and limitations of Statistics.
- Represent the data through diagrams and graphs.
- Calculate the measures of central tendency.
- Calculate the measures of dispersion.
- Calculate the measures of skewness and kurtosis.
- Interpret the results of measures of central tendency, dispersion, skewness and kurtosis.

### **Third Semester**

#### **ECO 202 Macro Economics -I**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe nature of Micro Economic analysis and Macro Economic Analysis
- Analyze Static, Comparative and Dynamic Economic Analysis
- Identify Central Problems of Economic Systems and their solutions
- Calculate National Income and its related aggregates and analyse the problems and limitation of National income estimation
- Describe Circular flow of income and expenditure.
- Analyze concepts of employment unemployment and full employment.

#### **STAT 206 Quantitative Techniques**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Solve numerical problems related to Correlation and Regression analysis and identify its applications
- Explain meaning of Index numbers and demonstrate ability to construct Index numbers using various techniques.
- Solve various types of numerical based on Probability and related theorems.
- Measure trend using various techniques of Time Series Analysis.
- Define various concepts and solve numerical related to Quadratic equations, Matrices, Arithmetic and Geometric Progression, and Straight Line.

## Fourth Semester

### ECO 203 Macro Economics - II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand the basic concepts of consumption, savings, investment, inflation.
- Understand the tenets of Keynesian Economics and apply them through the aggregate demand and supply model.
- Explain how the equilibrium interest rate is determined in the money market.
- Define the investment multiplier; explain its calculation, and relevance.
- Explain the working of acceleration principle and its weaknesses.  
Describe the business cycles and their phases

### ECO 204 Public Finance

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Conceptualise, explain and give examples of concepts of public goods and externality
- Understand and explain the role of government according to economic theory
- Identify and distinguish between various sources of Public Revenue and assess the impact and incidence of taxation
- Identify various features of Indian Tax system.
- Understand and explain concepts related to Public Expenditure, Public Debt and the Budget.

## **Fifth Semester**

### **ECO 303 Indian Economy – I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand the historical background of colonial economy.
- Appreciate the nature and characteristics of Indian Economy.
- Understand the evolution of Indian Planning, its strategies, objectives and failures.
- Analyze the development of physical and social infrastructure in India.
- Analyze Institutional Reforms in Indian Agriculture.
- Analyze issues of agriculture finance and marketing in India

## **Sixth Semester**

### **ECO 304 Indian Economy – II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
_____				

(CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand importance and problems of Industrial sector in India.
- Analyse composition and direction of foreign trade and foreign trade policy in India.
- Understand the concept of poverty and unemployment.
- Evaluate the policies related to poverty, unemployment and inflation in India.

### Discipline Electives

#### ECO 305 International Economics

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Discuss and explain trade policy issues such as protectionism and free trade.
- Understand and apply the principle of comparative advantage.
- Apply partial equilibrium models in analysing the economic effects of trade policy instruments such as tariffs and quotas.
- Understand the concept of BoP and its disequilibrium
- Critically analyse different theories of determination of exchange rate.
- Appreciate the role of international organizations such as IMF, World Bank, WTO, UNCTAD

#### ECO 301 Development Economics and Environment

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Acquire a basic understanding of the issues and on-going debates on development economics.
- Discuss the important theories in economic development and their policy implication.
- Demonstrate a basic knowledge of the role of market and market failure with regard to the allocation of natural resources and environmental amenities.
- Analyze and interpret the environmental implications of economic decisions
- Understand the nature and scope of contemporary environmental debates

### **ECO 306 Economics of Social Sector**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand basic concepts of Social Sector.
- Analyze Problems and Opportunities in Social Sector.
- Cost and returns of Social Sector
- Understand pattern of expenditure on health and education.
- Analyze association between Human capital and Economic Growth.

### **ECO 308 History of Economic Thought**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Comprehend the development of the theory of economics in historical perspective.
- Grasp emerging paradigms and aberrations with its reasons.

- Analyze similarities and differences among different economic schools of thoughts

## English Literature

### First Semester

#### ENGL 105 Prose and Short Stories

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- exhibit a fair knowledge of the development of English essay/short story as literary genre(s);
- develop critical thinking by analysing texts;
- exhibit word power with use of idiomatic expressions and wide vocabulary;
- communicate effectively in all forms of social interaction;
- inculcate effective citizenship with a deep grounded sense of ethics and moral dimensions.

#### ENGL 106 Romantic Poetry

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- understand the meaning, form, and function of different theoretical and philosophical strands of Structuralism, Post-structuralism, Marxism, New Historicism etc.;
- analyze the historical, political and aesthetic milieu of the romantic age;
- develop creative and critical thinking;
- enhance writing skills;
- inculcate humane values and ethics through the given poem;
- engage in the praxis of applying those theoretical and philosophical underpinnings for the analysis of a particular poem.

## Second Semester

### ENGL 104 Fiction

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- understand the social and literary context of the Victorian world and its anxieties about modernity, capitalism and gender issues;
- analyze, discuss and write critically about the use of social realism in literature;
- analyse and interpret the work of a range of Victorian novelists;
- understand the various elements of long fiction;
- understand the interdisciplinary area of science and literature;
- identify and discuss theoretical discourses concerning class, sexuality, and gender in literary texts;
- comprehend and successfully apply a range of terms and concepts integral to literary studies.

### ENGL 107 Victorian Poetry

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- apply the knowledge of the theoretical discourses based on the social and literary history of the age to a range of texts specifically, Victorian poetry;
- identify the trends of Victorian literature in relation to the advent of science, democratic ideals, Victorian morality, new education etc.;
- critically analyze literary texts of Victorian age keeping in mind the anxiety of the Victorian age;
- explicate their views in terms of the prevailing traits of the preceding and succeeding age of Victorian era.

## Third Semester

### ENGL 201 American Literature

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- appreciate and evaluate the literary history of America;
- recognize the human experiences reflected in the works;
- develop appreciation and understanding of American culture
- demonstrate a knowledge and understanding of a range American writing in its historical and cultural contexts;
- demonstrate improvement in critical writing and critical thinking skills through the analysis of American literary texts;
- enhance their communication skills;
- Inculcate effective citizenship with a deep grounded sense of ethics and moral dimensions.

### ENGL 202 Drama

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- appreciate drama as a genre of literary expression;
- have an understanding of drama of the Renaissance and Restoration period;
- acquaint themselves with the terminologies relevant to the texts to interpret this genre in the backdrop of actual staging;
- understand the various constituents of the performance of the Shakespearean tragedies and the Restoration comedies.

## Fourth Semester

### ENGL 205 Grammar

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- know the nature, form, and function of language;
- use the language effectively;
- learn grammar as a rule governed behaviour;
- develop an insight into the structure of English language;
- assimilate the correct patterns of the language.

### ENGL 206 Indian Writing in English

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- relate the major literary movements of India and their influence on Indian literature;
- demonstrate knowledge of the select texts and traditions in the specific social, cultural and historical context;
- analyse the literary texts with specific reference to cultural and political developments in India's colonial and post-colonial history;
- inculcate the concept of nationalism through literary texts;
- communicate effectively in all forms of social interaction;
- inculcate effective citizenship with a deep grounded sense of ethics and moral dimensions.

## Fifth Semester

### ENGL 304 Modern Fiction

<b>Max. Marks : 100</b>	<b>L T P C</b>

(CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- develop an insight into the genre of fiction and art of fiction writing;
- understand the humanitarian aspects expressed in novels from around the world and to draw a comparative perspective of cross-cultural social, economic and political experiences;
- recognize terminologies identified in various literary texts across cultures;
- apply perspectives gained from literature to personal and global situations;
- evaluate various interpretations of a text and their validity over time.

## Sixth Semester

### ENGL 308 Literary Movements: History of Ideas

Max. Marks : 100 L T P C  
 (CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- understand some major concepts which are related to metaphysics, epistemology, and aesthetics.
- develop critical thinking.
- nurture dialectical thought process that may enable them to communicate effectively by placing anti-thesis to some given thesis.
- contribute in enriching the intellectual history of our country.
- unleash the potential of students and to bring them on an enriching path of lifelong learning.

## Discipline Electives

### ENGL 305 Modern Poetry

Max. Marks : 100 L T P C

(CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- appreciate various poetic devices identified in the various texts of modern poetry;
- understand realism and other modes of poetic expression;
- critically analyze modern poetic texts and assimilate ideas of various movements of the milieu;
- synthesize humane values against the decadence;
- display their understanding of various poets of the era.

### ENGL 309 Science Fiction

**Max. Marks : 100** L T P C  
 (CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- know the major aspects of Science Fiction
- explore the relationship between literature and Science
- understand the complex nuances which connect literature and Science
- appreciate the socio-pragmatic realities of the world that science and literature represent

### ENGL 303 Modern Drama

**Max. Marks : 100** L T P C  
 (CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- appreciate drama as a genre of literature in general and modern English drama in particular;
- familiarize themselves with the techniques of modern drama and artefacts which constitute the effect on stage;

- acquaint themselves with different facets of modern drama and understand the socio-political and cultural background of the audience, the playwright, and also the texts;
- build up understanding to adjudicate the performance of such dramas and their effect on their value system.

### **ENGL 306 Autobiography**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- know the major aspects of autobiography
- explore the relationship between self and its representation
- understand the complex nuances growth and development of self in autobiography
- appreciate the socio-pragmatic realities of the world autobiography represents

### **ENGL 310 Travel Writing**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- know the major aspects of cinema
- explore the relationship between literature and cinema
- understand the complex nuances which connect literature and cinema
- appreciate the socio-pragmatic realities of the world that cinema and literature represent.

## **Geography**

### **First Semester**

#### **GEOG 103 Physical Geography**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe origin of earth, continents and ocean basin, Isostasy, diastrophism, drainage pattern and several landforms.
- Describe the wind movements, pressure, composition and structure of the earth, jet streams.
- Classify world in terms of climate, air masses and fronts and describe cyclones and their types.
- Describe ocean bottom reliefs of Indian ocean, distribution of temperature and salinity, tides, currents and coral reefs.

### **GEOG 101L Fundamentals of Cartography Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe cartography and theoretical background of scales and their types.
- Draw plain, diagonal, comparative, time and Vernier scale.
- Enlarge, reduce and combine maps.
- Describe the uses of thermometer, barometer, hair hygrometer, rain gauge and wind vane.
- Conduct a plain table survey through radiation, intersection and traversing.

## **Second Semester**

### **GEOG 102 Human Geography**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Define human geography and relate it to the other social sciences; describe man environment relationships and schools of human geography.

- Describe evolution of man, classify human races and describe migration theories.
- Map and describe the distribution of several tribes- Pigmies, Badawins, Eskimos, Khirgiz, Gujjars, Bakarwals, Toda, Bhil and Santhal and their economic activities.
- Describe population distribution of the world with maps, concepts of population growth, population theories and human development.
- Classify cities functionally; describe urbanization, settlements and their types.

### **GEOG 104L Statistical Techniques and Data Representation Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

**After the completion of this course, students should be able to:**

- Describe statistical sampling and represent frequency distribution in several forms.
- Represent statistical data through diagrams- multiple bar diagram, simple pyramid diagram, rectangular diagram, wheel or pie diagram, and spherical diagram.
- Measure mean, median mode & standard deviation.
- Represent Statistical data through graphs-poly linear graph, climograph and triangular graph.

### **Third Semester**

#### **GEOG 202 Introduction to Geography of India**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe and map the location of India, its physiographic divisions.

- Describe the drainage, climate, soil and vegetation their types and distribution.
- Describe major crops, minerals, industrial regions, population of India and their distribution.
- Demarcate Rajasthan in terms of physiography, describe climate, drainage, vegetation, soils and their distribution.
- Describe agriculture, livestock, irrigation, human resources and tourism.

### **GEOG 203L Mapping and Prismatic Compass Survey Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Create distribution maps through chorochromatic, simple shading, choro-schematic methods.
- Create maps of isobars, isotherms and dot method.
- Conduct prismatic compass survey through radiation and intersection method.
- Correct closing error through Bowditch rule.

## **Fourth Semester**

### **GEOG 201 Economic Geography**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Define economic geography, describe its scope and relate it with other social sciences
- Classify resources and describe soil mineral and energy resources
- Describe spatial distribution, production and trade of rice, wheat, cotton, tea and Classify world into agricultural regions
- Describe several industries, their location determinants, and distribution of iron- steel and cotton-textile industry.

- Describe trade, transport, their controlling factors, major law making bodies of the world and major transport routes.

## **GEOG 204L Relief Representation and Topographical Maps Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Interpret topographical maps.
- Represent topographical features with the help of contours.
- Identify Human and natural phenomenon.
- Create Profiles using Contours in the topographical sheets.

## **Fifth Semester**

### **GEOG 303L Map Projection Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Elucidate necessity & classification of map projections.
- Compare different kind of map projections.
- Construct map projections graphically.
- Suggest projection for any area of earth surface.

## **Sixth Semester**

### **GEOG 301L Fundamentals of Geoinformatics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Explain development and types of aerial photographs.
- Identify and interpret aerial photographs.
- Elucidate different elements and development of remote sensing.

- Describe different kinds of remote sensing platforms and discuss important elements of GIS.

## Discipline Electives

### GEOG 305 Environment and Disaster Management

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand about the ecosystem and their functions.
- Describe disaster, its types and issues generated during different cycles of disasters.
- Describe the policies of disaster management in India.
- Assimilate role of different bodies established for the cause of disaster relief.

### GEOG 302 Geographical Thought

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Explain evolution of geographical thought and relationship of Geography with other branches of knowledge.
- Describe different tools and techniques of geographical study.
- Compare ancient, medieval and modern scholar's contributions in Geography.
- Elucidate important concepts of Geography as well as recent trends and current issues of subject.

### GEOG 306 Settlement Geography

<b>Max. Marks : 100</b>	<b>L T P C</b>

(CA: 40 + ESA: 60) 6 0 0 6

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop an approach to study settlements.
- Depict the evolution of settlements and relate it to the geographical factors.
- Describe rural and urban morphology, its meaning and types.
- Classify cities functionally into different zones.

### **GEOG 304 World Regional Geography**

**Max. Marks : 100** L T P C  
(CA: 40 + ESA: 60) 6 0 0 6

**Learning Outcomes:** After the completion of the course, students will be able to:

- Elucidate physical aspects of Asia, Europe, Africa, North & South America and Oceania.
- Describe cultural aspects of Asia, Europe, Africa, North & South America and Oceania.
- Compare different continents of world.
- Illustrate terrain, drainage, climate, natural vegetation and Industrial regions of studied continents.

## **gñhl lgr**

### **ihl lel =**

### **HIND 103 gñh0 kdj.k, cadl0 l**

**Max. Marks : 100** L T P C  
(CA: 40 + ESA: 60) 4 0 0 4

**viqr ifj.l**

- 1- Nk;k; 'H=h o 0kdj.kd -fv lshko lgr dsvè ; u dh le> cukldaho d0 'H=h ijfjklslE d~: i lsvoxr gsl dahA

**2 0kdj.ko d0 dsfo/kvahl sijp; iR dj ldahA**



**viqr if. le**

- 1- Nk; e/; ; qh dlo vlyula, oainfr; ladsle> l dala
- 2 Hrdly ds yltkj.k dh i'fr ds lfrd vki l s  
iffr gala
- 3 lkt d le; vadsneyu eal fr dh lkle> l dala
- 4 Hrdlyh dfo; lads lfr d , oalkt d vonu l siffr  
gsl dala

**rth lel =**

**HIND 205 vkr dlo &**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**viqr if. le**

- 1- vkr dfor k ds mlo dh i'fr; l dle> us dh lerk  
fodfr dj ik, xl
- 2 lorarkvlyu ij ghl fr ds ladsv/; ; u eal le gs  
l dala
- 3 i'kr dlo lalyudhey houlal siffr gsl dala
- 4 uolu dlo ifrek'ly; lads siffr lal siffr gsl dala

**HIND 203 ghul d , oa, dldh**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**viqr if. le**

- 1- uld o jaep dsfr : fr tkir glik, xl
- 2 uld o jaep foikdhfo/k'ly; l siffr gsl dala
- 3 ifr uld ladsvly ij uld ds ofed cnys lo#i l siffr  
gsl dala
- 4 Nk; gh uld dly dh ek; rvl dle> us eal efr gs  
l dala

**prtl el =**





(CA: 40 + ESA: 60)

4 0 0 4

**viðr if. ðe**

- ; k kfoj.kyflu & dky dkfodll gkka
- Nkvladhltulleð ekuf drkdksodll gkka
- ; k k lfgR djla ls ifjfr gsj lfgR o lkt ds çfr  
læsu'ly gñhA
- Hjrñ o ikpR ; k kvuþ } jkufd o l h-frd ek, ldk  
fodll gkka

**HIND 305 HgykvðedHkyflu**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**viðr if. ðe**

- vðedHk lðsek; e ls Nk-k aff=; ladhcnyrhNfo ls ifjfr  
gsl dala
- lfgR o lkt d l jklj lðsl e> useal eH gsl dala
- Nkka l=hyflu dhof kVrkl sifjfr gsl dala
- Nkkaefgyk lðsviusxgu vullðskçfusdsgß yhl sij. k  
ysl dala
- l=heulfoKkj l=h' lkl l=h' ldr o l=h l kZvlin epalal s  
ifjfr gsl dala

**HIND 303 izktueyd fñh**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**viðr if. ðe**

- 1- izktueyd fñh ds Klu ls izll fud inlagrql {lerk c<k  
ikxla
- 2- fofkl rdullð oklud 'lufy; lðsvklj ij HkZlerkdk  
fodll dj ikxla

- 3 वक्रिणं ले; दसोभिर्न ललेत्त द , oa'ल ध {ल्लेज्ज्ख्ज् ds  
volj vftZ dj ikṣā
- 4 ल्लेकदसो/क: ललेदसु वऽ ० लोत्त इत्त; लसल्लेक्व/ल्लि  
तऽसल्लेत्त {ले कु इक्ख
- 5 लल्लेक्व 'ल्लेत्तदस/; ; u दसे; e लसदुल्ले ल्लेत्त , oa  
फ/क वक्ख, oa ललेत्त {ले ea lora द्दZ द्दुस ध {लेक  
ददल्ले र्द इक्ख

### HIND 308 वुक्ख फल्ले

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

वल्लेत्त इत्त -

- ० लोत्त ल्लेत्त; न् एवुक्ख द्दक'लेत्त ग्ग ल् लल्लेत्त  
दस}ल्लेक्ख ल्लेत्त ले > ददल्ले र्द ग्ग
- ल्लेत्त ल्लेत्त-ल्लेत्त ल्लेत्त; ग्ग व्द ल्लेत्त (ल्लेत्त) ग्ग
- द्द ल्लेत्त वुक्ख द्द ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त  
ग्ग
- ल्लेत्त ल्लेत्त द्द ल्लेत्त -ल्लेत्त; ल्लेत्त ल्लेत्त एवुक्ख : ल्लेत्त  
व्लेत्त; u ल्लेत्त; u द्द {ले ० ल्लेत्त ग्ग
- ल्लेत्त ल्लेत्त -ल्लेत्त; ल्लेत्त ल्लेत्त द्द ल्लेत्त {ले ग्ग

### HIND 307 ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

वल्लेत्त इत्त -

- ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त ल्लेत्त  
ददल्ले र्द ग्ग
- वक्रिणं ले; दसोभिर्न ललेत्त द , oa'ल ध {ल्लेज्ज्ख्ज् ds  
volj vftZ dj ikṣā

- ; HZ?Wukvads l osu'ly l Hgr d 'ly eaiZrq djusth  
{lerkfodfl r dj ikxIA
- Nk v leal t ZEd {lerkd kfodll gkIA

## HISTORY

### First Semester

#### HIST 101 History of Early India (upto Mauryan Age)

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Comprehend different types of sources of early Indian history
- Be acquainted with trends of political developments in early India
- Orient themselves to continuity of cultural evolution beginning from the Lithic Ages
- Familiarise themselves with regional and Indian stylistic development of aesthetics

#### HIST 103 History of Medieval India (1000 to 1526 AD)

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Define the struggling phase of an era of transformation in medieval India.
- Understand the advent of Islam and role of the Sultanate in the development of new political system and policies in India.

- Identify how the disintegration of an empire leads to the rise of regional powers.
- Comprehend technical developments and socio-cultural relation of two different societies.

## Second Semester

### HIST 102 History of India (200 BC to 1000 AD)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After the completion of the course, students will be able to:

- Visualize rise of imperial, regional and Rajput powers in ancient India
- Assess the consolidation of foreign powers on Indian soil
- Comprehend Indian social transformations in early Christian centuries
- Understand overseas expansion of Indian culture

### HIST 104 History of Medieval India (1526 to 1707 AD)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Appreciate significance of composite culture
- Understand Mughal policies, administrative system and their military establishment
- Elaborate the growth of economic institutions and social change in medieval age.
- Define the significance of Mughal rulers as they established a new empire in India, its relation with the Central Asian empires, the commercial and cultural relations between India, China and Europe.

## Third Semester

### HIST 202 Political History of Modern India (1757 to 1947)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop critical thinking about the political impact of British Raj
- Understand how India got independence with partition
- Evaluate the structure of British administrative system.
- Locate the nature of various peasant, tribal movement and the discourse on 1857 event.

### **HIST 203 Social and Economic History of Modern India (1707 to 1947)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop the critical thinking about the colonial & exploitative character of British Raj.
- Locate the history of education, profession and institutionalization of knowledge.
- Evaluate the nature of socio-religious movement in modern India and write an assignment on the same.
- Understand the recent trends of historiography on science, technology, and environment.

## **Fourth Semester**

### **HIST 201 Civilizations of the World**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Know about the early world civilizations
- Analyze the contribution of world civilizations in the field of science, art and architecture.
- Discuss the literary and philosophical achievements of the Greeks.

- Understand rise of Judaism, Christianity, Islam and emergence of the crusades.

### **HIST 204 Survey of the History of Rajasthan**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Recognise the importance of regional history in Indian History.
- Describe the political and cultural developments of Rajasthan.
- Assess the resistance and collaboration of Rajput rulers towards imperial powers.
- Analyse the emergence of socio-religious, tribal, peasant and prajamandal movements.

## **Fifth Semester**

### **HIST 301 Changing Patterns of World History**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Critically analyze/interpret primary documents/secondary sources; qualitative/ quantitative data to evaluate historical events.
- Develop communication skills through oral/written exercises, and develop analytical skills by critically interpreting historical events.
- Analyze how local/national/international policies/practices developed in the past continue to impact their contemporary lives.
- Understand the establishment of United nations Organization

## **Sixth Semester**

### **HIST 302 Introduction to Historiography**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop a critical thinking with regard to the genesis and nature of the discipline.
- Understand the recent developments in gender history, new history and archaeological techniques.
- Locate the philosophy of history in terms of cyclical, linear and great men theory.
- Read and write a paper related to the fundamental question- what is history

## **Discipline Electives**

### **HIST 303 Tracing Women's History in Indian Society**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Locate the progress of civilization and subsequent changes in position of women
- Interpret Women's status through Buddhist and Jaina texts
- Assess women's contribution towards making of medieval Indian culture
- Analyze Women's participation in national movement

### **HIST 306 Fundamentals of Indian Society and Culture**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- § Understand the evolution of Indian society and culture.
- § Analyse the philosophy of Indian thought process.
- § Explore the Indian contribution to the field of science and education.

## HIST 307 Trends in the Understanding of History

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand key philosophical development of 20th century.
- Develop idea about the social history.
- Develop a critical thinking with regard to the oral history and quantitative techniques.
- Discuss the various eminent historians and the new historical trends

## HIST 305 An Outline of the History of South India

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Familiarize themselves with contributions of South Indian dynasties to Indian History.
- Understand dynamics of socio-economic life in South India.
- Assess the evolution of South Indian Art & architecture.

## Home Science

### First Semester

## HSC 101 Basics of Home Science and Resource Management

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Interpret concept and scope of Home Science discipline

- Develop an insight into fundamentals of Resource and their management

### **HSC 108L Interior Decoration Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Design and draw floor plans to meet a given set of requirements
- Apply informed judgments in designing interiors

## **Second Semester**

### **HSC 102 Basics of Human Development**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Get insight into concept and various aspects of Human Development
- Appraise concerns and issues related to parenting and development aspects
- Relate theories to developmental aspects

### **HSC 107 Fundamentals of Foods and Nutrition**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe the functions of food and role of various nutrients, dietary requirement of various nutrients, and effect of deficiencies and excesses
- Explain the methods of food preparation and principles applied in food preservation.

- Apply and incorporate the knowledge of nutritional requirement in various life stages.

## **Third Semester**

### **HSC 215 Nutrition in Health and Disease**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe the role of nutrition and nutrients in health, disease and various life stages
- Explain the causes of food spoilage and types of food preservation
- Apply and incorporate the knowledge of therapeutic diet for various disease conditions

<https://www.slideshare.net/jinulazer/ppt-on-nutrients>

### **HSC 205L Food and Nutrition Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Plan and prepare different types and specific nutrient rich diets using different cooking methods
- Plan and prepare diets for various disease conditions
- Prepare food products using various preservation methods

## **Fourth Semester**

### **HSC 210 Introduction to Community Nutrition and Extension**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Explain the linkages between nutrition, environment, health and disease
- Recognize the importance of malnutrition as a conditioning factor in relation to many diseases in community
- Get acquainted with the roles of national & international agencies in community nutrition
- Explain importance of extension programmes for the betterment of QOL in rural areas and develop skills for effective communication

### **HSC 212 Life Span Development**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand important aspects of development during the whole life span
- Understand the issues faced and adjustments required at each stage across the life span

## **Fifth Semester**

### **HSC 308 Introduction to Textiles**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Get basic knowledge about different fibers used in textile Industry, their physical and chemical characteristics and end use
- Identify different methods of yarn and fabric manufacturing and their characteristics and utility
- Analyze different techniques used to enrich the surface of fabric through dyeing and printing and finishing

- Discuss the use of different types of washing methods , equipments and different agents used in care and maintenance of fabric
- Evaluate different practices involved in Textile Industry and at household level

## **Discipline Elective – I**

### **HSC 305 Family Dynamics and Parent Education**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Gain information about importance, problems and adjustment in marriage life and family
- Attain knowledge about role of parents and their involvement for overall development of the child
- Get awareness about parent and community education for betterment of society

### **HSC 320 Family and Child Welfare**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Get an insight into the family as a social system
- Understand about the family disharmony due to changing socio-economic conditions in the country.
- Gain an understanding of the needs and problems of children, youth, women, the aged and the family as a whole.
- Acquire knowledge about welfare services for family and children India

## **Sixth Semester**

## HSC 312L Textile care and Clothing Construction Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Learn basic garment construction and embroidery skills
- Use learned skills in garment construction for different age groups and figure types
- Learn basic knitting stitches and their use for knitting different garments
- Apply theory in taking care of household textiles and garments

## Discipline Elective – II

### HSC 307 Introduction to Clothing

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand the basic essentials of clothing construction
- Assess the various steps involved in the process of garment making
- Gain the skills required for apparel construction

### HSC 322 Fundamentals of Family Clothing

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe the selection factors for fabrics and clothes of individuals of different age group.

- Understand specific property of fabric required for different types of garments.
- Elaborate various functions of clothing.
- Use different principles and elements of art while selecting or designing dress for different figure types.

## Indian Classical Dance (Kathak)

### First Semester

#### **DNCE 105 Literature of Indian Classical Dance–I (Kathak)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- The origin of dance hence command over technical terms of Kathak Dance.
- Recognize and apply the Neck and Eye movements and Hastmudras.
- Execute basic etiquettes of the various Taals.

#### **DNCE 111L Performance of Indian Classical Dance-I (Kathak)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Execute basic etiquettes of Dance.
- Perform combined hand, feet movements and formation of figures.
- Formulate chakkars

### Second Semester

#### **DNCE 106 Literature of Indian Classical Dance-II (Kathak)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand the development of Kathak Dance in Historical perspective.

- Explain the abhinaya and its types, head movements.
- Understand the regional folk dance and Raas.
- Learn the Taal system.

### **DNCE 112L Performance of Indian Classical Dance-II (Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Execute the different Taals and foot work in Kathak.
- Perform Shloka and padhant of all bols.
- Formulate the composition.

### **Third Semester**

### **DNCE 201 Literature of Indian Classical Dance-III (Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Recognize various Gharanas and other Indian Classical Dance forms.
2. Understand technical terms of Kathak Hastamudras and their uses in Kathak Dance.
3. Develop the knowledge of Kathak Legends.

### **DNCE 207L Performance of Indian Classical Dance-III (Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Develop the Skills of musicality and various forms of Dance with expression.
2. Develop foot leg exercises back exercise, contractions over curve.
3. Manage the time or time-management.
4. Improve health, wellbeing and learning ability through Dance.
5. Develop appreciation for the art form.

## Fourth Semester

### DNCE 202 Literature of Indian Classical Dance-IV (Kathak)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Formulate the Sanyukta Hasta Mudras.
2. Understand the Sangeet and Taal.
3. Recognize the famous dancers and self made composition with notation.

### DNCE 208L Performance of Indian Classical Dance-IV (Kathak)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Execute the various types of expression.
2. Develop to play other instruments.
3. To Perform in more expressive and communicating way.

## Fifth Semester

### DNCE 301L Performance of Indian Classical Dance-V (Kathak)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Perform the additional Taals: Pancham Sawari, Shikar.
2. Perform live shows.
3. Develop the Art appreciation.

## **SIXTH SEMESTER**

### **DNCE 312L Performance of Indian Classical Dance-VI (Kathak)**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Perform as a dancer on stage.
- Execute the desires, emotions and imagination through Dance.
- Develop their vision.

## **Discipline Electives**

### **MUS 308L Performance of Indian Classical Music (Tabla)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### **MUS 309L Performance of Indian Classical Music (Harmonium)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### **DNCE 309L Performance of Rajasthani Folk Dance**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### **DNCE 307L Performance of Other Classical Dance (Bharatnatyam)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **DNCE 308L Performance of Other Classical Dance (Manipuri)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

## **Indian Classical Dance (Bharatnatyam)**

### **First Semester**

#### **DNCE 107 Literature of Indian Classical Dance-I (Bharatnatyam)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Develop the knowledge of the origin of dance and technical terms.
2. Recognize and apply the Neck and Eye movements and Hastmudras.
3. Execute basic etiquettes of the various Taals.

#### **DNCE 109L Performance of Indian Classical Dance-I (Bharatnatyam)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Execute basic etiquettes of Dance.
2. Perform combind hand, feet movements and formation of figures.

## Second Semester

### DNCE 108 Literature of Indian Classical Dance-II (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Understand the Bharatnatyam Dance in Historical aspect.
2. Explain the technical terms.
3. Understand the regional folk dance and Raas.
4. Learn the Taal System

### DNCE 110L Performance of Indian Classical Dance-II (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Execute the different Taals and foot work in Kathak.
2. Perform Shloka and recite the bolas
3. Formulate the composition.

## THIRD SEMESTER

### DNCE 203L Literature of Indian Classical Dance-III (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### DNCE 205L Performance of Indian Classical Dance-III

**(Bharatnatyam)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes:** After the completion of the course, students will be able to:

- ✓ Sequence of Bharatanatyam items.
- ✓ Types of Nayak and Nayika.
- ✓ Historical Stories of shiva and parvati creation of Tandav and lasya.
- ✓ Uses of different handgestures.
- ✓ Knowledge of songs along with Korvais and jathi with Taal.
- ✓ Receive the blessings before any stage performance which is stage.....

**FOURTH SEMESTER**

**DNCE 204 Literature of Indian Classical Dance-IV**  
**(Bharatnatyam)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**DNCE 206L Performance of Indian Classical Dance-IV**  
**(Bharatnatyam)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes:** After the completion of the course, students will be able to::

- ✓ Following ancient tradition of devadasi.
- ✓ Understand the regional Different folk dance.
- ✓ Knowledge of mythological stories ( Mahabharta and Ramayana)
- ✓ Uses of different hand gestures.

## FIFTH SEMESTER

### DNCE 305L Performance of Indian Classical Dance-V (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- ✓ Knowledge of different styles used in Bharatanatyam.
- ✓ Usually comes through is evolving to the particular taalās in north Indian Taalas.
- ✓ Uses of different hand gestures.
- ✓ Knowledge of songs along with Jathis, Koravais play with taal.

## SIXTH SEMESTER

### DNCE 306L Performance of Indian Classical Dance-VI (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- ✓ The Natyashastra documents the history behind the development of the arts in India.
- ✓ It is a theatre and dance treatise of national importance.
- ✓ Detailed knowledge of Lokdharmi, Natyadharmi, vritti pravirtti and prekshagriha.
- ✓ Knowledge of Trikaal jathi play with taal.

## Discipline Elective

### MUS 310L Performance of Indian Classical Music (Mridangam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**MUS 309L Performance of Carnatic Music (Vocal)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**DNCE 310L Performance of Other Classical Dance  
(Kuchipudi)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**DNCE 311L Performance of Other Classical Dance  
(Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**DNCE 309L Performance of Rajasthani Folk Dance**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Indian Music****First Semester****MUS 101 Literature of Indian Classical Music – I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Students will be able to understand the literary terms of music.
- Will be able to differentiate the ragas and have the command over writing the notations which is vital part of music.

## MUS 101L Performance of Indian Classical Music – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Recognition of musical piece and rendering the technical transitions may increase the knowledge of the structure of music and instruments as well.
- Ability to perform in different formations of TIME by practicing/performing with percussions.

## Second Semester

### MUS 102 Literature of Indian Classical Music – II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Student will be able to increase their knowledge by descriptive and comparative study of evolution of music from ancient era to till date by inclusively added the forms of music and dances.
- This will be making the students more competitive in the field of fine arts.

### MUS 102L Performance of Indian Classical Music-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Students will be able to handle the instruments and tune them in the certain scales. This will increase the opportunities for them to start their own business.
- They will be able to seek a career in composing equally in Indian and filmy/light music by developing the ability of composing the musical pieces.

### Third Semester

#### MUS 201 Literature of Indian Classical Music – III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

#### MUS 201L Performance of Indian Classical Music –III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcome :**

- Students will be getting the ability to handling and playing instruments.
- They will have a guideline to use different transitions with each other, by help of these, they can furbish their pursued command with a more excellence.

### Fourth Semester

#### MUS 202 Literature of Indian Classical Music – IV

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Students will be having the idea of complex components of music, like – raga theory and different forms of music along with taal system. It will help them to showcase their intense knowledge of vital elements of music.
- Students will be able to achieve the ability to write essays on musical topics and understand the valuable contribution of Pandits and Ustads of Indian Music.

#### MUS 202L Performance of Indian Classical Music –IV

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Understand the implementation of technical terms of performing in various formations of taal.
- Having command over different raga and taal excluding Teen taal which is considered as a basic, primary taal but the most beautiful and used taal in Indian Music system.
- Play with the accompaniment of rhythm in various tempos and taal by using variety of technical transitions and plucking formations.

## **Fifth Semester**

### **MUS 301L Performance of Indian Classical Music –V**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 8 4**

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Command over Shuddha and Mishra ragas.
- Will be knowing the method of tuning the instruments. Will be able to the and instrument.
- Will be developing the ability to use the complex and more advanced musical pieces to elaborate a raga by singing Khayals and playing Gats.
- Will be preparing the students to understand and perform through traditional styles of music rendition.

## **Sixth Semester**

### **MUS 302L Performance of Indian Classical Music –VI**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 8 4**

**Learning Outcomes :** After the completion of the course, the students will be able to:

- To promote the understanding of ragas & mishra ragas.
- Ability to tune your own instrument to enable the student understanding and grip.

- Ability to develop vakrachalan of swar instead of straight aaroh&avroh.
- Ability to sing/play badakhayal & chotakhayal /masitkhani & razakhani gats in different taal with different laykari.
- To prepare the students for conventional & traditional style of singing.

### **Discipline Electives**

#### **MUS 308L Performance of Indian Classical Music (Tabla)**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 8 4**

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Definition of terminology such as sam, kaal, khanda, maatra, laya etc.
- General information about the origin of tabla.
- Definition of terminology such as kayada, palta, mukhra, tukra,ect.
- Basic knowledge of Bhatkhande notation system.

#### **MUS 307L Performance of Indian Classical Music (Harmonium)**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 8 4**

**Learning Outcomes :** After the completion of the course, the students will be able to:

- A formal training initiate to students about basic terms like types of notes, different patterns of notes (Alankaars), rhythm and its components with an initial start of learning ragas.
- Encourage students to play/sing with zeal to get improved at beginning level and heading towards pro level.
- Will be able to handle the instruments carefully and maintain them by his/her own.

## MUS 303L Basic Technical Skills for Audio Production

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

## Indian Music (Tabla)

### First Semester

#### MUS 103 Literature of Indian Classical Music – I (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to.

1. Develop the knowledge of the origin of Tabla and technical terms.
2. Recognize and apply the hand movements on Tabla.
3. Execute basic etiquettes of the various Taals.

#### MUS 105L Performance of Indian Classical Music - I (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to.

1. To introduces the student to the basics of tabla playing.
2. Perform combined and single hand movements of figures.
3. To introduce the student basic knowledge of Baj.
4. It is only when these concepts are strong that the learner can take her next steps confidently.

### Second Semester

#### MUS 104 Literature of Indian Classical Music - II (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

1. To introduce the students with complex Tall's and a step higher from the basic level.
2. To give the students merits and demerits of the Tabla players.
3. To prepare students to stage performance and boost confidence.
4. To take the student a step ahead and introduces different laya and some basic embellishments of the taals studied before.
5. To prepare students to stage performance and boost confidence.
6. To invoice of the knowledge of Pt.Vishnu Digambar Paluskar notation system.

### **MUS 106L Performance of Indian Classical Music - II (Tabla)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes:** After completion of this course, the students will be able to

1. The students is Advance bols that are played on tabla.
2. The students should be able to show these taals with the hands through claps, showing the taali and khaali.
3. The students play theka of taals learnt in the previous course in single as well as double tempo.
4. Students will be ready to play Teental, Rupak, jhaptal, Ektal, Rupak, Tilwara.

## **Third Semester**

### **MUS 203 Literature of Indian Classical Music - III (Tabla)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes :** After completion of this course, the students will be able to:

1. Delivering the extended understanding to the students about evolution and principles of different aspects study of Indian taal system.
2. To developed the students his mastered the skill of creativity elaborating on a taal learnt, for booth solo performances and as accompaniment.
3. The students able to play a given laya through the presentation.

### **MUS 205L Performance of Indian Classical Music - III (Tabla)**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	8	4

**Learning Outcomes:** After completion of this course, the students will be able to:

1. knowledge of solo performance and accompaniment.
2. Play complex kayada in prescribe taal.
3. The student plays competent enough to elaborate Teen Tal and prescribe taal.
4. The students ability to play jaati style.
5. The students ability to play jaati style.

## **Fourth Semester**

### **MUS 204 Literature of Indian Classical Music - IV (Tabla)**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to

1. To recognize, what is gharana.
2. The objective of practical is to convey the one step advance understanding of recitation and presentation of a raga and taal.
3. Practical knowledge of handling and tuning the instruments.
4. To give the student detail and comparative study of the development of tabla.

## **MUS 206L Performance of Indian Classical Music - IV (Tabla)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

1. Develop appreciation for the art form.
2. Knowledge of tuning your own instrument.
3. The student should be able to play kaaydas, and rela in Teental and Rupak tal solo for fifteen minutes with the accompaniment of the levara.
4. The students also being able to read and play bols written on paper is an important skill that has to be mastered her.

## **Fifth Semester**

### **MUS 305L Performance of Indian Classical Music - V (Tabla)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to

1. The students able to play various thekas at both ati vilambit as well as drut laya.
2. The students should have the expertise of playing both common taals such as Teental, Jhaptal, Ektal, Rupak.
3. The students also be able to show with the hands the same kayada of a gharana in different taals.
4. The students able to make a comparative study of the styles of playing of different gharanas.
5. The students will be taught some kayadas that begin with the left hand.

## Sixth Semester

### MUS 306L Performance of Indian Classical Music - VI (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

1. To enable the students understanding and grip over Layakari.
2. To maximize the potential of students in terms of creativity, and command over every Taal.
3. To enhance the knowledge of students Gat and his three patterns.
4. To give them knowledge of tune your own instrument.
5. Knowledge of prescribed Taal in the syllabus.

## Discipline Electives

### MUS 309L Performance of Indian Classical Music (Vocal)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### MUS 307L Performance of Indian Classical Music (Harmonium)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### MUS 303L Basic Technical Skills for Audio Production

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>



## Management

### First Semester

#### COM 104 Financial Accounting

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Have knowledge of book-keeping and financial accounting
- Maintain the basic books of accounts and prepare various statements.
- Process and prepare final accounts i.e. trading, profit and loss accounts and balance sheet.

#### MGMT 102 Foundation of Management

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership
- Understand various theories and management principles.

### Second Semester

#### COM 101 Business Environment

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Interpret the impact of Micro & Macro environment on Business Decision
- Learn about factors affecting social orientation of Business
- Understand the basic concepts related with Indian economy, Industrial Policy, 1991 and Union Budget.
- Learn about Company registration process.
- Understand process of winding up of a company.

### **MGMT 104 Group Behaviour**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand group dynamics and basics of teamwork.
- Understand organizational culture and change management within the organizations.
- Understand stress and reasons behind stress within organization.

## **Third Semester**

### **MGMT 103 Foundation of Marketing Management**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand various issues and activities involved in marketing management and they stimulate their thinking in this direction specially those who wants to pursue their carrier in this field.

- Understand different concepts, strategies and issues they are involved in exchange of products and services between the firm and the markets.
- Understand distribution process and factors affecting the choice of distribution channels
- Understand promotion mix and various components of promotion mix

### **MGMT 205 Foundation of Human Resource Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Effectively manage and plan key human resource functions within organizations
- Proficiency in fundamental HR policies and practices that help to promote the organization's strategic goals
- Understand Human Resource Development.

## **Fourth Semester**

### **COM 211 Principles and Practices of Banking**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- To understand the banking operations.
- To advice and guide in basic banking operation.

### **MGMT 202 Basics of Financial Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Aware about capital structure and theories of capital structure.
- Understand the cost of capital in wide aspects.
- Understand working capital management

## **Fifth Semester**

### **MGMT 203 Bhartiya Prabandhan**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand ancient Indian spiritual teachings and their relevance in present day life.
- Have a value oriented approach in their everyday life.

## **Sixth Semester**

### **MGMT 309 Organizational Studies**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

1. The students will able to develop the concept on organizational studies and need of CSR and strengthen the knowledge about the growth of Indian companies.
2. Make the role clarity of consumer and brands in building trust for each other and the strategies implemented to gain consumer loyalty.
3. Equip students with multiple perspectives on leadership and organization.
4. Students will be aware about the CSR approaches adopted by the individuals.

5. Students will understand the role and importance of building social institutions and the critical role they play in the society.

## **Discipline Electives**

### **COM 312 Personal Finance**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand the requirements of Personal Financial Plan can develop and implement a budget.
- Use retirement planning calculators and other financial calculators.
- Understand Proactive and reactive ways to deal with Investment frauds and low quality financial services.

### **MGMT 308 Operations Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand the important functions of the Production and operations management.
- Deals with the decision making in planning for Location, process,
- Plan layout, scheduling and sequencing of facility.
- Control the inventory, and manufacturing process, in both manufacturing and service organization

### **MGMT 208 Retail Environment in Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand supply chain management, merchandising, buying, retail pricing, store management, store layout & design.
- Learn how small and large retail organizations are structured, gain an understanding of basic retail operations, acquire knowledge of the various types of retailers.

### **COM 210 Emerging Banking Services**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about banking scenario in India as well as globally.
- Know about various banking products including third party products.
- Know about the recent financial reforms for NPA management.

### **LAW 209 Intellectual Property Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the laws related to Intellectual Property Rights
- Use the principles of various IP laws.
- To assess the ways in which legislation and global policy influence the socio-economic environment in India and abroad.

### **MGMT 305 E-Business**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Compare and evaluate both offline and on-line modes of shopping.

- Know about Marketing & Branding in digital age, e-banking-CRM, e- SCM and ERP
- Understand about upcoming areas like digital marketing, e-commerce logistics, e-supply chain management as their career option.

## **Mathematics**

### **First Semester**

#### **MATH 106 Introduction to Calculus**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On completion of the course, the student will be able to,

- Apply the concept and principles of differential and integral calculus to solve geometric and physical problems.
- Evaluate various limit problems both algebraically and graphically
- Differentiate and integrate the functions which are applicable in real life situations.
- Interpret the geometric meaning of differential and integral calculus
- Apply differentiation to find linear approximation, extrema, monotonicity, and concavity of functions.

#### **STAT 104 Introduction to Probability and Statistics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On completion of the course, the student will be able to:

- Compute numerical quantities that measure the central tendency and dispersion of a set of data.
- Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
- Apply general properties of the expectation and variance operators.

- Understand the properties and fitting of the Normal, Binomial and Poisson distribution.
- Fit the straight line, second degree parabola and curves of type:  $ab^x$  and  $ax^b$
- Understand the concept of Correlation (Karl Pearson) and Linear Regression.

## Second Semester

### MATH 101 Analytical Solid Geometry

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the basic applications of analytic and solid geometry.
- Understand geometrical terminology for planes, tetrahedron, spheres, paraboloids, hyperboloids and ellipsoids.
- Visualize and represent geometric figures and classify different geometric solids.

### MATH 104 Differential Equations

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** On completion of this course, the student will be able to:

- Identify the type of a given differential equation and select and apply the appropriate analytical technique for finding the solution.
- Student will be able to solve first order differential equations utilizing the standard techniques for separable, exact, linear, homogeneous, or Bernoulli cases.
- Create and analyze mathematical models using first order differential equations to solve application problems.
- Determine solutions to the linear and nonlinear ordinary differential equations of first and second order.

- Determine the complete solution of a differential equation with constant coefficients by variation of parameters
- Evaluate the Laplace and Inverse Laplace transform of functions of one variable

### Third Semester

#### MATH 201 Abstract Algebra

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- To demonstrate the mathematical maturity of understanding the proof.
- To understand the definition of a group and be able to test a set with binary operation to determine if it is a group.
- To find the order of elements of groups.
- To identify subgroups of a given group, cycle groups, normal groups.
- To understand permutation groups and be able to decompose permutations into 2-cycles.
- To grasp the significance of the concepts of homomorphism, isomorphism, and automorphism and be able to check a given function is one of these.
- To classify groups up to isomorphism.
- To identify a set with to binary operation forms a ring or not.
- To really understand the special types of rings and be able to construct new examples from the old ones.
- To check a subset of a ring is an ideal or not and be able to identify proper and maximal ideal.

#### MATH 206 Real Analysis

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Think about basic proof techniques and fundamental definitions related to the real number system.
- Understand the concept of real-valued functions, limit, continuity, and differentiability.
- Find expansions of real functions in series forms.
- Demonstrate some of the fundamental theorems of analysis.
- Develop the capacity to solve real integral while understanding of integrable functions.

## Fourth Semester

### MATH 202 Introduction to Linear Algebra

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand vector spaces over a field and subspaces and apply their properties.
- Understand linear independence and dependence.
- Find basis and dimension of a vector space, and understand change of basis.
- Compute linear transformations, kernel and range, and inverse linear transformations, and find matrices of general linear transformations.
- Find eigenvalues and eigenvectors of a matrix and of linear transformation.
- Understand inner product on a vector space.
- Understand the concept of orthogonality in inner product spaces.
- Create orthogonal and orthonormal bases: Gram-Schmidt process.

### MATH 301 Complex Analysis

**Max. Marks: 100**  
(CA: 40+ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Demonstrate understanding of the basic concepts and fundamental definitions underlying complex analysis.
- Investigate complex functions, concept of limit, continuity and differentiability of complex functions.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.
- Prove and explain concepts of series and integration complex functions.
- Understand problem-solving using complex analysis techniques.
- Enjoy the roll of complex functions today's mathematics and applied contexts.

## Fifth Semester

### Core Paper

#### MATH 302 Introduction to Discrete Mathematics

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Write an argument using logical notation and determine if the argument is or is not valid.
- Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
- Understand the basic principles of sets and operations in sets.
- Prove basic set equalities.
- Apply counting principles to determine probabilities.
- Demonstrate an understanding of relations and functions and be able to determine their properties.
- Determine when a function is 1-1 and "onto".
- Demonstrate different traversal methods for trees and graphs.
- Model problems in Computer Science using graphs and trees.

## Sixth Semester

### Core Paper

#### MATH 303 Introduction to Numerical Analysis

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Solve the nonlinear equations, system of linear equations and interpolation problems using numerical methods.
- Examine the appropriate numerical differentiation and integration methods to solve problems.
- Apply the numerical methods to solve differential equations.

### Discipline Electives

#### MATH 203 Introduction to Mechanics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the geometry of the motion of particle in plane curve, i.e. position, velocity, and acceleration, and how those quantities are related through calculus.
- Learn Newton's laws of motion and examines their application to a wide variety of problems.
- Learn the basic concept of composition and resolution of forces and friction.
- Understand and visualize the real physical problem in terms of Mathematics.

- Learn one-dimensional (SHM), multi-dimensional (Projectile motion), and constrained motion, motion of particle with or without connecting with string.

### **MATH 304 Linear Programing and Its Applications**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Formulate the LPP.
- Conceptualize the feasible region.
- Solve the LPP with two variables using graphical method.
- Solve the LPP using simplex method.
- Formulate the dual problem from primal.
- Solve Transportation and Assignment problems
- Solve the problems of competitive situations between two competitors.

### **MATH 312 Vector Calculus**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On completion of this course, students will be able to,

- Manipulate vectors to perform geometrical calculations in three dimensions.
- Use Green's theorem and the Divergence theorem to compute integrals. Explain how Green's Theorem is a generalization of the Fundamental Theorem of Calculus.
- Communicate Calculus and other mathematical ideas effectively in speech and in writing.
- Recognize when it is appropriate to use a scalar and when to use a vector in problem solving.

## MATH 310 Number Theory

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the concept of divisibility and able to find greatest common divisor of large integers using Euclidean algorithm.
- Appreciate the importance of prime numbers and their distribution.
- Solve linear congruences and system of linear congruences.
- Know Euler's theorem, Fermat's theorem and Wilson's theorem.
- Demonstrate the applications of number theory in cryptography.

### n'kZu 'kkL=k

### izFke lel=k

#### PHIL 101 Hkkj rh; n' kL & I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### PHIL 103 fo'o ds /keZ & I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### f}rh; lel=k

#### PHIL 102 Hkkjrh; n'kZu & II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### PHIL 104 fo' o ds /kel & II

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**r`rh; lel=k****PHIL 201 uhfr'kkL=k & I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**PHIL 203 ik'pkR; n'kZu & I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**prqFkZ lel=k****PHIL 202 uhfr'kkL=k & II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**PHIL 204 ik'pkR; n'kZu & II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**iape lel=k****PHIL 301 ledkyhu Hkkjrh; n'kZu & I**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**PHIL 302 lka[;&;ksx & I**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

## "k"Be lel=k

### PHIL 303 lka[;&;ksx & II

<b>Max. Marks : 60</b>	<b>L T P C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4 0 0 4</b>

### PHIL 304 rdZ'kkL=k

<b>Max. Marks : 60</b>	<b>L T P C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4 0 0 4</b>

## Physical Education

### First Semester

#### PHED 101 Introduction and History of Physical Education

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Student will have an understanding of genesis and history of sports and physical education and its development through the years.
- Understanding of olympic philosophy and its importance.

#### PHED 101L Games and Sports Skills-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop motor skills necessary to participate successfully in a variety of physical activities.
- Fundamentals of various games, its rules and regulation.

## Second Semester

### PHED 102 Foundation of Physical Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the nature and scope of physical education and the role of sport in today's world.
- Knowledge and understanding of biological, physiological, psychological and sociological foundations in physical education.

### PHED 102L Games and Sports Skills-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Knowledge of basic skills like running, jumping, throwing, kicking, pulling etc.
- Students will learn basics of swimming, horse riding along with knowledge of Indian sports like kho-kho and kabaddi

## Third Semester

### PHED 201 Anatomy, Physiology and Exercise Physiology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- An understanding of human body and its organs.
- Understand the effects of exercise on various systems of the body.

### PHED 201L Games and Sports Skills - III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### Learning Outcomes:

- Knowledge of basic gymnastic movements
- Advance knowledge in a game of specialization.

## Fourth Semester

### PHED 202 Health Education and First-Aid

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

- Apply the knowledge of health education and hygiene towards the welfare of society.
- Manage causality with minor injuries like sprain, strain, bleeding, inflammation etc.

### PHED 202L Games and Sports Skills - IV

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Students are able to perform advance skills of swimming and horse riding.
- Student is able to play one racquet game.

## Fifth Semester

### PHED 301L Games and Sports Skills - V

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### Learning Outcomes:

- Mastering in one specialized game.
- Basic understanding of all secondary /minor games.

## **Sixth Semester**

### **PHED 302L Games and Sports Skills - VI**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- An understanding of heptathlon in athletics.
- An understanding of yogasasna for fitness.

## **Discipline Electives**

### **PHED 301 Scientific Principles of Sports Training**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Apply Scientific methods of sports training for preparation of sportsman for competitions.
- Realize and apply methods of technique and tactical training.
- Understand of psychological preparation for competition.

### **PHED 302 Introduction to Yoga**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

**Students will be able to:**

- Understand of Yoga philosophy.
- Understand of Yoga Asana and Pranayam.

- Understand and apply Shatkarma for internal cleansing of the body.

### **PHED 303 Adapted Physical Education**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand and adapted physical education for disabled.
- Understand adapted sports activities and encourage participation
- Understand nature of disabilities its causes and prescribe programme accordingly.

### **PHED 304 Corrective Physical Education and Rehabilitation**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

**Student will able to:**

- Understand causes of sports injuries and its rehabilitation
- Understand & apply therapeutic exercises
- Demonstrate and take preventive and curative measures in sports injuries.

### **PHED 305 Methods in Physical Education**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand various teaching methods in physical education.
- Conceive plans to organize tournaments.

- Develop command over play field markings.

## POLITICAL SCIENCE

### First Semester

#### POL 102 Foundations of Political Science

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Comprehend the ideas and concept of Political Theory in depth .
- Identify the significance and relevance of political theory in present scenario.
- Analyze and discuss political ideas critically.
- Understand their rights and duties.
- Understand the qualities of good citizenship and this will develop them as good citizens of India.

#### POL 103 Indian Political Thinkers

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the social, political and economic ideas of Indian political thinkers.
- Compare the ideas of key political thinkers in India.
- Analyze the political thought from ancient to modern era.

### Second Semester

## **POL 105 National Movement and Constitutional Development of India**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the National Movement and Constitutional Development in India.
- Analyze the National Movement from various perspectives.
- Aware about women's participation in National Movement.

## **POL 108 Principles of Political Science**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of the course, the students will be able to:

- Comprehend the ideas and concept of political theory in depth.
- Develop their knowledge about the various forms of government
- Compare governments of various countries.
- Critically analyze and discuss political System.
- Understand the qualities of democracy and conditions of successful working of democracy. This will help them to develop as a good citizen.

## **Third Semester**

### **POL 201 Indian Political System - I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the Salient features of Indian Constitution
- Aware about Rights and Duties of the citizens
- Analyze working of central Government of India.

### **POL 205 Major Governments of the World**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the political system and process of the major countries of the world.
- Identify and distinguish the functions of various political systems.
- Analyze the outputs of political systems.

## **Fourth Semester**

### **POL 202 Indian Political System – II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the basic structure of federal system
- Know about electoral process in India .
- Critically Analyze the Indian Democracy.

### **POL 204 Major Governments of South Asia**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the working of political systems of major countries of south Asia.

- Aware about issues and challenges before the political systems in south Asia.
- Analyze the working of political systems in south Asia.

### **Fifth Semester**

#### **POL 304 Western Political Thinkers**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the diverse intellectual political traditions in the west.
- Aware about conceptual debate of fundamental political ideas in the west.
- Critically analyze the political philosophy of western political thinkers.

### **Sixth Semester**

#### **POL 303 Major Political Ideologies**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the major political ideologies, basic principles and relevance.
- Compare the diverse perspectives of political ideologies.
- Analyze the major political ideologies.

### **Discipline Electives**

#### **POL 302 International Relations since 1945**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Analyze and explain contemporary international phenomena, including identifying and assessing the International Scenario.
- Identify important historical changes in International Relations.
- Recognize key aspects of International Organizations and processes.

### **POL 305 Decentralized Democracy in India**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Comprehend the origin and development of the Indian local self-government.
- Understand the Indian system of democratic decentralization, which included rural and urban bodies.
- Analyze the working of local self-government in India.

### **POL 301 India's Foreign Policy**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the foreign Policy its determinants and relevance.
- Critically analyze the India's bilateral relations with major powers and its neighbor countries.
- Explore the various issues and challenges of international politics

### **POL 306 Research Methodology in Political Science**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After completion of the course students will be able to:

- Understand the basics of political science research and develop aptitude for political science research.

- Identify various sources of primary and secondary data.
- Use and apply various methods and techniques of research.

## **Psychology**

### **First Semester**

#### **PSY 101 Introduction to Psychological Processes**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Describe the scope and applications of psychology.
- Evaluate the basic psychological theories, approaches, principles, and concepts of general psychology.
- Apply psychological theories and principles to their own lives and experiences.
- Discuss and Integrate different perspectives to explain human behavior in everyday life.

#### **PSY 101L Introduction to Psychological Processes Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Articulate ethical views of research.
- Describe the process and steps of psychological testing.
- Demonstrate the use of various psychological tests in terms of memory and learning.
- Critically assess the relevance of psychological tests in demonstrating different phenomenas.

### **Second Semester**

#### **PSY 102 Social Psychology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the major theories, concepts, empirical findings, methods and techniques used in social psychology.
- Evaluate major theories, concepts, perspectives, and empirical findings in social psychology to explain human behavior.
- Explain group dynamics and attitude formation in term of human behavior.
- Discuss how individual differences influence beliefs, values, and interactions with others.

### **PSY 102L Social Psychology Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop recognizing of social psychology of group life and the cognitive, attitudinal and behavioural consequences of social psychology of group life including interdependence and categorization.
- Demonstrate how social identity and self-categorization process affect the pattern and progression of group life.
- Explain empirically attitude measurement and also formation of socio-metric matrix and sociogram to issues of social psychology.
- Manifest the assessment of leadership and examine the interactive influence of different leadership styles and group productivity norms.

## **Third Semester**

### **PSY 205 Statistics and Research Methodology in Psychology**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the role of basic statistics technique in analysis of the data.
- Discuss the signification of hypothesis testing in psychological research.
- Explain the process of representing psychological data and its issues.
- Evaluate ethical issues associated to research process.

### **PSY 205L Statistics and Research Methodology in Psychology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the concepts and uses of various statistical techniques.
- Discuss and demonstrate the utility of various psychological tests in terms of personality and intelligence.
- Relate and restate theoretical concepts to a real-world problem in a written report in terms of a statistical model or algorithm.
- Make appropriate use of statistical software to communicate the analysis accurately and effectively.

## **Fourth Semester**

### **PSY 201 Developmental Psychology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Distinguish between major theoretical perspectives in developmental psychology.
- Explain the respective contributions of “nature” and “nurture” to human development.

- Identify the major issues and developmental task of human development.
- Demonstrate knowledge of research method and finding related to development throughout the life span.

### **PSY 201L Developmental Psychology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Demonstrate determining of major developmental milestones in human cognitive, perceptual, social emotional and language development.
- Exhibit a scientific attitude in critically thinking about, and learning about, behavior creativity and programmatic problem solving.
- Collaborate effectively, demonstrating an ability to work with groups and to complete case study projects with reasonable time frames in an ethical manner.
- Write effectively the reports including short summary, paper, report sections, proposals for various purposes.

## **Semester V/Semester VI**

### **Discipline Electives**

#### **PSY 304 Abnormal Psychology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Discuss the recent conceptualization of abnormality and psychological disorders as per DSM –V approach.
- Explain recent developments in the area of diagnostic and treatment approaches.

- Explain the relevance of DSM-V approach in dealing with psychological and neurological disorders.
- Discuss research design and its types.

### **PSY 304L Abnormal Psychology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Assess various types of psychopathology through various tests objectively.
- Demonstrate various personality and self- inventories.
- Analyze information and ideas from multiple sources regarding personality.
- Explain neurosis by applying various psychological tests.

### **PSY 305 Experimental Psychology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Demonstrate knowledge of experimental psychology in understanding psychological process empirically.
- Implicate the principles of psychophysics in sensation and perception theoretically.
- Formulate scientific knowledge as out memory learning and other psychological process.
- Apply the fundamental concepts of empirical researches.

### **PSY 305L Experimental Psychology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

After completion of the course the students will be able to:

- Analyze the major theoretical perspectives in the primary substantive sub-disciplines of experimental psychology.
- Demonstrate proficiency in writing experimental summaries and findings.
- Understand how psychologists study human behavior and mind.
- Develop the understanding of research procedure and systematic steps in conducting experiments.

### **PSY 302 Physiological Psychology**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After completion of the course the students will be able to:

- Explain physiological mechanism of the brain and nervous system.
- Analyze the different methods of genetic, pharmacological and physiological studies.
- Describe the nerve impulse and biological basis of behavior.
- Explain the neural and physiological mechanism of sleep and waking, hunger and thirst.

### **PSY 302L Physiological Psychology Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After completion of this course, the students will be able to:

- Analyze and synthesize practical information regarding physiological process.
- Explain the mechanism of neuro imaging devices.
- Demonstrate report writing activity through different approaches in terms of primary and secondary data.
- Demonstrate Ravens Standard, Advanced and Coloured Progressive Matrices.

## **PSY 306 Introduction to Clinical Psychology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Identify how psychologists study human behavior and how this knowledge can be used to explain, predict, and influence behavior.
- Identify and critically evaluate psychological research methods.
- Explain various methods for collecting information from the client.
- Perform personality assessment by using various methods and approaches.

## **PSY 306L Introduction to Clinical Psychology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop skills in the administration and interpretation of various projective tests.
- Discuss ethical issues in the administration of various tests.
- Identify and handle problems in data collection and dealing with the clients.

## **Public Administration**

### **First Semester**

#### **PUB 101 Indian Administration- I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about the history of Administration in India and British rule influence in Indian administration.

- To develop a clear understanding of Indian Administration system and processes.
- To comprehend about the functions of these institutions.

### **PUB 103 Principles of Public Administration - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the foundation of subject in proper fashion.
- Comprehend the concept and application of good governance.
- Develop interdisciplinary insight about the subject.

## **Second Semester**

### **PUB 102 Indian Administration-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Gain the knowledge of typical process of budget formulation, its approval and execution.
- Familiarized with CAG, Parliamentary Committees and administrative reforms in India.
- Informed with Personnel administration and their problems like administrative corruption in India.

### **PUB 104 Principles of Public Administration-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop deeper understanding of principles of organization will be developed.
- Develop skills regarding communication and leadership styles.
- Understand the various processes of recruitment, training and promotion under Administration.

### **Third Semester**

#### **PUB 201 Administrative Institutions in India- I**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop an understanding of constitutional and extra constitutional bodies will be developed.
- Enhances the vision about Indian Administration.
- Learn about the functions of political parties and pressure groups and their interactions with each other.
- Develop understanding about administrative institutions will developed.

#### **PUB 204 State Administration in India with Special Reference to Rajasthan-I**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Comprehend the administrative setup of state administration.
- Describe the constitutional status of center-state administration.
- Do the analysis of the changing scenario of various departments and institutions.

### **Fourth Semester**

#### **PUB 202 Administrative Institutions in India- II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop an understanding of constitutional and extra constitutional bodies will be developed.
- Enhancement of the vision about Indian Administration will be perceived.
- Learn the functions and organization of Finance, Election Commission, Railway Board, and Simple Social Welfare Board.

### **PUB 205 State Administration in India with Special Reference to Rajasthan-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Learn about the institutional framework of personnel administration
- Develop an overall understanding about revenue administration will be developed.
- Learn about the administrative initiatives, problems and reforms in state administration.

## **Fifth Semester**

### **PUB 303 Comparative Administrative Systems**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about the administrative system of various countries like UK, USA and France.
- Learn about the Role of civil services in the administrative system of these countries.

- Develop knowledge about various controlling authorities in USA, France, and Sweden will be gained.
- Do a comparative study of administrative systems of these countries.

## **Sixth Semester**

### **PUB 301 Administrative Thinkers**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Learn about the contribution of eminent scholars like Henri Fayol, F W Taylor, Weber, Mayo, Bernard, Simon, Maslow, Frederick Herzberg, Likert and Riggs.
- To understand the theory of development properly.
- Conceived the knowledge of Motivational theories and leadership styles.

## **Discipline Electives**

### **PUB 305 Rural Local Self Government**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop knowledge of Rural Local self-government.
- Understand role of the agencies involved with PRIs with better perspectives.
- To distinguished Policies and programmes for the rural people and areas effectively.

### **PUB 308 Labour Welfare Administration**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about Labour Welfare Administration in India.
  - Understand international labour organization, labour policy and legislation in India.
  - Familiarize with worker's education and training.
- Aware about various labour laws.

### **PUB 306 Urban Local Self Government**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Perceived knowledge of Urban Local Self Government.
- Analyze the structures and functions of agencies involved directly and indirectly in administration.
- Comprehended elections process of local bodies, Role of Local elections and nominated executives.

### **PUB 307 Governance : Issues and Challenges**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know the concept of state, governance and state's role in Globalized era.
- Understand the governance and development.
- Aware about the Environmental governance, Local Governance and good governance initiatives in India.

**1Er**

**file lel =**

**SANS 102 vkkpd ulv; , oa) kj.k**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**fixZ% iB; dæ dsl Qyrliuŵ v/; ; u dsi'pr~fo | HZfulufyf|lr ea  
leHgzA**

- **Qkdj.kkkl sHk& ljpukdsl e>uA**
- **'Dlplj.l iBu o vHkck l EUh dslly dkfodH djusts  
lH&l Hko'ykk{lerkdkfodH gsl dsla**

**SANS 103 iplu ul/; , oaNu**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; Øe dsl Qyrliuŵ v/; ; u dsi'pr~fo | HZfulufyf|lr ea  
leHgzA**

- **vfllepu dslly dkfodH A**
- **l lekt d] l ldfird , oafird eŵ ldkfodH A**

**ŷrh lel =**

**SANS 101 vHkck] fucUk, oavugA**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; dæ dsl Qyrliuŵ v/; ; u dsi'pr~fo | HZfulufyf|lr ea  
leHgzA**

- **jkVh prukdkfodH A**
- **ufrd eŵ ldkfodH A**
- **Qkdj.kdsvüxZ l Kk, oal flkinlj.kdkvoekA**
- **jkë.k, oægHjrdlyu Hjrh l ldfir dkKluA**

**SANS 104 ijk l lef l lgr , oajkj.k**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; dæ dsl Qyrliuŵ v/; ; u dsi'pr~fo | HZfulufyf|lr ea  
leHgzA**

- Klu ds0 loglj d izk dh {lerkdkfodll A
- l nr 0 kdj.k izk dh; k rkd kfodll A
- l fgr xr f'k olrqdk rgulled f'y skk djus dh {lerk dk fodll A

**l rh l el =**

**SANS 202 v k f d d l 0 | 0 kdj.k, o a f u k**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**f u z % i b ; d e d s l Q y r l i o d v / ; ; u d s i ' p r ~ f o | R Z f u l u f y f l k e a l e R Z g l a**

- d l 0 l t z k d s l e h ; z k k , o a l l o d k t k z d j e l y d v f l l d r d h ; k r k d k f o d l l k A
- k k k l 0 , o a l l k k d l l y d h ; k r k d k f o d l l A

**SANS 204 i p l a d l 0 , o a v y a l j**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**f u z % i b ; 0 e d s l Q y r l i o d v / ; ; u d s i ' p r ~ f o | R Z f u l u f y f l k e a l e R Z g l a**

- d l 0 k p r h o o d y i u k l e h ; z l e u h ; k r k d k f o d l l A
- v y a l j l e d k i g p k u a
- e v k d k k l a

**p r z l e l =**

**SANS 201 v k f d x | l f g r , o a 0 k d j . k**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4



**ipe l el =****SANS 303 ofnd l lgr , oafncUk**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrliozl v/; ; u dsi'pr~fo | HZfulufyflr ea  
leHgzka**

- ofnd NuladkKluA
- \_Xofnd l lgr l lgr kvochkA

**'KB l el =****SANS 304 ofnd l lgr | lgrh l Nfr , oavudn**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrliozl v/; ; u dsi'pr~fo | HZfulufyflr ea  
leHgzka**

- cka.k vlj.; d , oani fu'ladh Klul fink l selvd fpuru , oa  
Q logfid izk dh lerkdkfodH A
- l h frd ev lerkdkfodH A

**p; fur v/; ; u iB; Øe leg****SANS 301 'H= l lgr , oa)klj.k l k&i**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrliozl v/; ; u dsi'pr~fo | HZfulufyflr ea  
leHgzka**

- 'Dj nplj.ko iBu dh; k rerkdkfodH A
- jktufd ev la, oalof; l kUlprukdkfodH A
- jpukdkly d k f od H A

SANS 302 'H= l fgr , oa Q kj. k Hk&H

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo| HZfulufyflr ea  
leHgzkA

- Hk&l jpuK dks le>uk , oa 'Dj nfpj.k iBu o vHkck  
l fUhdly dkif'dljA
- Qkj.kdkeHkd , oay\$lu vff) dr esizkA
- dQ 'H= , oauW; 'H=h rBkckck , oamudsvuizk dh  
{lerkdkfodH A

SANS 305 Hjr h n'H dkl leH ifp;

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo| HZfulufyflr ea  
leHgzkA

- nkHd fpUu dheyHv vo/lj. Hvl fUhl e> dkfodH A
- vk; HEd fpUu esinHkdkfodH A
- rHd fo'y\$kkdh{lerkesof) A

SANS 602 ipla Hjr h l Hk;

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo| HZfulufyflr ea  
leHgzkA

- l fUlr l Hk ldslo: i , oamdhxfrfo/k ldkckA
- l h~frd leB; , oavk; HEdrkdkfodH A

## SANS 307 **vk qh , caoufir foklu**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo | RZfulufyflr ea l eHgzka**

- **vk qh esufgr vllh Klu l sifp; A**
- **loH; dsif prukesof) A**
- **o'lpfdR kdhfofo/ki fo/k adkKluA**

## SANS 306 **ofnd f'kl lgr**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo | RZfulufyflr ea l eHgzka**

- **ofnd ok e; es' d'lpj. kdhdyrkdR A**
- **ofnd f'kl lgr , oand dhni; lsrkdhl e> dkfodR A**

## Sociology

### First Semester

#### SOC 101 Basic Elements of Sociology

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Analyze the discipline of Sociology.
- Discuss the emergence of Sociology.
- Describe the fundamental Concepts of Sociology.

## SOC 104 Structure of Indian Society

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain Indian society and culture in sociological perspective.
- Describe the concepts and features of family, kinship and marriage in India.
- Discuss the changing patterns of basic social institutions and social stratification
- Understand demographic profile of Indian society.

## Second Semester

### SOC 102 Issues Concerning Indian Society

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Analyze the issues concerning national integration .
- Explain Familial and Social issues.
- Describe structural issues.

### SOC 103 Social Statics and Social Dynamics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Discuss the social institutions.
- Explain the concept of static aspect of society.
- Analyse the concept of social and cultural change.

## Third Semester

### SOC 203 Introduction to Rural Sociology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Conceptualise rural Sociology and its relationship with other social sciences.
- Describe rural social structure and social processes.
- Identify the problems occurring in rural social structure.
- Critically evaluate rural development policies and programmes.

### SOC 205 Research Methods in Sociology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Describe the steps of scientific social research.
- Explain different research designs and its importance.
- Construct and apply various tools and techniques of data collection in research.

## Fourth Semester

### SOC 204 Population and society

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain the basic concepts related to population structure and its dynamics.
- Discuss the population theories with their critical perspective.

- Analyze population policies at state and national level for social change and development.

### **SOC 206 Sociology of Change and Development**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Describe concept and theories of social change
- Analyse paradigm shift in development discourse.
- Discuss the process of social change and development in Indian Society.
- Identify conditions and barriers of social change and development.

## **Fifth Semester**

### **SOC 301 Masters of Sociological Thought - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain emergence and development of Sociological thought.
- Describe the contributions of classical sociological thinkers.
- Critically analyse the works of Comte, Spencer and Durkheim.

## **Sixth Semester**

### **SOC 302 Masters of Sociological Thoughts –II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain the intellectual background of classical sociological thinkers i.e. Karl Marx, Max Weber and Pareto
- Describe the contributions of Karl Marx, Max Weber and Pareto.

- Critically analyse the works of Karl Marx, Max Weber and Pareto.

## Discipline Electives

### SOC 303 Social Anthropology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain meaning and scope of Social Anthropology.
- Explain social institutions, culture and tribe.
- Describe the economic and political organizations in tribal society.

### SOC 305 Sociology of Mass Communication

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Define the concept of Communication and mass communication.
- Analyse the various theories of mass media.
- Discuss the role of mass media.
- Explain the functions and Dysfunctions of mass media.

### SOC 307 Sociology of Gender

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Comprehend the basic ideas of *Gender and Society* in context to the Indian society.
- Explore the different facets of gender and how it assists in shaping the identity of women.

- Learn about the social structures of the Indian society and acquaint with important social institutions.
- Become aware of various issues of women and will be able to examine the differing ways in which gender inequality and discrimination against women persist.

### **SOC 308 Sociology of Social Movements**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Demonstrate awareness of social movements on a state, national, and global level .
- Distinguish between different types of social movements.
- Describe how social movements are organized and institutionalized over time.
- Describe how social movements impact our political and economic systems as well as our global world.

## **Statistics**

### **First Semester**

#### **STAT 106 Probability and Descriptive Statistics**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to:

- differentiate between the two definitions of Statistics
- understand and differentiate between population and sample, variables and attributes in any survey
- chose between the type of survey, census or sample, and the method of data collection, primary and secondary methods for a study,
- represent the data using suitable tabular and/or graphical method
- identify and calculate appropriate summary statistics for the data

- understand the concept of various definitions of probability and calculate probability for any given problem.
- define a random variable for a study variable and obtain its properties.

### **STAT 106L Probability and Descriptive Statistics Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Express raw data in terms of frequency table by using exclusive and inclusive method of classification for continuous/discrete variable.
- Apply and justify the use of, various graphical representations such as Histogram, Frequency polygon etc.
- Interpret and analyze the data using various averages such as arithmetic Mean, Median and Mode.
- Compare different data sets using methods such as standard deviation, mean deviation, quartile deviation and coefficient of variation.
- Employ and interpret the measures of Skewness and Kurtosis.

### **Second Semester**

#### **STAT 109 Measures of Association and Probability Distributions**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Formulate the mathematical/statistical models for real data sets arising in various fields of the populations.
- Understand how to use probability distributions in real life problems.

- Understand how to check the independence of attributes.

## **STAT 109L Measures of Association and Probability Distributions Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply and use fitting of various curves such as Straight line, parabola, exponential curve etc.
- Effectively distinguish between and compute, correlation and rank correlation, Partial and Multiple correlations.
- Understand and perform the Fitting of Binomial, Poisson and Normal distribution

## **Third Semester**

### **STAT 209 Sampling Distributions**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the difference between probability distribution and sampling distribution.
- Understand the sampling distribution of the mean of a sample from a Normal Population.
- Understand the properties of the sampling distribution of the sample mean in general situations, using the Central Limit Theorem.
- Understand the concepts of the t, F and  $\chi^2$  distributions.
- Apply t, F and  $\chi^2$  tests on real life data.

### **STAT 209L Sampling Distributions Lab**

**Max. Marks : 100**

L	T	P	C
_____	_____	_____	_____

(CA: 40 + ESA: 60) 0 0 4 2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Effectively compute and understand testing of significance and confidence intervals in various contexts such as, for single proportion, difference of two proportions for large sample, for single mean, difference of two means for large sample.
- Proficiently test for goodness of fit, independence of attributes.
- Understand how and when to use testing for equality of two population variances

## Fourth Semester

### STAT 207 Statistical Inference and Quality Control

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **6 0 0 6**

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply various basic parametric, non-parametric and sequential estimation techniques and testing procedures to deal with real life problems.
- Understand confidence interval in normal case, Neyman-Pearson fundamental lemma, UMP test.
- Understand SPRT, OC and ASN function.
- Understand some non-parametric techniques.

### STAT 207L Statistical Inference and Quality Control Lab

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **0 0 4 2**

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand when and how to use various control charts such as  $\bar{X}$ , R, and s charts.
- Effectively understand and determine the AOQ and AOQL plots.

- Understand when and how to use various non - parametric tests such as Sign test, Run test, Median test etc.

## V Semester/VI Semester

### Discipline Electives

#### STAT 302 Sampling Techniques and Design of Experiments

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to;

- Understand the Simple and Stratified random sampling techniques.
- Understand the ratio estimation procedure.
- Apply ANOVA for one-way and two-way classification, fixed effect models with equal number of observations per cell.

#### STAT 302L Sampling Techniques and Design of Experiments Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- The basic principles underlying survey design and estimation.
- How to draw a random sample by using with and with replacement sampling technique in excel.
- Calculate the sampling mean and sampling variance in case of SRSWR and SRSWOR.
- Draw a random sample from stratified and systematic sampling and also to compare the efficiencies of these sampling techniques with respect to each other.

- Analyze the results of a designed experiment in order to conduct the appropriate statistical analysis of the data.
- Compare several means by using the concept of one way and two way ANOVA.
- Compare the three designs named CRD, RBD and LSD in terms of their efficiencies.

### **STAT 301 Applied Statistics**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the concept of time series data and application in various fields.
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Understand the calculation and interpretation of the principal demographic measures, and standardize these measures for comparison and construct and interpret life tables.
- Understand the uses of index number with their construction methods.
- Understand the concept of demand and supply theory.
- Understand the concept of scaling of scores.

### **STAT 301L Applied Statistics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Find the trend and seasonal components in the given dataset and separate these components on excel.
- Calculate and interpret the basic demographic measures and compare the measure for two different populations.
- Construct the life table with the help of some given life table columns.
- Calculate the index numbers for different commodities.

- Scaling the scores, test the reliability of these scores and compute the IQ of any individual.

### **STAT 303 Financial Statistics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand acquisition of financial data
- Describe financial data using distributions
- Find relation between two or more financial series
- Understand the concept of stochastic process
- Apply basic stochastic models in financial data.

### **STAT 303L Financial Statistics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the behavior of financial data through graphs
- Describe the nature of financial data
- Calculate risk through financial data
- Find relationship between financial series
- Model financial data using some simple stochastic models.

### **STAT 304 Health Statistics and Population Dynamics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand different measures related to health statistic,
- Able to calculate morbidity measures,

- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Discuss the demographic significance of age and sex structures and the implications of variations in age & sex structure.
- Construct and interpret life tables.
- Calculation and interpretation of the principal demographic measures, and standardize these measures for comparison.
- Understand the components of population change, including the effects of changing birth, death and migration rates, and demonstrate their influences on age structure.
- Estimate and project the population by different methods.

## **STAT 304L Health Statistics and Population Dynamics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Calculate various measures of morbidity and their accuracy
- Construct population pyramid and identify its features
- Estimate population growth rates and project for future
- Calculate measures of mortality and fertility for a given population
- Calculate simple measures of life table and analyze it.

## **Textile Designing (Weaving)**

### **First Semester**

#### **TXTD 102 Weaving - I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Know the basics of color, its properties and attributes.
- Understand types of yarn and its origin.

- Know theoretical about the loom, parts of Loom, Loom Mechanism and Basic weaves.

### **TXTD 102L Weaving - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### **Learning outcomes:**

Upon completion of the course, the students will be able to:

- Apply the color its properties and attributes in their practical work.
- Work with different types of yarns.
- Work on loom using Basic weaves.

### **TXTD 203 Weaving - II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand yarns and its counting systems.
- Know about Twisting Winding and Warping Methods.
- Acquire Knowledge of Advance fabric constructions.

### **TXTD 203L Weaving - II Lab**

<b>Max.Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Work with types of yarns by using yarn counting system for their work.
- Handle different types of yarns.
- Develop different types of fabrics by using Advance Weaves.

### **TXTD 204 Weaving - III**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Basics of weaving.
- Understand Weaving Mechanism.
- Understand types of Advance weaves.

### **TXTD 204L Weaving - III Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Work with different types of Weaving Mechanisms.
- Construct fabric by using Basic and Advance methods of weaving.

### **Discipline Elective**

### **TXTD 305 Weaving IV**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
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**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Advance Weaving Mechanism.
- Understand Cloth calculations and Advance weaves.
- Understand Method of Cloth Analysis.

### **TXTD 303L Weaving - IV Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Work with Advance Weaving Mechanism.
- Estimate the cost of fabrics.
- Analyze the fabric for reproduction.

### **TXTD 304 Weaving CATD**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Basics of computer, Hardware and Software.
- Understand Computers Color Theory.
- Understand Application of Woven Design by using Software.

### **TXTD 304L Weaving CATD Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply Computer Color Theory in various designs by using Software.
- Develop new Woven designs by using given Software.

## **Textile Designing (Printing)**

### **Second Semester**

#### **TXTD 101 Dyeing and Printing - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the role of Textile Designing in Textile Industries.
- Understand the Elements and principles of Design, types of Motifs and types of Repeats which helps in drawing.
- Know various fabric finishes.

#### **TXTD 101L Dyeing and Printing - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Develop new concepts for design on the basis of given brief.
- Explore new designs by following Design Elements and Principles.
- Understand and apply different finishes on fabric.

## Third Semester

### TXTD 201 Dyeing and Printing - II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand working of Dyeing Machines.
- Understand Natural Dyes and its properties.
- Understand Printing methods and finishing process.

### TXTD 201L Dyeing and Printing - II Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Know how to work with Dyeing Machines.
- Know how to apply a dye on different fabrics.
- Apply Printing methods on different fabrics.

## Fourth Semester

### TXTD 202 Dyeing and Printing – III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explore different Printing materials, printing process according to its properties.
- Use various Printing styles for their further work.

### **TXTD 202L Dyeing and Printing -III Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply different Printing materials on fabric by using Printing processes.
- Make screen and apply this method on fabrics.

## **Fifth Semester**

### **Textile Designing (Printing)**

#### **Discipline Elective-I**

### **TXTD 301 Dyeing and Printing - IV**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Natural fibers, Synthetic dyes and dyeing processes.
- Understand Advance Printing Methods and Digital Printing.
- Get Knowledge of Traditional Rajasthani Textiles.

### **TXTD 301L Dyeing and Printing - IV Lab**

<b>Max. Marks :100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply Synthetic dyes with dyeing processes.
- Apply Advance Printing Methods on fabrics.
- Work with Traditional Rajasthani Textiles.

## Sixth Semester

### Textile Designing (Printing)

#### Discipline Electives – II

#### TXTD 302 Dying and Printing CATD

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Basics of computer, Hardware and Software.
- Understand Computers Color Theory.
- Understand Application of Print Design by using Software before sampling

#### TXTD 302L Dyeing and Printing CATD Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Handle computer with its different application.
- Apply Computer Color Theory in various designs by using Software.
- Develop new Print designs by using given Software.

#### Discipline Elective

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Develop the final concept (soft-copy) based on the chosen design brief.
- Develop a product range/prototype based on the finalized concept.
- Select market and product knowledge to the student related to the interest area.
- Conceptualize the ideas in form of at-least 40 sketches (both hand & on soft wares).



# BANASTHALI VIDYAPITH

**Bachelor of Arts and Bachelor of Education**



## **Curriculum Structure**

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022  
Seventh Semester Examination, December, 2022  
Eighth Semester Examination, April/May, 2023

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

July, 2019

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## **Programme Educational Objectives**

Department of Education aims to develop human resource in terms of effective School Teachers, Educational Researchers, Teacher Educators and Educational Leaders so as to achieve the excellence in teaching, research and innovation with Indian ethos.

Teacher Education program at Banasthali Vidyapith intends to develop knowledge of Teaching Learning Process, competencies to transfer the knowledge, development of skills, organization and management of school system as well as to develop subject content and curriculum and maintain professional ethics and attitude towards Teaching as a 'noble profession'.

Department of Education purports to provide comprehensive inputs which are aimed;

- \* To study the education as a discipline.
- \* To prepare competent and enlightened teachers for different levels of education in India.
- \* To develop responsive, reflective and responsible teachers, educational administrators, researchers and academicians who will be able to work in collaboration with parents and community.
- \* To develop an understanding of focal concerns of education such as language diversity, inclusive education, gender-neutral attitude and education for sustainable development and global citizenship.
- \* To prepare teachers having an understanding of interact and instruct in class in the context of school organization and school education system at local and global level.
- \* Develop a sensitivity and appreciation amongst professionals about the larger societal context in which school education operates, the linkages, mutual pressure and influences of other sub systems.
- \* To provide a deep understanding of educational research and be competent to carry out independent need based quality field researches.
- \* To create digital competency amongst professionals in order to enhance their teaching, research, innovation and administration.
- \* To prepare effective teachers by integrating the academic studies with professional understanding, competencies and reflective visions.
- \* To nurture a temperament in the professionals to work toward self-driven performance goals, entrepreneurship and academic leadership for a noble mission 'Teaching'.
- \* To increase the sensitivity of professional ethics, code of conduct, social cultural values, human dignity and humanness.

## Programme Outcomes

Program Specific Outcomes of Four Year Integrated Program.

Students will be able to-

- PSO 1: able to integrate theoretical and practical knowledge of their respective subject in classroom practice.
- PSO-2: apply their knowledge of core content and pedagogy to set goals and objectives for learning based on Curriculum, and design instruction that engages students in meaningful learning activities.
- PSO-3: appreciate the diversity of learners and create appropriate learning environment to assure a focus on learning of all students.
- PSO-4: deliver meaningful learning experiences for all students by integrating their knowledge and applying a variety of communication, instructional, and assessment strategies in their teaching.
- PSO-5: demonstrate their commitment for continuous self-improvement by engaging in professional development activities and collaborative and reflective practices to improve teaching and learning that contribute to the revitalization of the teaching profession.
- PSO-6: demonstrate leadership qualities by participating in the curriculum initiatives, student support and school management systems.
- PSO-7: demonstrate their associations with school, family and community to foster student and community progression.
- PSO-8: integrate ICT in teaching-learning and assessment process to enrich professional practice.
- PSO-9: engage in value based and culturally responsive teaching practices.
- PSO-10: use effective and appropriate verbal, nonverbal, written, and media communication techniques in their teaching, professional collaboration, and interactions with students, colleagues, parents, and the community.
- PSO-11: demonstrate professional ethics and responsibilities as an educational practitioner.
- PSO-12: recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of knowledge explosion and technological change.

**First Semester**  
**Disciplinary Courses**  
**Applied Statistics**

**MATH 102 Basic Mathematics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On completion of the course, the student will be able to:

- Understand the basic rules of logic, including the role of axioms or assumptions.
- Appreciate the role of mathematical proof in formal deductive reasoning.
- Distinguish a coherent argument from a fallacious one, both in mathematical reasoning and in everyday life.
- Understand the differences between inductive and deductive reasoning.
- Proficiently construct logical arguments and rigorous proofs.
- Formulate and solve abstract mathematical problems.

**STAT 101 Basic Statistics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On completion of the course, the student will be able to:

- Distinguish between qualitative variables and quantitative variables.
- Differentiate between discrete and continuous variables.
- Construct/draft questionnaire.
- Identify the need of Classification and Tabulation.
- Construct frequency tables, Interprets the data, identifies the importance of diagrammatic presentation of data.
- Explain and evaluate various measures of central tendency.

- Evaluate and interpret partition values – Quartiles, Deciles and Percentiles

## Second Semester STAT 107 Statistical Methods

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** On completion of the course, the student will be able to:

- Explain the purpose of measures of dispersion, and the information they convey.
- Select an appropriate measure of dispersion and correctly calculate and interpret the statistic.
- Describe and explain the mathematical characteristics of the standard deviation.
- Apply the definition of independence to attempt to determine whether an assumption of independence is justifiable in a given situation.
- Find probabilities of single events, complementary events and the unions and intersections of collections of events.
- Describe the main properties of probability distributions and random variables.
- Identify the random variable(s) of interest in a given scenario.

## STAT 107L Statistical Methods Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Make the frequency distribution for inclusive and exclusive type of class intervals on excel.
- Construct the table for given raw data.

- Draw the graphs for the given data like histogram, frequency polygon, frequency curve and ogives.
- Draw the diagrams like bar diagram and pie charts etc.
- Calculate the measures of central tendency and dispersion on excel for given set of observations.
- Fit the curves like straight line, parabola, exponential and power curve by using excel.

### **Third Semester**

#### **STAT 205 Probability Distributions and Numerical Analysis**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

**Learning Outcomes:** On successful completion of the course, the student will be able to:

- Understand the basic principles of Probability, sample space, conditional probability.
- Differentiate between basic discrete & continuous distributions & how to work with them.
- Understand cumulative distribution function, expectation and distributions for functions of random variables.
- Work with bivariate distributions & basic two variable statistics.
- Derive numerical methods for various mathematical operations and tasks, such as interpolation, differentiation, integration, the solution of linear and nonlinear equations, and the solution of differential equations and apply them to obtain approximate solutions to mathematical problems.

#### **STAT 205L Probability Distributions and Numerical Analysis Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Fit the probability distributions by using Excel.
- Find out the missing values using interpolation
- Get the approximate values of differentiation and integration by using excel.
- Obtain the solution of linear and nonlinear equations and the solution of differential equations and apply them to obtain approximate solutions to mathematical problems.

## Fourth Semester

### STAT 202 Inferential Statistics and Quality Control

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** On successful completion of the course the students should be able to,

- Define estimator, its unbiasedness and efficiency.
- Obtain maximum likelihood estimates of parameters of some simple distributions.
- Perform testing of significance of single mean, proportion, s. d. and difference of two means, proportions, s. d, variances for small and large samples.
- Understand the concept of non-parametric testing.
- Apply the non-parametric methods to test for single population and two populations.
- Understand the concept of statistical quality control.
- Construct control charts for variables and attributes.

### STAT 202L Inferential Statistics and Quality Control Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On successful completion of the course, students will be able to,

- Test the significance of single mean, proportion, s. d. and difference of two means, proportions, s. d. and variances for small and large samples.

- Understand when and how to use various non parametric tests such as Sign test, Run test, Median test etc. for single population and two populations.
- Plot various control charts for variables and attributes such as  $\bar{X}$ , R, and s charts and determine whether the given procedure is in statistical control or out of statistical control.

## **Fifth Semester/Sixth Semester**

### **Discipline Electives I & II**

#### **STAT 302 Sampling Techniques and Design of Experiments**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** On successful completion of this course, student will be able to,

- Understand the Simple and Stratified random sampling techniques.
- Understand the ratio estimation procedure.
- Apply ANOVA for one-way and two-way classification, fixed effect models with equal number of observations per cell.

#### **STAT 302L Sampling Techniques and Design of Experiments Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On successfully completion of the course, students will be able to:

- The basic principles underlying survey design and estimation.
- How to draw a random sample by using with and with replacement sampling technique in excel.
- Calculate the sampling mean and sampling variance in case of SRSWR and SRSWOR.

- Draw a random sample from stratified and systematic sampling and also to compare the efficiencies of these sampling techniques with respect to each other.
- Analyze the results of a designed experiment in order to conduct the appropriate statistical analysis of the data.
- Compare several means by using the concept of one way and two way ANOVA.
- Compare the three designs named CRD, RBD and LSD in terms of their efficiencies.

### **STAT 301 Applied Statistics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

**Learning Outcomes:** On completion of the course, the student will be able to:

- Understand the concept of time series data and application in various fields.
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Understand the calculation and interpretation of the principal demographic measures, and standardize these measures for comparison and construct and interpret life tables.
- Understand the uses of index number with their construction methods.
- Understand the concept of demand and supply theory.
- Understand the concept of scaling of scores.

### **STAT 301L Applied Statistics Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

**Learning Outcomes:** On successful completion of the course, students will be able to,

- Find the trend and seasonal components in the given dataset and separate these components on excel.
- Calculate and interpret the basic demographic measures and compare the measure for two different populations.
- Construct the life table with the help of some given life table columns.
- Calculate the index numbers for different commodities.
- Scaling the scores, test the reliability of these scores and compute the IQ of any individual.

### **STAT 303 Financial Statistics**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** On completion of the course, the students will be able to,

- Understand acquisition of financial data
- Describe financial data using distributions
- Find relation between two or more financial series
- Understand the concept of stochastic process
- Apply basic stochastic models in financial data.

### **STAT 303L Financial Statistics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On completion of this course, the students will be able to,

- Understand the behavior of financial data through graphs
- Describe the nature of financial data
- Calculate risk through financial data
- Find relationship between financial series
- Model financial data using some simple stochastic models.

## **STAT 304 Health Statistics and Population Dynamics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:** On completion of this course, the students will be able to,

- Understand different measures related to health statistic,
- Able to calculate morbidity measures,
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Discuss the demographic significance of age and sex structures and the implications of variations in age & sex structure.
- Construct and interpret life tables.
- Calculation and interpretation of the principal demographic measures, and standardize these measures for comparison.
- Understand the components of population change, including the effects of changing birth, death and migration rates, and demonstrate their influences on age structure.
- Estimate and project the population by different methods.

## **STAT 304L Health Statistics and Population Dynamics Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:** On completion of this course, the students will be able to:

- Calculate various measures of morbidity and their accuracy
- Construct population pyramid and identify its features
- Estimate population growth rates and project for future
- Calculate measures of mortality and fertility for a given population
- Calculate simple measures of life table and analyze it.

# Computer Applications

## First Semester

### CS 106 Computer Fundamentals

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** On successful completion of the course students will be able to:

- Knowledge of component of computer.
- Convert numbers in binary, octal, hexadecimal, and vice versa including binary arithmetic
- Simplify Boolean expression Draw electronic circuits.
- Devise Algorithm and draw flowchart for Searching, sorting, merging through computer

### MATH 105 Elements of Mathematics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Determine the particular progression work (AP, GP, HP)
- Demonstrate the determinant of a matrix up to third order.
- Identify function and relations, notations, operations and applications of sets.
- Locate the quadrant in Cartesian plain.
- Recognize real-world problems that are amenable to mathematical analysis, and formulate mathematical models of such problems.

## Second Semester

### CS 110 Computer Programming

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes :** On successful completion of the course students will be able to :

- develop the ability to write, compile and debug programs in C language and use different data types for writing the programs.
- formulate the programs based on structures, loops and functions.
- conceptualize the understating of differentiating between call by value and call by reference.
- develop the conceptual understanding of the dynamic behavior of memory by the use of pointers.

### **CS 110L Computer Programming Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **Third Semester**

### **CS 210 Data Structures**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Choose appropriate data structure as applied to specified problem definition.
- Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- Use linear and non-linear data structures like stacks, queues , linked list etc.
- Understand Internal representation of Linear and nonlinear data structures.

### **CS 210L Data Structures Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Lab no. Problems**

- L1-L4 Programs on Searching and Sorting: Linear search and Binary Search, Bubble sort, Selection sort, Insertion sort, Quick sort, Radix sort.
- L5-L6 Programs based on static implementation of stacks.
- L7-L8 Programs based on static implementation of queues.
- L9-L13 Programs based on dynamic implementation of stack and its applications.
- L14-L17 Programs based on dynamic implementation of queue and its applications.
- L18-L27 Programs based on Singly, Doubly & Circular Linked lists. Operations on linked lists like: creation, insertion, deletion, traversal, searching etc.
- L28-L40 Operations on Binary tree, binary search tree.
- L41-L45 Simple programs on representation of graphs and their traversal.

## IV Semester

### CS 201 Application Software and Visual Computing

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Course Outcomes:**

On successful completion of the course students will be able to

- Exposure of the features of the MS-Word including Editing files, Basic formatting features, Page setup, Inserting and formatting objects, Tables and Mail-merge.
- Hands on features of the MS-Excel including Functions, Formulas, References, Filters, Validation, Solver and Pivot tables.
- Apply MS- Power point including Presentation, Chart, and Data Tables.
- Introduce features of VB.NET supporting visual and object oriented programming
- Explain the relative merits of VB.NET in .NET framework as an object oriented and visual programming language
- Show how to produce software with rich graphics as a user interface using VB.NET.

- Introduce advanced features of VB.NET specifically RAD, ADO.NET etc

### **CS 201L Application Software and Visual Computing Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **V Semester VI Semester**

### **Discipline Electives**

#### **CS 303 Database Management Systems**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Describe data models and schemas in DBMS
- Learn the features of database management systems and Relational database.
- Use SQL-the standard language of relational databases.
- Learn the functional dependencies and design of the database.
- Learn the concept of Transaction and Query processing.

#### **CS 303L Database Management Systems Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **CS 320 Programming in JAVA**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Apply Object oriented features to program design and implementation.
- Explain object-oriented concepts and describe how Java including identifying the features and peculiarities of the Java programming language supports them.
- Use Java to demonstrate practical experience in developing object-oriented solutions using graphical components.

### **CS 320L Programming in Java Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **CS 307 Multimedia and Web Designing**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Design and develop a static and dynamic website
- Use java script to add dynamic content to website.
- Analysis the various latest interactive multimedia devices and the basic concepts about images and image format.
- Discuss various multimedia tools like Photoshop, Flash.
- Students will be able to design interactive multimedia software using multimediatools(Photoshop, Flash) and web programming languages(HTML, CSS, Java Script,PHP)

### **CS 306L Multimedia and Web Designing Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## CS 323 Web Development and .NET Framework

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop working knowledge of C# programming constructs and the .NET Framework architecture.
- Develop, implement and create Applications with C#.
- Build and debug well-formed Web Forms with ASP. NET Controls
- Use of XML in ADO.NET and SQL server.

## CS 323L Web Development and .Net Framework Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## Dramatic Art (Theatre)

### First Semester

#### DRMA 102 History and Principles of Dramatic Art

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the History and Principles of Dramatic Art.
- Contribution of Greek Theatre in the Drama Worlds.
- Role of the Rasa in Social Community and Acting Method.
- Understand the Nature of the Folk Drama of Rajasthan.

#### DRMA 102L History and Principles of Dramatic Art Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the Role of Exercise and Yoga for the Actor.
- Develop the Relationship with the Drama Book.
- Understand the Technical Words of Theatre.
- Process and Maintain a basic Knowledge of the Tradition of Theatre.
- Articulate Theatrical Knowledge of the Basic Areas of Theatre.

## **Second Semester**

### **DRMA 101 Acting and Speech**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop Vocal, Physical and Imaginative Skills to Express the Emotions.
- Understand the Various Acting Theory of the World.
- Understand the Styles of Indian Folk Dramas.
- Understand the Elements of Drama Analysis.

### **DRMA 101L Acting and Speech Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 8 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the rehearsal and Performance Process.
- Develop the Relationship between the Actor and the Director, the Actor and Stage Manager, Actor and Production Crew, Actor and Fellow Actors.
- Understand the Role of Improvisation, Co-ordination and Synchronization in the Drama.

- Understand the Organs of Speech and Respiration.
- Understand the difference between the Dramatic Voice and Normal Voice.

## **Third Semester**

### **DRMA 202 Sanskrit Drama Literature**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop Working Knowledge of the Principle Works, Authors, Genres and Periods of Sanskrit Drama Literature.
- Understand texts in Their Cultural and Historical Contexts.
- Analyze Literature Using Appropriate Terminology and Common rhetorical figures.
- Demonstrate Awareness of Different Critical Approaches.
- Perform Competent Close readings of Texts.

### **DRMA 203L Transformation to an Actor Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 8 4**

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate Technical and Artistic Proficiency in Acting.
- Develop Working Knowledge of the Voice and Speech.
- Understand Technical and Artistic Movements of Theatre.
- Strong Supple Bodies that are Capable of Playing a Variety of Characters with Various Physical Demands.
- Work on the Whole Body/Mind of an Actor.

## Fourth Semester

### DRMA 201 Hindi Drama Literature

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate Knowledge of the History or Culture of the Hindi Drama Literature.
- Apply Critical and Theoretical Approaches to the reading and Analysis of Literary and Cultural Texts in Multiple genres.
- Understand Drama Texts in Their Culture and Historical Contexts.
- Analyze Literature Using Appropriate Terminology and Common Rhetorical Figures.

### DRMA 201L Hindi Drama Literature Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Analyze the Functions of Text and Their Relations with Historical, Social and Political Contexts.
- Familiarity with terms, Practices and Theoretical Foundations.
- Understand Pre-production Process in File work.
- Demonstrate Knowledge of the Character.

## Fifth Semester

### DRMA 301L One Act Play Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Understand the Craft and Technique of the One Act Play.

- Develop the Predicting Skills.
- Understand the Role of Que Sheets in the Production.
- Listening and Connecting emotionally to Multiple Scene Partners.
- Creating Characters and Performances that Serve a Broader Story and Production.

## Sixth Semester

### DRMA 302L Play and Production Lab

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Developing an Extensive Vocal Warm-up Process for Rehearsal and Performance.
- Participating in Crew and Stage hand Responsibilities.
- Carrying out Production Meetings and Marketing.
- Demonstrate Understand of the Social and Artistic Movements that have Shaped Theatre as we know it Today.
- Demonstrate Proficiency in one or more area. Specific Skills Acting, Directing, Choreography, Design, Technical Theatre, Management, Playwriting.

## Discipline Electives

### DRMA 304L Analysis of One Act Play

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate Knowledge of the History of One Act Play.
- Develop Working Knowledge of the Principles of One Act Play.
- Analyze One Act Play Using Appropriate Terminology and Common Theatrical Figures.
- Develop the Specialization Skills of One Act Play.

### **DRMA 303L Analysis of Modern Hindi Drama**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Demonstrate knowledge of the history of the modern Hindi Drama Literature.
- Analyse full length dramas using appropriate terminology and common theatrical figures.
- Understand the role of drama for community culture and society.
- Familiar with the modern hindi drama writers and his texts.

### **DRMA 306L Rajasthani Folk Drama Jaipuri Tamasha**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

Demonstrate knowledge of the History and Culture of the Rajasthani Folk Dramas.

- Develop the Predicting Skills.
- Understand the Role of Folk Drama for Community Culture and Society.

### **DRMA 305L Radio and T.V. Anchoring**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop Vocal, Physical and Imaginative Skills to Express the Emotions.
- Introduce to Student Style of the Speech, Diction and Modulation.

### **DRMA 308L Technical Knowledge of Costume Design**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- To develop costume design ability through study of elements and principal of design and research techniques.
- To gain and understanding of costume design as an Allied art and essential part of the collaborative theatre production processes.

### **DRMA 309L Technical Knowledge of Make-Up**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop working knowledge of principal to make-up
- Demonstrate technical and artistic proficiency in make-up.
- Understand basic techniques of make-up.

### **DRMA 307L Set Design**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, student will be able to:

- Student will eye cute basic tasks in set construction.
- Student will apply their historical and aesthetic knowledge in set design.
- Student will assess their own performance and the show as a whole.

## Drawing and Painting

### First Semester

#### DNP 105 Fundamentals of Visual Art-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes

**After the accomplishment of the course students will be able to:**

- Know about creative process.
- Understand fundamentals and basic elements of visual arts.
- Co-relate art, nature and society.
- Communicate through art works.

#### DNP 107L Basic Drawing – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Gain control over the uses of various mediums.
- Apply knowledge in the use of objects, subjects and mediums.
- Understand elements of art and its implementation in their art practices.

#### DNP 103L Basic Sketching and Art Work

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Use all aspects and values of visual arts.
- Appreciate own work of art and others.
- Identify new possibilities in their art works.

## Second Semester

### DNP 106 Fundamentals of Visual Art-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Recognize aesthetic notions and its application.
- Understand principles of visual art used in the creation, presentation and preservation.
- Explain the importance of visual art and its relevance with society and nature.

### DNP 108L Basic Drawing - II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Recognize and draw variety of forms and shapes, their values, texture and chiaroscuro.
- Realize values of different objects and arrange them in making composition.
- Emphasize concepts and the application of various materials and aesthetic values.

### DNP 104L Creative Work and Study

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** On successful completion of the course students will be able to:

- Develop observation skills.
- Grow curiosity, interest and enjoyment in own creativity and others.

- Improve ideas about the visual language, concepts and principles of visual arts.

### Third Semester

#### DNP 201 History of Indian Painting and Sculpture - I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know the art history and its existence.
- Understand the theory and its relation with art practices.
- Write, speak and communicate ideas critically.

#### DNP 205L Study from Life - I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Explore and develop personal concepts regarding study from life.
- Cultivate several modes of artistic expression in study from life.
- Handle all the mediums according to requirements.

#### DNP 203L Sketching and Media Exploration – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Execute freehand drawing rapidly.
- Use proper medium for visual communications.
- Draw sketches (Indoor and outdoor) as well as explore possibilities and limitations of various media.

## Fourth Semester

### DNP 202 History of Indian Painting and Sculpture –II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know about Indian painting and sculpture.
- Identify various Indian artist and their contribution in Indian art scenario.
- Ability to link theory with creative practices.

### DNP 206L Study from Life – II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Make free hand structural drawings of human figure.
- Enrich knowledge about various poses of human figure
- Know about the importance of light & shades.
- Get acquainted with the handlings of various mediums used in life study.

### DNP 204L Sketching and Media Exploration – II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Enhance the use of appropriate medium and relate with the concept of art.
- Explore ideas about the language, concepts and principles of visual arts.
- Experiment in their art works and bring about innovations.

## Fifth Semester

### DNP 305L Sketching and Media Exploration - III

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Execute freehand drawing rapidly and recognize the importance of sketching in visual art studies.
- Achieve all learning experiences and create art works accordingly.
- Synthesis previous knowledge with new insights, regarding sketching and media exploration.

### Discipline Electives

#### DNP 303L Portrait Painting - I

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	6	3

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Analyze own problem in portrait painting and solve accordingly.
- Learn proper techniques to create a portrait painting.
- Create aesthetic appeal in a portrait.

#### DNP 301L Pictorial Composition - I

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	6	3

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know subjects and materials used in composition.
- Identify the importance of realistic and abstract subject in composition.
- Realize the aesthetic value of composition.

## DNP 307L Screen Printing - I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Command of the technical aspects of all processes covered.
- Conversant with multiple introductory screen printing processes
- Think critically, communicate clearly and work creatively in intellectual pursuit.
- Explore and develop personal concepts in creative expression.

## Sixth Semester

### DNP 306L Sketching and Media Exploration – IV

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Execute freehand drawing rapidly.
- Know about the new media art.
- Execute ideas through unconventional mediums.

## Discipline Electives

### DNP 304L Portrait Painting - II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Know about the role of portraiture in art practices (from ancient to contemporary).
- Understand the anatomy of face, structure, light, shade, proportion and the characteristics of model.
- Develop eclectic and aesthetic knowledge about portrait making

## DNP 302L Pictorial Composition - II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Enrich knowledge about composition based on sketching and drawing.
- Realize the meaning of realistic and abstract value of composition
- Emphasize the significance of colour in composition.

## DNP 308L Screen Printing - II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Command of the technical aspects of all processes covered.
- Conversant with multiple introductory screen printing processes
- Think critically, communicate clearly and work creatively in intellectual pursuit.
- Explore and develop personal concepts in creative expression.

## Economics

### First Semester

#### ECO 106 Micro Economics -I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe nature and scope of Economics.
- Analyze cardinal and ordinal approaches to consumer behaviour.
- Illustrate uses of indifference curvess.

- Discuss various concepts of elasticity and its measurement.
- Analyze short run and long run law of Production.
- Illustrate various concepts related to cost.

## **ECO 109 Money and Banking**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand the role of money in the broader economy.
- Understand the unique role of banking financial system.
- Analyse a Bank's balance sheet.
- Acquire adequate knowledge of theories related to supply of, and demand of money, and its relationship with prices.
- Analyse the role of a central bank and instruments of monetary policy.

## **Second Semester**

### **ECO 107 Micro Economics - II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe various revenue concepts and explain the behaviour of revenue under different market structures
- Identify structure of a market
- Analyze short run and long run equilibrium of firms under perfect and imperfect competition.
- Discuss various concepts related to profit and to analyse the determination of profit
- Discuss various concepts related to rent and to analyse the determination of rent.

- Discuss various concepts related to interest and to analyse the determination of interest.

### **STAT 103 Elementary Statistical Methods**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe the meaning function and limitations of Statistics.
- Represent the data through diagrams and graphs.
- Calculate the measures of central tendency.
- Calculate the measures of dispersion.
- Calculate the measures of skewness and kurtosis.
- Interpret the results of measures of central tendency, dispersion, skewness and kurtosis.

### **Third Semester**

#### **ECO 202 Macro Economics -I**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Describe nature of Micro Economic analysis and Macro Economic Analysis
- Analyze Static, Comparative and Dynamic Economic Analysis
- Identify Central Problems of Economic Systems and their solutions
- Calculate National Income and its related aggregates and analyse the problems and limitation of National income estimation
- Describe Circular flow of income and expenditure.
- Analyze concepts of employment unemployment and full employment.

#### **STAT 206 Quantitative Techniques**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Solve numerical problems related to Correlation and Regression analysis and identify its applications
- Explain meaning of Index numbers and demonstrate ability to construct Index numbers using various techniques.
- Solve various types of numerical based on Probability and related theorems.
- Measure trend using various techniques of Time Series Analysis.
- Define various concepts and solve numerical related to Quadratic equations, Matrices, Arithmetic and Geometric Progression, and Straight Line.

## Fourth Semester

### ECO 203 Macro Economics - II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand the basic concepts of consumption, savings, investment, inflation.
- Understand the tenets of Keynesian Economics and apply them through the aggregate demand and supply model.
- Explain how the equilibrium interest rate is determined in the money market.
- Define the investment multiplier; explain its calculation, and relevance.
- Explain the working of acceleration principle and its weaknesses. Describe the business cycles and their phases

### ECO 204 Public Finance

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Conceptualise, explain and give examples of concepts of public goods and externality
- Understand and explain the role of government according to economic theory
- Identify and distinguish between various sources of Public Revenue and assess the impact and incidence of taxation
- Identify various features of Indian Tax system.
- Understand and explain concepts related to Public Expenditure, Public Debt and the Budget.

## Fifth Semester

### ECO 303 Indian Economy – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand the historical background of colonial economy.
- Appreciate the nature and characteristics of Indian Economy.
- Understand the evolution of Indian Planning, its strategies, objectives and failures.
- Analyze the development of physical and social infrastructure in India.
- Analyze Institutional Reforms in Indian Agriculture.
- Analyze issues of agriculture finance and marketing in India

## Sixth Semester

### ECO 304 Indian Economy – II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
_____				

(CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand importance and problems of Industrial sector in India.
- Analyse composition and direction of foreign trade and foreign trade policy in India.
- Understand the concept of poverty and unemployment.
- Evaluate the policies related to poverty, unemployment and inflation in India.

### Discipline Electives

#### ECO 305 International Economics

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Discuss and explain trade policy issues such as protectionism and free trade.
- Understand and apply the principle of comparative advantage.
- Apply partial equilibrium models in analysing the economic effects of trade policy instruments such as tariffs and quotas.
- Understand the concept of BoP and its disequilibrium
- Critically analyse different theories of determination of exchange rate.
- Appreciate the role of international organizations such as IMF, World Bank, WTO, UNCTAD

#### ECO 301 Development Economics and Environment

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Acquire a basic understanding of the issues and on-going debates on development economics.
- Discuss the important theories in economic development and their policy implication.
- Demonstrate a basic knowledge of the role of market and market failure with regard to the allocation of natural resources and environmental amenities.
- Analyze and interpret the environmental implications of economic decisions
- Understand the nature and scope of contemporary environmental debates

### **ECO 306 Economics of Social Sector**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Understand basic concepts of Social Sector.
- Analyze Problems and Opportunities in Social Sector.
- Cost and returns of Social Sector
- Understand pattern of expenditure on health and education.
- Analyze association between Human capital and Economic Growth.

### **ECO 308 History of Economic Thought**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** On successful completion of the course, students will be able to:

- Comprehend the development of the theory of economics in historical perspective.
- Grasp emerging paradigms and aberrations with its reasons.

- Analyze similarities and differences among different economic schools of thoughts

## English Literature

### First Semester

#### ENGL 105 Prose and Short Stories

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- exhibit a fair knowledge of the development of English essay/short story as literary genre(s);
- develop critical thinking by analysing texts;
- exhibit word power with use of idiomatic expressions and wide vocabulary;
- communicate effectively in all forms of social interaction;
- inculcate effective citizenship with a deep grounded sense of ethics and moral dimensions.

#### ENGL 106 Romantic Poetry

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- understand the meaning, form, and function of different theoretical and philosophical strands of Structuralism, Post-structuralism, Marxism, New Historicism etc.;
- analyze the historical, political and aesthetic milieu of the romantic age;
- develop creative and critical thinking;
- enhance writing skills;
- inculcate humane values and ethics through the given poem;
- engage in the praxis of applying those theoretical and philosophical underpinnings for the analysis of a particular poem.

## Second Semester

### ENGL 104 Fiction

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- understand the social and literary context of the Victorian world and its anxieties about modernity, capitalism and gender issues;
- analyze, discuss and write critically about the use of social realism in literature;
- analyse and interpret the work of a range of Victorian novelists;
- understand the various elements of long fiction;
- understand the interdisciplinary area of science and literature;
- identify and discuss theoretical discourses concerning class, sexuality, and gender in literary texts;
- comprehend and successfully apply a range of terms and concepts integral to literary studies.

### ENGL 107 Victorian Poetry

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- apply the knowledge of the theoretical discourses based on the social and literary history of the age to a range of texts specifically, Victorian poetry;
- identify the trends of Victorian literature in relation to the advent of science, democratic ideals, Victorian morality, new education etc.;
- critically analyze literary texts of Victorian age keeping in mind the anxiety of the Victorian age;
- explicate their views in terms of the prevailing traits of the preceding and succeeding age of Victorian era.

## Third Semester

### ENGL 201 American Literature

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- appreciate and evaluate the literary history of America;
- recognize the human experiences reflected in the works;
- develop appreciation and understanding of American culture
- demonstrate a knowledge and understanding of a range American writing in its historical and cultural contexts;
- demonstrate improvement in critical writing and critical thinking skills through the analysis of American literary texts;
- enhance their communication skills;
- Inculcate effective citizenship with a deep grounded sense of ethics and moral dimensions.

### ENGL 202 Drama

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- appreciate drama as a genre of literary expression;
- have an understanding of drama of the Renaissance and Restoration period;
- acquaint themselves with the terminologies relevant to the texts to interpret this genre in the backdrop of actual staging;
- understand the various constituents of the performance of the Shakespearean tragedies and the Restoration comedies.

## Fourth Semester

### ENGL 205 Grammar

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- know the nature, form, and function of language;
- use the language effectively;
- learn grammar as a rule governed behaviour;
- develop an insight into the structure of English language;
- assimilate the correct patterns of the language.

### ENGL 206 Indian Writing in English

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On successful completion of the course, students will be able to:

- relate the major literary movements of India and their influence on Indian literature;
- demonstrate knowledge of the select texts and traditions in the specific social, cultural and historical context;
- analyse the literary texts with specific reference to cultural and political developments in India's colonial and post-colonial history;
- inculcate the concept of nationalism through literary texts;
- communicate effectively in all forms of social interaction;
- inculcate effective citizenship with a deep grounded sense of ethics and moral dimensions.

## Fifth Semester

### ENGL 304 Modern Fiction

<b>Max. Marks : 100</b>	<b>L T P C</b>

(CA: 40 + ESA: 60) 

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 4 0 0 4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- develop an insight into the genre of fiction and art of fiction writing;
- understand the humanitarian aspects expressed in novels from around the world and to draw a comparative perspective of cross-cultural social, economic and political experiences;
- recognize terminologies identified in various literary texts across cultures;
- apply perspectives gained from literature to personal and global situations;
- evaluate various interpretations of a text and their validity over time.

## Sixth Semester

### ENGL 308 Literary Movements: History of Ideas

Max. Marks : 100 L T P C  
 (CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** On successful completion of the course, students will be able to:

- understand some major concepts which are related to metaphysics, epistemology, and aesthetics.
- develop critical thinking.
- nurture dialectical thought process that may enable them to communicate effectively by placing anti-thesis to some given thesis.
- contribute in enriching the intellectual history of our country.
- unleash the potential of students and to bring them on an enriching path of lifelong learning.

## Discipline Electives

### ENGL 305 Modern Poetry

Max. Marks : 100 

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 L T P C

(CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- appreciate various poetic devices identified in the various texts of modern poetry;
- understand realism and other modes of poetic expression;
- critically analyze modern poetic texts and assimilate ideas of various movements of the milieu;
- synthesize humane values against the decadence;
- display their understanding of various poets of the era.

### ENGL 309 Science Fiction

**Max. Marks : 100** L T P C  
 (CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- know the major aspects of Science Fiction
- explore the relationship between literature and Science
- understand the complex nuances which connect literature and Science
- appreciate the socio-pragmatic realities of the world that science and literature represent

### ENGL 303 Modern Drama

**Max. Marks : 100** L T P C  
 (CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- appreciate drama as a genre of literature in general and modern English drama in particular;
- familiarize themselves with the techniques of modern drama and artefacts which constitute the effect on stage;

- acquaint themselves with different facets of modern drama and understand the socio-political and cultural background of the audience, the playwright, and also the texts;
- build up understanding to adjudicate the performance of such dramas and their effect on their value system.

### **ENGL 306 Autobiography**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- know the major aspects of autobiography
- explore the relationship between self and its representation
- understand the complex nuances growth and development of self in autobiography
- appreciate the socio-pragmatic realities of the world autobiography represents

### **ENGL 310 Travel Writing**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- know the major aspects of cinema
- explore the relationship between literature and cinema
- understand the complex nuances which connect literature and cinema
- appreciate the socio-pragmatic realities of the world that cinema and literature represent.

## **Geography**

### **First Semester**

#### **GEOG 103 Physical Geography**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe origin of earth, continents and ocean basin, Isostasy, diastrophism, drainage pattern and several landforms.
- Describe the wind movements, pressure, composition and structure of the earth, jet streams.
- Classify world in terms of climate, air masses and fronts and describe cyclones and their types.
- Describe ocean bottom reliefs of Indian ocean, distribution of temperature and salinity, tides, currents and coral reefs.

### **GEOG 101L Fundamentals of Cartography Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe cartography and theoretical background of scales and their types.
- Draw plain, diagonal, comparative, time and Vernier scale.
- Enlarge, reduce and combine maps.
- Describe the uses of thermometer, barometer, hair hygrometer, rain gauge and wind vane.
- Conduct a plain table survey through radiation, intersection and traversing.

## **Second Semester**

### **GEOG 102 Human Geography**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Define human geography and relate it to the other social sciences; describe man environment relationships and schools of human geography.

- Describe evolution of man, classify human races and describe migration theories.
- Map and describe the distribution of several tribes- Pigmies, Badawins, Eskimos, Khirgiz, Gujjars, Bakarwals, Toda, Bhil and Santhal and their economic activities.
- Describe population distribution of the world with maps, concepts of population growth, population theories and human development.
- Classify cities functionally; describe urbanization, settlements and their types.

### **GEOG 104L Statistical Techniques and Data Representation Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

**After the completion of this course, students should be able to:**

- Describe statistical sampling and represent frequency distribution in several forms.
- Represent statistical data through diagrams- multiple bar diagram, simple pyramid diagram, rectangular diagram, wheel or pie diagram, and spherical diagram.
- Measure mean, median mode & standard deviation.
- Represent Statistical data through graphs-poly linear graph, climograph and triangular graph.

### **Third Semester**

#### **GEOG 202 Introduction to Geography of India**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe and map the location of India, its physiographic divisions.

- Describe the drainage, climate, soil and vegetation their types and distribution.
- Describe major crops, minerals, industrial regions, population of India and their distribution.
- Demarcate Rajasthan in terms of physiography, describe climate, drainage, vegetation, soils and their distribution.
- Describe agriculture, livestock, irrigation, human resources and tourism.

### **GEOG 203L Mapping and Prismatic Compass Survey Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Create distribution maps through chorochromatic, simple shading, choro-schematic methods.
- Create maps of isobars, isotherms and dot method.
- Conduct prismatic compass survey through radiation and intersection method.
- Correct closing error through Bowditch rule.

## **Fourth Semester**

### **GEOG 201 Economic Geography**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Define economic geography, describe its scope and relate it with other social sciences
- Classify resources and describe soil mineral and energy resources
- Describe spatial distribution, production and trade of rice, wheat, cotton, tea and Classify world into agricultural regions
- Describe several industries, their location determinants, and distribution of iron- steel and cotton-textile industry.

- Describe trade, transport, their controlling factors, major law making bodies of the world and major transport routes.

## **GEOG 204L Relief Representation and Topographical Maps Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Interpret topographical maps.
- Represent topographical features with the help of contours.
- Identify Human and natural phenomenon.
- Create Profiles using Contours in the topographical sheets.

## **Fifth Semester**

### **GEOG 303L Map Projection Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Elucidate necessity & classification of map projections.
- Compare different kind of map projections.
- Construct map projections graphically.
- Suggest projection for any area of earth surface.

## **Sixth Semester**

### **GEOG 301L Fundamentals of Geoinformatics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Explain development and types of aerial photographs.
- Identify and interpret aerial photographs.
- Elucidate different elements and development of remote sensing.

- Describe different kinds of remote sensing platforms and discuss important elements of GIS.

## **Discipline Electives**

### **GEOG 305 Environment and Disaster Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand about the ecosystem and their functions.
- Describe disaster, its types and issues generated during different cycles of disasters.
- Describe the policies of disaster management in India.
- Assimilate role of different bodies established for the cause of disaster relief.

### **GEOG 302 Geographical Thought**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Explain evolution of geographical thought and relationship of Geography with other branches of knowledge.
- Describe different tools and techniques of geographical study.
- Compare ancient, medieval and modern scholar's contributions in Geography.
- Elucidate important concepts of Geography as well as recent trends and current issues of subject.

### **GEOG 306 Settlement Geography**

<b>Max. Marks : 100</b>	<b>L T P C</b>

(CA: 40 + ESA: 60) 6 0 0 6

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop an approach to study settlements.
- Depict the evolution of settlements and relate it to the geographical factors.
- Describe rural and urban morphology, its meaning and types.
- Classify cities functionally into different zones.

### **GEOG 304 World Regional Geography**

**Max. Marks : 100** L T P C  
(CA: 40 + ESA: 60) 6 0 0 6

**Learning Outcomes:** After the completion of the course, students will be able to:

- Elucidate physical aspects of Asia, Europe, Africa, North & South America and Oceania.
- Describe cultural aspects of Asia, Europe, Africa, North & South America and Oceania.
- Compare different continents of world.
- Illustrate terrain, drainage, climate, natural vegetation and Industrial regions of studied continents.

## **gñh l gR**

**ihle lel =**

### **HIND 103 gñh0 kdj.k, cadl0 l**

**Max. Marks : 100** L T P C  
(CA: 40 + ESA: 60) 4 0 0 4

**viqr ifj.le**

- 1- Nk;k; 'H=h o 0kdj.kd -fv lshko l gR dsve; ;u dh le> cukldaho dlo 'H=h ijfjklslE d~: i lsvoxr gsl dahA
- 2 0kdj.ko dlo dsfo/kvahl sijp; iR dj ldahA



**viðr if. 2**

- 1- Næ; e/; ; qhu dlo vlyula, oainfr; ladsle> l dala
- 2 Hrdly ds yltkj.k dh i'fr ds lfrd vlij ls iffr gala
- 3 Hekt d le; vadsneyu eal fr dhfrkle> l dala
- 4 Hrdlyu dfo; ladslfrd , oalikt vonu lsiffr gsl dala

**rð l el =**

**HIND 205 vfrd dlo &**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**viðr if. 2**

- 1- vfrd dfrk ds mlo dh i'fr; l dle>us dh {lerk fodfr dj ik,la
- 2 lorarkvlyu ij gñhlfr dsiloadsv/; ; u eal {le gs l dala
- 3 iekdlo lalyudhey Houvlal siffr gsl dala
- 4 uolu dlo ifrek'ly; ladsiffrilal siffr gsl dala

**HIND 203 gñhuvd , oa, dleh**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**viðr if. 2**

- 1- uvd o jaep dsfr : fr tkir gsik,la
- 2 uvd o jaep foikdhfo/k'ly; lal siffr gsl dala
- 3 ifr uvdoadsvlij ij uvd dsfed cnyslo#i lsiffr gsl dala
- 4 Næ; gñh uvdlij dh ek; rvl dle>us eal efr gs l dala

**pril el =**





(CA: 40 + ESA: 60)

4 0 0 4

**viðr if. ðe**

- ; k kfoj.kyflu & dky dkfodl gkka
- Nkvladhltullel ekuf drkdkfodl gkka
- ; k k lfgR djla ls ifjfr gsj lfgR o lkt ds çfr lauu'ly gaha
- Hjrð o ikpR ; k kvuþ } jkufd o l h frd ek ldk fodl gkka

**HIND 305 HgykvðedHkyflu**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**viðr if. ðe**

- vðedHvðadsek; e ls Nk k aff=; ladhcnyrhNfo ls ifjfr gsl dala
- lfgR o lkt d l jkljaldsl e> useal eH gsl dala
- Nkkaal=hyflu dhof kvrkl sifjfr gsl dala
- Nkkaefgykðadsviusxgu vulladskfudsgðylal sij. lk ysl dala
- I=heulfoKlu I=h'lk I=h'ldr o I=h l 3Zvlin epalal s ifjfr gsl dala

**HIND 303 izktueyd fguh**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**viðr if. ðe**

- 1- izktueyd fguh ds Klu ls izld fud inlagrql{lerk c<k ikxla
- 2- fofkl rduldh oklud 'klufy; ladvklj ij HhZlerkdk fodl dj ikxla



- ; HZ?Wukvads l osu'ly l Hgr d 'ly eaiZrq djusth  
{lerkfodfl r dj ikxIA
- Nk v leal t ZEd {lerkd kfodll gkIA

## HISTORY

### First Semester

#### HIST 101 History of Early India (upto Mauryan Age)

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Comprehend different types of sources of early Indian history
- Be acquainted with trends of political developments in early India
- Orient themselves to continuity of cultural evolution beginning from the Lithic Ages
- Familiarise themselves with regional and Indian stylistic development of aesthetics

#### HIST 103 History of Medieval India (1000 to 1526 AD)

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Define the struggling phase of an era of transformation in medieval India.
- Understand the advent of Islam and role of the Sultanate in the development of new political system and policies in India.

- Identify how the disintegration of an empire leads to the rise of regional powers.
- Comprehend technical developments and socio-cultural relation of two different societies.

## Second Semester

### HIST 102 History of India (200 BC to 1000 AD)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After the completion of the course, students will be able to:

- Visualize rise of imperial, regional and Rajput powers in ancient India
- Assess the consolidation of foreign powers on Indian soil
- Comprehend Indian social transformations in early Christian centuries
- Understand overseas expansion of Indian culture

### HIST 104 History of Medieval India (1526 to 1707 AD)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Appreciate significance of composite culture
- Understand Mughal policies, administrative system and their military establishment
- Elaborate the growth of economic institutions and social change in medieval age.
- Define the significance of Mughal rulers as they established a new empire in India, its relation with the Central Asian empires, the commercial and cultural relations between India, China and Europe.

## Third Semester

### HIST 202 Political History of Modern India (1757 to 1947)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop critical thinking about the political impact of British Raj
- Understand how India got independence with partition
- Evaluate the structure of British administrative system.
- Locate the nature of various peasant, tribal movement and the discourse on 1857 event.

### **HIST 203 Social and Economic History of Modern India (1707 to 1947)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop the critical thinking about the colonial & exploitative character of British Raj.
- Locate the history of education, profession and institutionalization of knowledge.
- Evaluate the nature of socio-religious movement in modern India and write an assignment on the same.
- Understand the recent trends of historiography on science, technology, and environment.

### **Fourth Semester**

#### **HIST 201 Civilizations of the World**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** After the completion of the course, students will be able to:

- Know about the early world civilizations
- Analyze the contribution of world civilizations in the field of science, art and architecture.
- Discuss the literary and philosophical achievements of the Greeks.

- Understand rise of Judaism, Christianity, Islam and emergence of the crusades.

### **HIST 204 Survey of the History of Rajasthan**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Recognise the importance of regional history in Indian History.
- Describe the political and cultural developments of Rajasthan.
- Assess the resistance and collaboration of Rajput rulers towards imperial powers.
- Analyse the emergence of socio-religious, tribal, peasant and prajamandal movements.

## **Fifth Semester**

### **HIST 301 Changing Patterns of World History**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Critically analyze/interpret primary documents/secondary sources; qualitative/ quantitative data to evaluate historical events.
- Develop communication skills through oral/written exercises, and develop analytical skills by critically interpreting historical events.
- Analyze how local/national/international policies/practices developed in the past continue to impact their contemporary lives.
- Understand the establishment of United nations Organization

## **Sixth Semester**

### **HIST 302 Introduction to Historiography**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Develop a critical thinking with regard to the genesis and nature of the discipline.
- Understand the recent developments in gender history, new history and archaeological techniques.
- Locate the philosophy of history in terms of cyclical, linear and great men theory.
- Read and write a paper related to the fundamental question- what is history

## **Discipline Electives**

### **HIST 303 Tracing Women's History in Indian Society**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Locate the progress of civilization and subsequent changes in position of women
- Interpret Women's status through Buddhist and Jaina texts
- Assess women's contribution towards making of medieval Indian culture
- Analyze Women's participation in national movement

### **HIST 306 Fundamentals of Indian Society and Culture**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- § Understand the evolution of Indian society and culture.
- § Analyse the philosophy of Indian thought process.
- § Explore the Indian contribution to the field of science and education.

## **HIST 307 Trends in the Understanding of History**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand key philosophical development of 20th century.
- Develop idea about the social history.
- Develop a critical thinking with regard to the oral history and quantitative techniques.
- Discuss the various eminent historians and the new historical trends

## **HIST 305 An Outline of the History of South India**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Familiarize themselves with contributions of South Indian dynasties to Indian History.
- Understand dynamics of socio-economic life in South India.
- Assess the evolution of South Indian Art & architecture.

## **Home Science**

### **First Semester**

#### **HSC 101 Basics of Home Science and Resource Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Interpret concept and scope of Home Science discipline

- Develop an insight into fundamentals of Resource and their management

### **HSC 108L Interior Decoration Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Design and draw floor plans to meet a given set of requirements
- Apply informed judgments in designing interiors

## **Second Semester**

### **HSC 102 Basics of Human Development**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Get insight into concept and various aspects of Human Development
- Appraise concerns and issues related to parenting and development aspects
- Relate theories to developmental aspects

### **HSC 107 Fundamentals of Foods and Nutrition**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe the functions of food and role of various nutrients, dietary requirement of various nutrients, and effect of deficiencies and excesses
- Explain the methods of food preparation and principles applied in food preservation.

- Apply and incorporate the knowledge of nutritional requirement in various life stages.

## **Third Semester**

### **HSC 215 Nutrition in Health and Disease**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe the role of nutrition and nutrients in health, disease and various life stages
- Explain the causes of food spoilage and types of food preservation
- Apply and incorporate the knowledge of therapeutic diet for various disease conditions

<https://www.slideshare.net/jinulazer/ppt-on-nutrients>

### **HSC 205L Food and Nutrition Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Plan and prepare different types and specific nutrient rich diets using different cooking methods
- Plan and prepare diets for various disease conditions
- Prepare food products using various preservation methods

## **Fourth Semester**

### **HSC 210 Introduction to Community Nutrition and Extension**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Explain the linkages between nutrition, environment, health and disease
- Recognize the importance of malnutrition as a conditioning factor in relation to many diseases in community
- Get acquainted with the roles of national & international agencies in community nutrition
- Explain importance of extension programmes for the betterment of QOL in rural areas and develop skills for effective communication

### **HSC 212 Life Span Development**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand important aspects of development during the whole life span
- Understand the issues faced and adjustments required at each stage across the life span

### **Fifth Semester**

#### **HSC 308 Introduction to Textiles**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Get basic knowledge about different fibers used in textile Industry, their physical and chemical characteristics and end use
- Identify different methods of yarn and fabric manufacturing and their characteristics and utility
- Analyze different techniques used to enrich the surface of fabric through dyeing and printing and finishing

- Discuss the use of different types of washing methods , equipments and different agents used in care and maintenance of fabric
- Evaluate different practices involved in Textile Industry and at household level

## **Discipline Elective – I**

### **HSC 305 Family Dynamics and Parent Education**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Gain information about importance, problems and adjustment in marriage life and family
- Attain knowledge about role of parents and their involvement for overall development of the child
- Get awareness about parent and community education for betterment of society

### **HSC 320 Family and Child Welfare**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Get an insight into the family as a social system
- Understand about the family disharmony due to changing socio-economic conditions in the country.
- Gain an understanding of the needs and problems of children, youth, women, the aged and the family as a whole.
- Acquire knowledge about welfare services for family and children  
India

## **Sixth Semester**

## HSC 312L Textile care and Clothing Construction Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Learn basic garment construction and embroidery skills
- Use learned skills in garment construction for different age groups and figure types
- Learn basic knitting stitches and their use for knitting different garments
- Apply theory in taking care of household textiles and garments

## Discipline Elective – II

### HSC 307 Introduction to Clothing

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand the basic essentials of clothing construction
- Assess the various steps involved in the process of garment making
- Gain the skills required for apparel construction

### HSC 322 Fundamentals of Family Clothing

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Describe the selection factors for fabrics and clothes of individuals of different age group.

- Understand specific property of fabric required for different types of garments.
- Elaborate various functions of clothing.
- Use different principles and elements of art while selecting or designing dress for different figure types.

## Indian Classical Dance (Kathak)

### First Semester

#### **DNCE 105 Literature of Indian Classical Dance–I (Kathak)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- The origin of dance hence command over technical terms of Kathak Dance.
- Recognize and apply the Neck and Eye movements and Hastmudras.
- Execute basic etiquettes of the various Taals.

#### **DNCE 111L Performance of Indian Classical Dance-I (Kathak)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Execute basic etiquettes of Dance.
- Perform combined hand, feet movements and formation of figures.
- Formulate chakkars

### Second Semester

#### **DNCE 106 Literature of Indian Classical Dance-II (Kathak)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Understand the development of Kathak Dance in Historical perspective.

- Explain the abhinaya and its types, head movements.
- Understand the regional folk dance and Raas.
- Learn the Taal system.

### **DNCE 112L Performance of Indian Classical Dance-II (Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- Execute the different Taals and foot work in Kathak.
- Perform Shloka and padhant of all bols.
- Formulate the composition.

### **Third Semester**

### **DNCE 201 Literature of Indian Classical Dance-III (Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Recognize various Gharanas and other Indian Classical Dance forms.
2. Understand technical terms of Kathak Hastamudras and their uses in Kathak Dance.
3. Develop the knowledge of Kathak Legends.

### **DNCE 207L Performance of Indian Classical Dance-III (Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Develop the Skills of musicality and various forms of Dance with expression.
2. Develop foot leg exercises back exercise, contractions over curve.
3. Manage the time or time-management.
4. Improve health, wellbeing and learning ability through Dance.
5. Develop appreciation for the art form.

## Fourth Semester

### DNCE 202 Literature of Indian Classical Dance-IV (Kathak)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Formulate the Sanyukta Hasta Mudras.
2. Understand the Sangeet and Taal.
3. Recognize the famous dancers and self made composition with notation.

### DNCE 208L Performance of Indian Classical Dance-IV (Kathak)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Execute the various types of expression.
2. Develop to play other instruments.
3. To Perform in more expressive and communicating way.

## Fifth Semester

### DNCE 301L Performance of Indian Classical Dance-V (Kathak)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Perform the additional Taals: Pancham Sawari, Shikar.
2. Perform live shows.
3. Develop the Art appreciation.

## **SIXTH SEMESTER**

### **DNCE 312L Performance of Indian Classical Dance-VI (Kathak)**

**Learning Outcomes:** After the completion of the course, students will be able to:

- Perform as a dancer on stage.
- Execute the desires, emotions and imagination through Dance.
- Develop their vision.

## **Discipline Electives**

### **MUS 308L Performance of Indian Classical Music (Tabla)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **MUS 309L Performance of Indian Classical Music (Harmonium)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **DNCE 309L Performance of Rajasthani Folk Dance**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **DNCE 307L Performance of Other Classical Dance (Bharatnatyam)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **DNCE 308L Performance of Other Classical Dance (Manipuri)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

## **Indian Classical Dance (Bharatnatyam)**

### **First Semester**

#### **DNCE 107 Literature of Indian Classical Dance-I (Bharatnatyam)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Develop the knowledge of the origin of dance and technical terms.
2. Recognize and apply the Neck and Eye movements and Hastmudras.
3. Execute basic etiquettes of the various Taals.

#### **DNCE 109L Performance of Indian Classical Dance-I (Bharatnatyam)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Execute basic etiquettes of Dance.
2. Perform combind hand, feet movements and formation of figures.

## Second Semester

### DNCE 108 Literature of Indian Classical Dance-II (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Understand the Bharatnatyam Dance in Historical aspect.
2. Explain the technical terms.
3. Understand the regional folk dance and Raas.
4. Learn the Taal System

### DNCE 110L Performance of Indian Classical Dance-II (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

1. Execute the different Taals and foot work in Kathak.
2. Perform Shloka and recite the bolas
3. Formulate the composition.

## THIRD SEMESTER

### DNCE 203L Literature of Indian Classical Dance-III (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### DNCE 205L Performance of Indian Classical Dance-III

**(Bharatnatyam)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes:** After the completion of the course, students will be able to:

- ✓ Sequence of Bharatanatyam items.
- ✓ Types of Nayak and Nayika.
- ✓ Historical Stories of shiva and parvati creation of Tandav and lasya.
- ✓ Uses of different handgestures.
- ✓ Knowledge of songs along with Korvais and jathi with Taal.
- ✓ Receive the blessings before any stage performance which is stage.....

**FOURTH SEMESTER**

**DNCE 204 Literature of Indian Classical Dance-IV**  
**(Bharatnatyam)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**DNCE 206L Performance of Indian Classical Dance-IV**  
**(Bharatnatyam)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes:** After the completion of the course, students will be able to::

- ✓ Following ancient tradition of devadasi.
- ✓ Understand the regional Different folk dance.
- ✓ Knowledge of mythological stories ( Mahabharta and Ramayana)
- ✓ Uses of different hand gestures.

## FIFTH SEMESTER

### DNCE 305L Performance of Indian Classical Dance-V (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After the completion of the course, students will be able to:

- ✓ Knowledge of different styles used in Bharatanatyam.
- ✓ Usually comes through is evolving to the particular taalās in north Indian Taalās.
- ✓ Uses of different hand gestures.
- ✓ Knowledge of songs along with Jathis, Koravais play with taal.

## SIXTH SEMESTER

### DNCE 306L Performance of Indian Classical Dance-VI (Bharatnatyam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- ✓ The Natyashastra documents the history behind the development of the arts in India.
- ✓ It is a theatre and dance treatise of national importance.
- ✓ Detailed knowledge of Lokdharmi, Natyadharmi, vritti pravirtti and prekshagriha.
- ✓ Knowledge of Trikaal jathi play with taal.

## Discipline Elective

### MUS 310L Performance of Indian Classical Music (Mridangam)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**MUS 309L Performance of Carnatic Music (Vocal)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**DNCE 310L Performance of Other Classical Dance  
(Kuchipudi)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**DNCE 311L Performance of Other Classical Dance  
(Kathak)**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**DNCE 309L Performance of Rajasthani Folk Dance**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Indian Music****First Semester****MUS 101 Literature of Indian Classical Music – I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Students will be able to understand the literary terms of music.
- Will be able to differentiate the ragas and have the command over writing the notations which is vital part of music.

## MUS 101L Performance of Indian Classical Music – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Recognition of musical piece and rendering the technical transitions may increase the knowledge of the structure of music and instruments as well.
- Ability to perform in different formations of TIME by practicing/performing with percussions.

## Second Semester

### MUS 102 Literature of Indian Classical Music – II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Student will be able to increase their knowledge by descriptive and comparative study of evolution of music from ancient era to till date by inclusively added the forms of music and dances.
- This will be making the students more competitive in the field of fine arts.

### MUS 102L Performance of Indian Classical Music-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Students will be able to handle the instruments and tune them in the certain scales. This will increase the opportunities for them to start their own business.
- They will be able to seek a career in composing equally in Indian and filmy/light music by developing the ability of composing the musical pieces.

## Third Semester

### MUS 201 Literature of Indian Classical Music – III

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

### MUS 201L Performance of Indian Classical Music –III

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcome :**

- Students will be getting the ability to handling and playing instruments.
- They will have a guideline to use different transitions with each other, by help of these, they can furbish their pursued command with a more excellence.

## Fourth Semester

### MUS 202 Literature of Indian Classical Music – IV

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Students will be having the idea of complex components of music, like – raga theory and different forms of music along with taal system. It will help them to showcase their intense knowledge of vital elements of music.
- Students will be able to achieve the ability to write essays on musical topics and understand the valuable contribution of Pandits and Ustads of Indian Music.

### MUS 202L Performance of Indian Classical Music –IV

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Understand the implementation of technical terms of performing in various formations of taal.
- Having command over different raga and taal excluding Teen taal which is considered as a basic, primary taal but the most beautiful and used taal in Indian Music system.
- Play with the accompaniment of rhythm in various tempos and taal by using variety of technical transitions and plucking formations.

## **Fifth Semester**

### **MUS 301L Performance of Indian Classical Music –V**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Command over Shuddha and Mishra ragas.
- Will be knowing the method of tuning the instruments. Will be able to the and instrument.
- Will be developing the ability to use the complex and more advanced musical pieces to elaborate a raga by singing Khayals and playing Gats.
- Will be preparing the students to understand and perform through traditional styles of music rendition.

## **Sixth Semester**

### **MUS 302L Performance of Indian Classical Music –VI**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes :** After the completion of the course, the students will be able to:

- To promote the understanding of ragas & mishra ragas.
- Ability to tune your own instrument to enable the student understanding and grip.

- Ability to develop vakrachalan of swar instead of straight aaroh&avroh.
- Ability to sing/play badakhayal & chotakhayal /masitkhani & razakhani gats in different taal with different laykari.
- To prepare the students for conventional & traditional style of singing.

### **Discipline Electives**

#### **MUS 308L Performance of Indian Classical Music (Tabla)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- Definition of terminology such as sam, kaal, khanda, maatra, laya etc.
- General information about the origin of tabla.
- Definition of terminology such as kayada, palta, mukhra, tukra,ect.
- Basic knowledge of Bhatkhande notation system.

#### **MUS 307L Performance of Indian Classical Music (Harmonium)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes :** After the completion of the course, the students will be able to:

- A formal training initiate to students about basic terms like types of notes, different patterns of notes (Alankaars), rhythm and its components with an initial start of learning ragas.
- Encourage students to play/sing with zeal to get improved at beginning level and heading towards pro level.
- Will be able to handle the instruments carefully and maintain them by his/her own.

## MUS 303L Basic Technical Skills for Audio Production

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

## Indian Music (Tabla)

### First Semester

#### MUS 103 Literature of Indian Classical Music – I (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to.

1. Develop the knowledge of the origin of Tabla and technical terms.
2. Recognize and apply the hand movements on Tabla.
3. Execute basic etiquettes of the various Taals.

#### MUS 105L Performance of Indian Classical Music - I (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to.

1. To introduces the student to the basics of tabla playing.
2. Perform combined and single hand movements of figures.
3. To introduce the student basic knowledge of Baj.
4. It is only when these concepts are strong that the learner can take her next steps confidently.

### Second Semester

#### MUS 104 Literature of Indian Classical Music - II (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

1. To introduce the students with complex Tall's and a step higher from the basic level.
2. To give the students merits and demerits of the Tabla players.
3. To prepare students to stage performance and boost confidence.
4. To take the student a step ahead and introduces different laya and some basic embellishments of the taals studied before.
5. To prepare students to stage performance and boost confidence.
6. To invoice of the knowledge of Pt.Vishnu Digambar Paluskar notation system.

### **MUS 106L Performance of Indian Classical Music - II (Tabla)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	8	4

**Learning Outcomes:** After completion of this course, the students will be able to

1. The students is Advance bols that are played on tabla.
2. The students should be able to show these taals with the hands through claps, showing the taali and khaali.
3. The students play theka of taals learnt in the previous course in single as well as double tempo.
4. Students will be ready to play Teental, Rupak, jhaptal, Ektal, Rupak, Tilwara.

## **Third Semester**

### **MUS 203 Literature of Indian Classical Music - III (Tabla)**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes :** After completion of this course, the students will be able to:

1. Delivering the extended understanding to the students about evolution and principles of different aspects study of Indian taal system.
2. To developed the students his mastered the skill of creativity elaborating on a taal learnt, for booth solo performances and as accompaniment.
3. The students able to play a given laya through the presentation.

### **MUS 205L Performance of Indian Classical Music - III (Tabla)**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	8	4

**Learning Outcomes:** After completion of this course, the students will be able to:

1. knowledge of solo performance and accompaniment.
2. Play complex kayada in prescribe taal.
3. The student plays competent enough to elaborate Teen Tal and prescribe taal.
4. The students ability to play jaati style.
5. The students ability to play jaati style.

## **Fourth Semester**

### **MUS 204 Literature of Indian Classical Music - IV (Tabla)**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to

1. To recognize, what is gharana.
2. The objective of practical is to convey the one step advance understanding of recitation and presentation of a raga and taal.
3. Practical knowledge of handling and tuning the instruments.
4. To give the student detail and comparative study of the development of tabla.

## **MUS 206L Performance of Indian Classical Music - IV (Tabla)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

1. Develop appreciation for the art form.
2. Knowledge of tuning your own instrument.
3. The student should be able to play kaaydas, and rela in Teental and Rupak tal solo for fifteen minutes with the accompaniment of the levara.
4. The students also being able to read and play bols written on paper is an important skill that has to be mastered her.

## **Fifth Semester**

### **MUS 305L Performance of Indian Classical Music - V (Tabla)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to

1. The students able to play various thekas at both ati vilambit as well as drut laya.
2. The students should have the expertise of playing both common taals such as Teental, Jhaptal, Ektal, Rupak.
3. The students also be able to show with the hands the same kayada of a gharana in different taals.
4. The students able to make a comparative study of the styles of playing of different gharanas.
5. The students will be taught some kayadas that begin with the left hand.

## Sixth Semester

### MUS 306L Performance of Indian Classical Music - VI (Tabla)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

1. To enable the students understanding and grip over Layakari.
2. To maximize the potential of students in terms of creativity, and command over every Taal.
3. To enhance the knowledge of students Gat and his three patterns.
4. To give them knowledge of tune your own instrument.
5. Knowledge of prescribed Taal in the syllabus.

## Discipline Electives

### MUS 309L Performance of Indian Classical Music (Vocal)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### MUS 307L Performance of Indian Classical Music (Harmonium)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### MUS 303L Basic Technical Skills for Audio Production

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>



## Management

### First Semester

#### COM 104 Financial Accounting

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Have knowledge of book-keeping and financial accounting
- Maintain the basic books of accounts and prepare various statements.
- Process and prepare final accounts i.e. trading, profit and loss accounts and balance sheet.

#### MGMT 102 Foundation of Management

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership
- Understand various theories and management principles.

### Second Semester

#### COM 101 Business Environment

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Interpret the impact of Micro & Macro environment on Business Decision
- Learn about factors affecting social orientation of Business
- Understand the basic concepts related with Indian economy, Industrial Policy, 1991 and Union Budget.
- Learn about Company registration process.
- Understand process of winding up of a company.

### **MGMT 104 Group Behaviour**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand group dynamics and basics of teamwork.
- Understand organizational culture and change management within the organizations.
- Understand stress and reasons behind stress within organization.

## **Third Semester**

### **MGMT 103 Foundation of Marketing Management**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand various issues and activities involved in marketing management and they stimulate their thinking in this direction specially those who wants to pursue their carrier in this field.

- Understand different concepts, strategies and issues they are involved in exchange of products and services between the firm and the markets.
- Understand distribution process and factors affecting the choice of distribution channels
- Understand promotion mix and various components of promotion mix

### **MGMT 205 Foundation of Human Resource Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Effectively manage and plan key human resource functions within organizations
- Proficiency in fundamental HR policies and practices that help to promote the organization's strategic goals
- Understand Human Resource Development.

## **Fourth Semester**

### **COM 211 Principles and Practices of Banking**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- To understand the banking operations.
- To advice and guide in basic banking operation.

### **MGMT 202 Basics of Financial Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Aware about capital structure and theories of capital structure.
- Understand the cost of capital in wide aspects.
- Understand working capital management

## **Fifth Semester**

### **MGMT 203 Bhartiya Prabandhan**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand ancient Indian spiritual teachings and their relevance in present day life.
- Have a value oriented approach in their everyday life.

## **Sixth Semester**

### **MGMT 309 Organizational Studies**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

1. The students will able to develop the concept on organizational studies and need of CSR and strengthen the knowledge about the growth of Indian companies.
2. Make the role clarity of consumer and brands in building trust for each other and the strategies implemented to gain consumer loyalty.
3. Equip students with multiple perspectives on leadership and organization.
4. Students will be aware about the CSR approaches adopted by the individuals.

5. Students will understand the role and importance of building social institutions and the critical role they play in the society.

## **Discipline Electives**

### **COM 312 Personal Finance**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand the requirements of Personal Financial Plan can develop and implement a budget.
- Use retirement planning calculators and other financial calculators.
- Understand Proactive and reactive ways to deal with Investment frauds and low quality financial services.

### **MGMT 308 Operations Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes :** After completion of this course, the students will be able to:

- Understand the important functions of the Production and operations management.
- Deals with the decision making in planning for Location, process,
- Plan layout, scheduling and sequencing of facility.
- Control the inventory, and manufacturing process, in both manufacturing and service organization

### **MGMT 208 Retail Environment in Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand supply chain management, merchandising, buying, retail pricing, store management, store layout & design.
- Learn how small and large retail organizations are structured, gain an understanding of basic retail operations, acquire knowledge of the various types of retailers.

### **COM 210 Emerging Banking Services**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about banking scenario in India as well as globally.
- Know about various banking products including third party products.
- Know about the recent financial reforms for NPA management.

### **LAW 209 Intellectual Property Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the laws related to Intellectual Property Rights
- Use the principles of various IP laws.
- To assess the ways in which legislation and global policy influence the socio-economic environment in India and abroad.

### **MGMT 305 E-Business**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Compare and evaluate both offline and on-line modes of shopping.

- Know about Marketing & Branding in digital age, e-banking-CRM, e- SCM and ERP
- Understand about upcoming areas like digital marketing, e-commerce logistics, e-supply chain management as their career option.

## **Mathematics**

### **First Semester**

#### **MATH 106 Introduction to Calculus**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On completion of the course, the student will be able to,

- Apply the concept and principles of differential and integral calculus to solve geometric and physical problems.
- Evaluate various limit problems both algebraically and graphically
- Differentiate and integrate the functions which are applicable in real life situations.
- Interpret the geometric meaning of differential and integral calculus
- Apply differentiation to find linear approximation, extrema, monotonicity, and concavity of functions.

#### **STAT 104 Introduction to Probability and Statistics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** On completion of the course, the student will be able to:

- Compute numerical quantities that measure the central tendency and dispersion of a set of data.
- Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
- Apply general properties of the expectation and variance operators.

- Understand the properties and fitting of the Normal, Binomial and Poisson distribution.
- Fit the straight line, second degree parabola and curves of type:  $ab^x$  and  $ax^b$
- Understand the concept of Correlation (Karl Pearson) and Linear Regression.

## Second Semester

### MATH 101 Analytical Solid Geometry

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the basic applications of analytic and solid geometry.
- Understand geometrical terminology for planes, tetrahedron, spheres, paraboloids, hyperboloids and ellipsoids.
- Visualize and represent geometric figures and classify different geometric solids.

### MATH 104 Differential Equations

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** On completion of this course, the student will be able to:

- Identify the type of a given differential equation and select and apply the appropriate analytical technique for finding the solution.
- Student will be able to solve first order differential equations utilizing the standard techniques for separable, exact, linear, homogeneous, or Bernoulli cases.
- Create and analyze mathematical models using first order differential equations to solve application problems.
- Determine solutions to the linear and nonlinear ordinary differential equations of first and second order.

- Determine the complete solution of a differential equation with constant coefficients by variation of parameters
- Evaluate the Laplace and Inverse Laplace transform of functions of one variable

### Third Semester

#### MATH 201 Abstract Algebra

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- To demonstrate the mathematical maturity of understanding the proof.
- To understand the definition of a group and be able to test a set with binary operation to determine if it is a group.
- To find the order of elements of groups.
- To identify subgroups of a given group, cycle groups, normal groups.
- To understand permutation groups and be able to decompose permutations into 2-cycles.
- To grasp the significance of the concepts of homomorphism, isomorphism, and automorphism and be able to check a given function is one of these.
- To classify groups up to isomorphism.
- To identify a set with to binary operation forms a ring or not.
- To really understand the special types of rings and be able to construct new examples from the old ones.
- To check a subset of a ring is an ideal or not and be able to identify proper and maximal ideal.

#### MATH 206 Real Analysis

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Think about basic proof techniques and fundamental definitions related to the real number system.
- Understand the concept of real-valued functions, limit, continuity, and differentiability.
- Find expansions of real functions in series forms.
- Demonstrate some of the fundamental theorems of analysis.
- Develop the capacity to solve real integral while understanding of integrable functions.

## Fourth Semester

### MATH 202 Introduction to Linear Algebra

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand vector spaces over a field and subspaces and apply their properties.
- Understand linear independence and dependence.
- Find basis and dimension of a vector space, and understand change of basis.
- Compute linear transformations, kernel and range, and inverse linear transformations, and find matrices of general linear transformations.
- Find eigenvalues and eigenvectors of a matrix and of linear transformation.
- Understand inner product on a vector space.
- Understand the concept of orthogonality in inner product spaces.
- Create orthogonal and orthonormal bases: Gram-Schmidt process.

### MATH 301 Complex Analysis

**Max. Marks: 100**

**(CA: 40+ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Demonstrate understanding of the basic concepts and fundamental definitions underlying complex analysis.
- Investigate complex functions, concept of limit, continuity and differentiability of complex functions.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.
- Prove and explain concepts of series and integration complex functions.
- Understand problem-solving using complex analysis techniques.
- Enjoy the roll of complex functions today's mathematics and applied contexts.

## Fifth Semester

### Core Paper

#### MATH 302 Introduction to Discrete Mathematics

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Write an argument using logical notation and determine if the argument is or is not valid.
- Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
- Understand the basic principles of sets and operations in sets.
- Prove basic set equalities.
- Apply counting principles to determine probabilities.
- Demonstrate an understanding of relations and functions and be able to determine their properties.
- Determine when a function is 1-1 and "onto".
- Demonstrate different traversal methods for trees and graphs.
- Model problems in Computer Science using graphs and trees.

## Sixth Semester

### Core Paper

#### MATH 303 Introduction to Numerical Analysis

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Solve the nonlinear equations, system of linear equations and interpolation problems using numerical methods.
- Examine the appropriate numerical differentiation and integration methods to solve problems.
- Apply the numerical methods to solve differential equations.

### Discipline Electives

#### MATH 203 Introduction to Mechanics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the geometry of the motion of particle in plane curve, i.e. position, velocity, and acceleration, and how those quantities are related through calculus.
- Learn Newton's laws of motion and examines their application to a wide variety of problems.
- Learn the basic concept of composition and resolution of forces and friction.
- Understand and visualize the real physical problem in terms of Mathematics.

- Learn one-dimensional (SHM), multi-dimensional (Projectile motion), and constrained motion, motion of particle with or without connecting with string.

### **MATH 304 Linear Programing and Its Applications**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Formulate the LPP.
- Conceptualize the feasible region.
- Solve the LPP with two variables using graphical method.
- Solve the LPP using simplex method.
- Formulate the dual problem from primal.
- Solve Transportation and Assignment problems
- Solve the problems of competitive situations between two competitors.

### **MATH 312 Vector Calculus**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** On completion of this course, students will be able to,

- Manipulate vectors to perform geometrical calculations in three dimensions.
- Use Green's theorem and the Divergence theorem to compute integrals. Explain how Green's Theorem is a generalization of the Fundamental Theorem of Calculus.
- Communicate Calculus and other mathematical ideas effectively in speech and in writing.
- Recognize when it is appropriate to use a scalar and when to use a vector in problem solving.

## MATH 310 Number Theory

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the concept of divisibility and able to find greatest common divisor of large integers using Euclidean algorithm.
- Appreciate the importance of prime numbers and their distribution.
- Solve linear congruences and system of linear congruences.
- Know Euler's theorem, Fermat's theorem and Wilson's theorem.
- Demonstrate the applications of number theory in cryptography.

## n'kZu 'kkL=k

### izFke lel=k

PHIL 101 Hkkj rh; n' kL & I

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

## PHIL 103 fo'o ds /keZ & I

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

## f}rh; lel=k

PHIL 102 Hkkjrh; n'kZu & II

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

## PHIL 104 fo' o ds /kel & II

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**r`rh; lel=k****PHIL 201 uhfr'kkL=k & I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**PHIL 203 ik'pkR; n'kZu & I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**prqFkZ lel=k****PHIL 202 uhfr'kkL=k & II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**PHIL 204 ik'pkR; n'kZu & II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**iape lel=k****PHIL 301 ledkyhu Hkkjrh; n'kZu & I**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**PHIL 302 lka[;&;ksx & I**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

## "k"Be lel=k

### PHIL 303 lka[;&;ksx & II

<b>Max. Marks : 60</b>	<b>L T P C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4 0 0 4</b>

### PHIL 304 rdZ'kkL=k

<b>Max. Marks : 60</b>	<b>L T P C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4 0 0 4</b>

## Physical Education

### First Semester

#### PHED 101 Introduction and History of Physical Education

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Student will have an understanding of genesis and history of sports and physical education and its development through the years.
- Understanding of olympic philosophy and its importance.

#### PHED 101L Games and Sports Skills-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop motor skills necessary to participate successfully in a variety of physical activities.
- Fundamentals of various games, its rules and regulation.

## Second Semester

### PHED 102 Foundation of Physical Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the nature and scope of physical education and the role of sport in today's world.
- Knowledge and understanding of biological, physiological, psychological and sociological foundations in physical education.

### PHED 102L Games and Sports Skills-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Knowledge of basic skills like running, jumping, throwing, kicking, pulling etc.
- Students will learn basics of swimming, horse riding along with knowledge of Indian sports like kho-kho and kabaddi

## Third Semester

### PHED 201 Anatomy, Physiology and Exercise Physiology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- An understanding of human body and its organs.
- Understand the effects of exercise on various systems of the body.

### PHED 201L Games and Sports Skills - III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:**

- Knowledge of basic gymnastic movements
- Advance knowledge in a game of specialization.

### Fourth Semester

#### PHED 202 Health Education and First-Aid

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

- Apply the knowledge of health education and hygiene towards the welfare of society.
- Manage causality with minor injuries like sprain, strain, bleeding, inflammation etc.

#### PHED 202L Games and Sports Skills - IV

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Students are able to perform advance skills of swimming and horse riding.
- Student is able to play one racquet game.

### Fifth Semester

#### PHED 301L Games and Sports Skills - V

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:**

- Mastering in one specialized game.
- Basic understanding of all secondary /minor games.

## **Sixth Semester**

### **PHED 302L Games and Sports Skills - VI**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- An understanding of heptathlon in athletics.
- An understanding of yogasasna for fitness.

## **Discipline Electives**

### **PHED 301 Scientific Principles of Sports Training**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Apply Scientific methods of sports training for preparation of sportsman for competitions.
- Realize and apply methods of technique and tactical training.
- Understand of psychological preparation for competition.

### **PHED 302 Introduction to Yoga**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

**Students will be able to:**

- Understand of Yoga philosophy.
- Understand of Yoga Asana and Pranayam.

- Understand and apply Shatkarma for internal cleansing of the body.

### **PHED 303 Adapted Physical Education**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand and adapted physical education for disabled.
- Understand adapted sports activities and encourage participation
- Understand nature of disabilities its causes and prescribe programme accordingly.

### **PHED 304 Corrective Physical Education and Rehabilitation**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

**Student will able to:**

- Understand causes of sports injuries and its rehabilitation
- Understand & apply therapeutic exercises
- Demonstrate and take preventive and curative measures in sports injuries.

### **PHED 305 Methods in Physical Education**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand various teaching methods in physical education.
- Conceive plans to organize tournaments.

- Develop command over play field markings.

## POLITICAL SCIENCE

### First Semester

#### POL 102 Foundations of Political Science

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Comprehend the ideas and concept of Political Theory in depth .
- Identify the significance and relevance of political theory in present scenario.
- Analyze and discuss political ideas critically.
- Understand their rights and duties.
- Understand the qualities of good citizenship and this will develop them as good citizens of India.

#### POL 103 Indian Political Thinkers

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the social, political and economic ideas of Indian political thinkers.
- Compare the ideas of key political thinkers in India.
- Analyze the political thought from ancient to modern era.

### Second Semester

## **POL 105 National Movement and Constitutional Development of India**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the National Movement and Constitutional Development in India.
- Analyze the National Movement from various perspectives.
- Aware about women's participation in National Movement.

## **POL 108 Principles of Political Science**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of the course, the students will be able to:

- Comprehend the ideas and concept of political theory in depth.
- Develop their knowledge about the various forms of government
- Compare governments of various countries.
- Critically analyze and discuss political System.
- Understand the qualities of democracy and conditions of successful working of democracy. This will help them to develop as a good citizen.

## **Third Semester**

### **POL 201 Indian Political System - I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the Salient features of Indian Constitution
- Aware about Rights and Duties of the citizens
- Analyze working of central Government of India.

### **POL 205 Major Governments of the World**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the political system and process of the major countries of the world.
- Identify and distinguish the functions of various political systems.
- Analyze the outputs of political systems.

## **Fourth Semester**

### **POL 202 Indian Political System – II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the basic structure of federal system
- Know about electoral process in India .
- Critically Analyze the Indian Democracy.

### **POL 204 Major Governments of South Asia**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the working of political systems of major countries of south Asia.

- Aware about issues and challenges before the political systems in south Asia.
- Analyze the working of political systems in south Asia.

## **Fifth Semester**

### **POL 304 Western Political Thinkers**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the diverse intellectual political traditions in the west.
- Aware about conceptual debate of fundamental political ideas in the west.
- Critically analyze the political philosophy of western political thinkers.

## **Sixth Semester**

### **POL 303 Major Political Ideologies**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the major political ideologies, basic principles and relevance.
- Compare the diverse perspectives of political ideologies.
- Analyze the major political ideologies.

## **Discipline Electives**

### **POL 302 International Relations since 1945**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Analyze and explain contemporary international phenomena, including identifying and assessing the International Scenario.
- Identify important historical changes in International Relations.
- Recognize key aspects of International Organizations and processes.

### **POL 305 Decentralized Democracy in India**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Comprehend the origin and development of the Indian local self-government.
- Understand the Indian system of democratic decentralization, which included rural and urban bodies.
- Analyze the working of local self-government in India.

### **POL 301 India's Foreign Policy**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the foreign Policy its determinants and relevance.
- Critically analyze the India's bilateral relations with major powers and its neighbor countries.
- Explore the various issues and challenges of international politics

### **POL 306 Research Methodology in Political Science**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After completion of the course students will be able to:

- Understand the basics of political science research and develop aptitude for political science research.

- Identify various sources of primary and secondary data.
- Use and apply various methods and techniques of research.

## **Psychology**

### **First Semester**

#### **PSY 101 Introduction to Psychological Processes**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Describe the scope and applications of psychology.
- Evaluate the basic psychological theories, approaches, principles, and concepts of general psychology.
- Apply psychological theories and principles to their own lives and experiences.
- Discuss and Integrate different perspectives to explain human behavior in everyday life.

#### **PSY 101L Introduction to Psychological Processes Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Articulate ethical views of research.
- Describe the process and steps of psychological testing.
- Demonstrate the use of various psychological tests in terms of memory and learning.
- Critically assess the relevance of psychological tests in demonstrating different phenomenas.

### **Second Semester**

#### **PSY 102 Social Psychology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the major theories, concepts, empirical findings, methods and techniques used in social psychology.
- Evaluate major theories, concepts, perspectives, and empirical findings in social psychology to explain human behavior.
- Explain group dynamics and attitude formation in term of human behavior.
- Discuss how individual differences influence beliefs, values, and interactions with others.

### **PSY 102L Social Psychology Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop recognizing of social psychology of group life and the cognitive, attitudinal and behavioural consequences of social psychology of group life including interdependence and categorization.
- Demonstrate how social identity and self-categorization process affect the pattern and progression of group life.
- Explain empirically attitude measurement and also formation of socio-metric matrix and sociogram to issues of social psychology.
- Manifest the assessment of leadership and examine the interactive influence of different leadership styles and group productivity norms.

## **Third Semester**

### **PSY 205 Statistics and Research Methodology in Psychology**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the role of basic statistics technique in analysis of the data.
- Discuss the signification of hypothesis testing in psychological research.
- Explain the process of representing psychological data and its issues.
- Evaluate ethical issues associated to research process.

## **PSY 205L Statistics and Research Methodology in Psychology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Explain the concepts and uses of various statistical techniques.
- Discuss and demonstrate the utility of various psychological tests in terms of personality and intelligence.
- Relate and restate theoretical concepts to a real-world problem in a written report in terms of a statistical model or algorithm.
- Make appropriate use of statistical software to communicate the analysis accurately and effectively.

## **Fourth Semester**

### **PSY 201 Developmental Psychology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Distinguish between major theoretical perspectives in developmental psychology.
- Explain the respective contributions of “nature” and “nurture” to human development.

- Identify the major issues and developmental task of human development.
- Demonstrate knowledge of research method and finding related to development throughout the life span.

### **PSY 201L Developmental Psychology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Demonstrate determining of major developmental milestones in human cognitive, perceptual, social emotional and language development.
- Exhibit a scientific attitude in critically thinking about, and learning about, behavior creativity and programmatic problem solving.
- Collaborate effectively, demonstrating an ability to work with groups and to complete case study projects with reasonable time frames in an ethical manner.
- Write effectively the reports including short summary, paper, report sections, proposals for various purposes.

## **Semester V/Semester VI**

### **Discipline Electives**

#### **PSY 304 Abnormal Psychology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Discuss the recent conceptualization of abnormality and psychological disorders as per DSM –V approach.
- Explain recent developments in the area of diagnostic and treatment approaches.

- Explain the relevance of DSM-V approach in dealing with psychological and neurological disorders.
- Discuss research design and its types.

### **PSY 304L Abnormal Psychology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Assess various types of psychopathology through various tests objectively.
- Demonstrate various personality and self- inventories.
- Analyze information and ideas from multiple sources regarding personality.
- Explain neurosis by applying various psychological tests.

### **PSY 305 Experimental Psychology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Demonstrate knowledge of experimental psychology in understanding psychological process empirically.
- Implicate the principles of psychophysics in sensation and perception theoretically.
- Formulate scientific knowledge as out memory learning and other psychological process.
- Apply the fundamental concepts of empirical researches.

### **PSY 305L Experimental Psychology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

After completion of the course the students will be able to:

- Analyze the major theoretical perspectives in the primary substantive sub-disciplines of experimental psychology.
- Demonstrate proficiency in writing experimental summaries and findings.
- Understand how psychologists study human behavior and mind.
- Develop the understanding of research procedure and systematic steps in conducting experiments.

### **PSY 302 Physiological Psychology**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After completion of the course the students will be able to:

- Explain physiological mechanism of the brain and nervous system.
- Analyze the different methods of genetic, pharmacological and physiological studies.
- Describe the nerve impulse and biological basis of behavior.
- Explain the neural and physiological mechanism of sleep and waking, hunger and thirst.

### **PSY 302L Physiological Psychology Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After completion of this course, the students will be able to:

- Analyze and synthesize practical information regarding physiological process.
- Explain the mechanism of neuro imaging devices.
- Demonstrate report writing activity through different approaches in terms of primary and secondary data.
- Demonstrate Ravens Standard, Advanced and Coloured Progressive Matrices.

## **PSY 306 Introduction to Clinical Psychology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Identify how psychologists study human behavior and how this knowledge can be used to explain, predict, and influence behavior.
- Identify and critically evaluate psychological research methods.
- Explain various methods for collecting information from the client.
- Perform personality assessment by using various methods and approaches.

## **PSY 306L Introduction to Clinical Psychology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop skills in the administration and interpretation of various projective tests.
- Discuss ethical issues in the administration of various tests.
- Identify and handle problems in data collection and dealing with the clients.

## **Public Administration**

### **First Semester**

#### **PUB 101 Indian Administration- I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about the history of Administration in India and British rule influence in Indian administration.

- To develop a clear understanding of Indian Administration system and processes.
- To comprehend about the functions of these institutions.

### **PUB 103 Principles of Public Administration - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Understand the foundation of subject in proper fashion.
- Comprehend the concept and application of good governance.
- Develop interdisciplinary insight about the subject.

## **Second Semester**

### **PUB 102 Indian Administration-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Gain the knowledge of typical process of budget formulation, its approval and execution.
- Familiarized with CAG, Parliamentary Committees and administrative reforms in India.
- Informed with Personnel administration and their problems like administrative corruption in India.

### **PUB 104 Principles of Public Administration-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop deeper understanding of principles of organization will be developed.
- Develop skills regarding communication and leadership styles.
- Understand the various processes of recruitment, training and promotion under Administration.

### Third Semester

#### PUB 201 Administrative Institutions in India- I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop an understanding of constitutional and extra constitutional bodies will be developed.
- Enhances the vision about Indian Administration.
- Learn about the functions of political parties and pressure groups and their interactions with each other.
- Develop understanding about administrative institutions will be developed.

#### PUB 204 State Administration in India with Special Reference to Rajasthan-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Comprehend the administrative setup of state administration.
- Describe the constitutional status of center-state administration.
- Do the analysis of the changing scenario of various departments and institutions.

### Fourth Semester

#### PUB 202 Administrative Institutions in India- II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop an understanding of constitutional and extra constitutional bodies will be developed.
- Enhancement of the vision about Indian Administration will be perceived.
- Learn the functions and organization of Finance, Election Commission, Railway Board, and Simple Social Welfare Board.

### **PUB 205 State Administration in India with Special Reference to Rajasthan-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Learn about the institutional framework of personnel administration
- Develop an overall understanding about revenue administration will be developed.
- Learn about the administrative initiatives, problems and reforms in state administration.

## **Fifth Semester**

### **PUB 303 Comparative Administrative Systems**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about the administrative system of various countries like UK, USA and France.
- Learn about the Role of civil services in the administrative system of these countries.

- Develop knowledge about various controlling authorities in USA, France, and Sweden will be gained.
- Do a comparative study of administrative systems of these countries.

## **Sixth Semester**

### **PUB 301 Administrative Thinkers**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Learn about the contribution of eminent scholars like Henri Fayol, F W Taylor, Weber, Mayo, Bernard, Simon, Maslow, Frederick Herzberg, Likert and Riggs.
- To understand the theory of development properly.
- Conceived the knowledge of Motivational theories and leadership styles.

## **Discipline Electives**

### **PUB 305 Rural Local Self Government**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Develop knowledge of Rural Local self-government.
- Understand role of the agencies involved with PRIs with better perspectives.
- To distinguished Policies and programmes for the rural people and areas effectively.

### **PUB 308 Labour Welfare Administration**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know about Labour Welfare Administration in India.
  - Understand international labour organization, labour policy and legislation in India.
  - Familiarize with worker's education and training.
- Aware about various labour laws.

### **PUB 306 Urban Local Self Government**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Perceived knowledge of Urban Local Self Government.
- Analyze the structures and functions of agencies involved directly and indirectly in administration.
- Comprehended elections process of local bodies, Role of Local elections and nominated executives.

### **PUB 307 Governance : Issues and Challenges**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**Learning Outcomes:** After completion of this course, the students will be able to:

- Know the concept of state, governance and state's role in Globalized era.
- Understand the governance and development.
- Aware about the Environmental governance, Local Governance and good governance initiatives in India.

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**SANS 102 vkkpd ulv; , oa) kj.k**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

**fixZ% iB; dæ dsl Qyrliuŵ v/; ; u dsi'pr~fo| HZfulufyf|kr ea  
leHgzA**

- **Qkdj.kkkl sHk& ljpukdsl e>uA**
- **'Dlplj.l iBu o vHkck l EUh dslly dkfodH djusts  
l H&l Hko'ykk{lerkdkfodH gsl dsla**

**SANS 103 iplu ul/; , oaNu**

Max. Marks : 100  
(CA: 40 + ESA: 60)

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4	0	0	4

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**SANS 101 vHkck] fucUk, oavugA**

Max. Marks : 100  
(CA: 40 + ESA: 60)

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- **jkVh prukdkfodH A**
- **ufrd eŵ ldkfodH A**
- **Qkdj.kdsvüxZ l Kk, oal flkinlj.kdkvoekA**
- **jkë.k, oægHjrdlyu Hjrh l ldfir dkKluA**

**SANS 104 ijk l lef l lgr , oajklj.k**

Max. Marks : 100  
(CA: 40 + ESA: 60)

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leHgzA**

- Klu ds0 loglj d izk dh{lerkdkfodH A
- I Nr 0 kdj.kizk dh; R rkdckfodH A
- I lgr xr f'k olrqdk rgulEd fo'yakk djus dh {lerk dk fodH A

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**SANS 202 vkkpd dl0] 0 kdj.k, oaficUk**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

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- dl0 l tZk dsl Er; Zkk, oallo dktkz dj elyd vff0 dr dh; R rkdckfodHkA
- ERk' l0 , oalRkkdlly dh; R rkdckfodH A

**SANS 204 iiplu dl0 , oavyalj**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**fixZ% iB; 0e dsl Qyrlioz v/; ; u dsi'pr~fo| HZfulufyflr ea l eHZgla**

- dl0 lpr Ho o dYiukl Er; Zl EUl; R rkdckfodH A
- vydljedkigpkula
- eY ldkKla

**prHl el =**

**SANS 201 vkkpd x| l lgr , oa0 kdj.k**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

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- **එහි ජාලයේ දෘඪතාවය වැඩි වීමට හේතු වේ; එහි දෘඪතාවය වැඩි වීමට හේතු වේ.**
- **එහි දෘඪතාවය වැඩි වීමට හේතු වේ; එහි දෘඪතාවය වැඩි වීමට හේතු වේ.**

### SANS 203 **ප්ලාස්ටික් පොලිමරයකට ප්ලාස්ටික් පොලිමරයක් එක් කිරීමේදී**

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

**සූචිකතයේ ස්වර්ණය වැඩි කිරීමේදී ප්ලාස්ටික් පොලිමරයකට ප්ලාස්ටික් පොලිමරයක් එක් කිරීමේදී**

- **එහි ජාලයේ දෘඪතාවය වැඩි වීමට හේතු වේ; එහි දෘඪතාවය වැඩි වීමට හේතු වේ.**
- **එහි දෘඪතාවය වැඩි වීමට හේතු වේ; එහි දෘඪතාවය වැඩි වීමට හේතු වේ.**

**ipe l el =****SANS 303 ofnd l fgr , oafncUk**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo | HZfulufyflr ea  
leHgzka**

- ofnd NuladkKluA
- \_Xofnd l fgr l adkvockkA

**'KB l el =****SANS 304 ofnd l fgr | Hjr h l Nfr , oavudn**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo | HZfulufyflr ea  
leHgzka**

- cka.k vlj.; d , oani fu'ladh Klul fink l selvd fpuru , oa  
Qlogfid izk dh{lerkdkfodH A
- l h-frd ex kdkfodH A

**p; fur v/; ; u iB; Oe leg****SANS 301 'H= l fgr , oa)kj.k Hk&**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo | HZfulufyflr ea  
leHgzka**

- 'H nplj.ko iBu dh; H rkdKfodH A
- jktufd ex la, oalof; l EUhprukdkfodH A
- jpukdkly dKfodH A

## SANS 302 'H= l l g B , oa Q kj. k l k &amp; II

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

fixZ% iB; de dsl QyrliuZ v/; ; u dsi'pr~fo| HZfulufyflr ea  
leH/gkA

- Hkkl jpuK dks le>uk , oa 'Dj nfpj. k iBu o vHkck  
l kUhdlsy dkif'dljA
- Qkj.kdkekl , oay\$lu vff) dr esizkA
- dQ 'H= , oauW; 'H=h rBladkckk , oamudsvuizk dh  
{lerkdkfodH A

## SANS 305 Hjr h n' H dkl k l j ifp;

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

fixZ% iB; de dsl QyrliuZ v/; ; u dsi'pr~fo| HZfulufyflr ea  
leH/gkA

- nkkl d fpuru dhewlv vo/lj. kvkl kUhl e> dkfodH A
- vk; Hkd fpuru esin'kdkfodH A
- rklZ fo'y\$kkdh{lerkesof) A

## SANS 602 i l p h Hjr h l H k ;

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

fixZ% iB; de dsl QyrliuZ v/; ; u dsi'pr~fo| HZfulufyflr ea  
leH/gkA

- l kUlr l Hk l dsl o: i , oamdhxfrfo/k l dkkkA
- l h- frd leB; , oavk; HkdrkdkfodH A

## SANS 307 **vk qh , caoufir foklu**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo | RZfulufyflr ea  
leHgzka**

- **vk qh esufgr vllh Klu l sifp; A**
- **loH; dsifr psukesof) A**
- **o'lpfdR kdhfofo/ki fo/k ldkKluA**

## SANS 306 **ofnd f'kl lgr**

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**fixZ% iB; de dsl Qyrlioz v/; ; u dsi'pr~fo | RZfulufyflr ea  
leHgzka**

- **ofnd ok e; es' d'lpj. kdhdyrkdKfdR A**
- **ofnd f'kl lgr , oand dhni; lsrkdhl e> dkfdR A**

## Sociology

### First Semester

#### SOC 101 Basic Elements of Sociology

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Analyze the discipline of Sociology.
- Discuss the emergence of Sociology.
- Describe the fundamental Concepts of Sociology.

## SOC 104 Structure of Indian Society

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain Indian society and culture in sociological perspective.
- Describe the concepts and features of family, kinship and marriage in India.
- Discuss the changing patterns of basic social institutions and social stratification
- Understand demographic profile of Indian society.

## Second Semester

### SOC 102 Issues Concerning Indian Society

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Analyze the issues concerning national integration .
- Explain Familial and Social issues.
- Describe structural issues.

### SOC 103 Social Statics and Social Dynamics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Discuss the social institutions.
- Explain the concept of static aspect of society.
- Analyse the concept of social and cultural change.

## Third Semester

### SOC 203 Introduction to Rural Sociology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Conceptualise rural Sociology and its relationship with other social sciences.
- Describe rural social structure and social processes.
- Identify the problems occurring in rural social structure.
- Critically evaluate rural development policies and programmes.

### SOC 205 Research Methods in Sociology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Describe the steps of scientific social research.
- Explain different research designs and its importance.
- Construct and apply various tools and techniques of data collection in research.

## Fourth Semester

### SOC 204 Population and society

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain the basic concepts related to population structure and its dynamics.
- Discuss the population theories with their critical perspective.

- Analyze population policies at state and national level for social change and development.

### **SOC 206 Sociology of Change and Development**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Describe concept and theories of social change
- Analyse paradigm shift in development discourse.
- Discuss the process of social change and development in Indian Society.
- Identify conditions and barriers of social change and development.

## **Fifth Semester**

### **SOC 301 Masters of Sociological Thought - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain emergence and development of Sociological thought.
- Describe the contributions of classical sociological thinkers.
- Critically analyse the works of Comte, Spencer and Durkheim.

## **Sixth Semester**

### **SOC 302 Masters of Sociological Thoughts –II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain the intellectual background of classical sociological thinkers i.e. Karl Marx, Max Weber and Pareto
- Describe the contributions of Karl Marx, Max Weber and Pareto.

- Critically analyse the works of Karl Marx, Max Weber and Pareto.

## Discipline Electives

### SOC 303 Social Anthropology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explain meaning and scope of Social Anthropology.
- Explain social institutions, culture and tribe.
- Describe the economic and political organizations in tribal society.

### SOC 305 Sociology of Mass Communication

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Define the concept of Communication and mass communication.
- Analyse the various theories of mass media.
- Discuss the role of mass media.
- Explain the functions and Dysfunctions of mass media.

### SOC 307 Sociology of Gender

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Comprehend the basic ideas of *Gender and Society* in context to the Indian society.
- Explore the different facets of gender and how it assists in shaping the identity of women.

- Learn about the social structures of the Indian society and acquaint with important social institutions.
- Become aware of various issues of women and will be able to examine the differing ways in which gender inequality and discrimination against women persist.

### **SOC 308 Sociology of Social Movements**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Demonstrate awareness of social movements on a state, national, and global level .
- Distinguish between different types of social movements.
- Describe how social movements are organized and institutionalized over time.
- Describe how social movements impact our political and economic systems as well as our global world.

## **Statistics**

### **First Semester**

#### **STAT 106 Probability and Descriptive Statistics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- differentiate between the two definitions of Statistics
- understand and differentiate between population and sample, variables and attributes in any survey
- chose between the type of survey, census or sample, and the method of data collection, primary and secondary methods for a study,
- represent the data using suitable tabular and/or graphical method
- identify and calculate appropriate summary statistics for the data

- understand the concept of various definitions of probability and calculate probability for any given problem.
- define a random variable for a study variable and obtain its properties.

### **STAT 106L Probability and Descriptive Statistics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Express raw data in terms of frequency table by using exclusive and inclusive method of classification for continuous/discrete variable.
- Apply and justify the use of, various graphical representations such as Histogram, Frequency polygon etc.
- Interpret and analyze the data using various averages such as arithmetic Mean, Median and Mode.
- Compare different data sets using methods such as standard deviation, mean deviation, quartile deviation and coefficient of variation.
- Employ and interpret the measures of Skewness and Kurtosis.

### **Second Semester**

#### **STAT 109 Measures of Association and Probability Distributions**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Formulate the mathematical/statistical models for real data sets arising in various fields of the populations.
- Understand how to use probability distributions in real life problems.

- Understand how to check the independence of attributes.

### **STAT 109L Measures of Association and Probability Distributions Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply and use fitting of various curves such as Straight line, parabola, exponential curve etc.
- Effectively distinguish between and compute, correlation and rank correlation, Partial and Multiple correlations.
- Understand and perform the Fitting of Binomial, Poisson and Normal distribution

### **Third Semester**

#### **STAT 209 Sampling Distributions**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the difference between probability distribution and sampling distribution.
- Understand the sampling distribution of the mean of a sample from a Normal Population.
- Understand the properties of the sampling distribution of the sample mean in general situations, using the Central Limit Theorem.
- Understand the concepts of the t, F and  $\chi^2$  distributions.
- Apply t, F and  $\chi^2$  tests on real life data.

#### **STAT 209L Sampling Distributions Lab**

**Max. Marks : 100**

L	T	P	C
_____			

(CA: 40 + ESA: 60) 0 0 4 2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Effectively compute and understand testing of significance and confidence intervals in various contexts such as, for single proportion, difference of two proportions for large sample, for single mean, difference of two means for large sample.
- Proficiently test for goodness of fit, independence of attributes.
- Understand how and when to use testing for equality of two population variances

## Fourth Semster

### STAT 207 Statistical Inference and Quality Control

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **6 0 0 6**

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply various basic parametric, non-parametric and sequential estimation techniques and testing procedures to deal with real life problems.
- Understand confidence interval in normal case, Neyman-Pearson fundamental lemma, UMP test.
- Understand SPRT, OC and ASN function.
- Understand some non-parametric techniques.

### STAT 207L Statistical Inference and Quality Control Lab

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **0 0 4 2**

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand when and how to use various control charts such as  $\bar{X}$ , R, and s charts.
- Effectively understand and determine the AOQ and AOQL plots.

- Understand when and how to use various non - parametric tests such as Sign test, Run test, Median test etc.

## V Semester/VI Semester

### Discipline Electives

#### STAT 302 Sampling Techniques and Design of Experiments

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to;

- Understand the Simple and Stratified random sampling techniques.
- Understand the ratio estimation procedure.
- Apply ANOVA for one-way and two-way classification, fixed effect models with equal number of observations per cell.

#### STAT 302L Sampling Techniques and Design of Experiments Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- The basic principles underlying survey design and estimation.
- How to draw a random sample by using with and with replacement sampling technique in excel.
- Calculate the sampling mean and sampling variance in case of SRSWR and SRSWOR.
- Draw a random sample from stratified and systematic sampling and also to compare the efficiencies of these sampling techniques with respect to each other.

- Analyze the results of a designed experiment in order to conduct the appropriate statistical analysis of the data.
- Compare several means by using the concept of one way and two way ANOVA.
- Compare the three designs named CRD, RBD and LSD in terms of their efficiencies.

### **STAT 301 Applied Statistics**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the concept of time series data and application in various fields.
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Understand the calculation and interpretation of the principal demographic measures, and standardize these measures for comparison and construct and interpret life tables.
- Understand the uses of index number with their construction methods.
- Understand the concept of demand and supply theory.
- Understand the concept of scaling of scores.

### **STAT 301L Applied Statistics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Find the trend and seasonal components in the given dataset and separate these components on excel.
- Calculate and interpret the basic demographic measures and compare the measure for two different populations.
- Construct the life table with the help of some given life table columns.
- Calculate the index numbers for different commodities.

- Scaling the scores, test the reliability of these scores and compute the IQ of any individual.

### **STAT 303 Financial Statistics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand acquisition of financial data
- Describe financial data using distributions
- Find relation between two or more financial series
- Understand the concept of stochastic process
- Apply basic stochastic models in financial data.

### **STAT 303L Financial Statistics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the behavior of financial data through graphs
- Describe the nature of financial data
- Calculate risk through financial data
- Find relationship between financial series
- Model financial data using some simple stochastic models.

### **STAT 304 Health Statistics and Population Dynamics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand different measures related to health statistic,
- Able to calculate morbidity measures,

- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Discuss the demographic significance of age and sex structures and the implications of variations in age & sex structure.
- Construct and interpret life tables.
- Calculation and interpretation of the principal demographic measures, and standardize these measures for comparison.
- Understand the components of population change, including the effects of changing birth, death and migration rates, and demonstrate their influences on age structure.
- Estimate and project the population by different methods.

## **STAT 304L Health Statistics and Population Dynamics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Calculate various measures of morbidity and their accuracy
- Construct population pyramid and identify its features
- Estimate population growth rates and project for future
- Calculate measures of mortality and fertility for a given population
- Calculate simple measures of life table and analyze it.

## **Textile Designing (Weaving)**

### **First Semester**

#### **TXTD 102 Weaving - I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Know the basics of color, its properties and attributes.
- Understand types of yarn and its origin.

- Know theoretical about the loom, parts of Loom, Loom Mechanism and Basic weaves.

### **TXTD 102L Weaving - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### **Learning outcomes:**

Upon completion of the course, the students will be able to:

- Apply the color its properties and attributes in their practical work.
- Work with different types of yarns.
- Work on loom using Basic weaves.

### **TXTD 203 Weaving - II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand yarns and its counting systems.
- Know about Twisting Winding and Warping Methods.
- Acquire Knowledge of Advance fabric constructions.

### **TXTD 203L Weaving - II Lab**

<b>Max.Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Work with types of yarns by using yarn counting system for their work.
- Handle different types of yarns.
- Develop different types of fabrics by using Advance Weaves.

### **TXTD 204 Weaving - III**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Basics of weaving.
- Understand Weaving Mechanism.
- Understand types of Advance weaves.

### **TXTD 204L Weaving - III Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Work with different types of Weaving Mechanisms.
- Construct fabric by using Basic and Advance methods of weaving.

### **Discipline Elective**

### **TXTD 305 Weaving IV**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
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**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Advance Weaving Mechanism.
- Understand Cloth calculations and Advance weaves.
- Understand Method of Cloth Analysis.

### **TXTD 303L Weaving - IV Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Work with Advance Weaving Mechanism.
- Estimate the cost of fabrics.
- Analyze the fabric for reproduction.

### **TXTD 304 Weaving CATD**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Basics of computer, Hardware and Software.
- Understand Computers Color Theory.
- Understand Application of Woven Design by using Software.

### **TXTD 304L Weaving CATD Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply Computer Color Theory in various designs by using Software.
- Develop new Woven designs by using given Software.

## **Textile Designing (Printing)**

### **Second Semester**

#### **TXTD 101 Dyeing and Printing - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand the role of Textile Designing in Textile Industries.
- Understand the Elements and principles of Design, types of Motifs and types of Repeats which helps in drawing.
- Know various fabric finishes.

#### **TXTD 101L Dyeing and Printing - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Develop new concepts for design on the basis of given brief.
- Explore new designs by following Design Elements and Principles.
- Understand and apply different finishes on fabric.

## Third Semester

### TXTD 201 Dyeing and Printing - II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand working of Dyeing Machines.
- Understand Natural Dyes and its properties.
- Understand Printing methods and finishing process.

### TXTD 201L Dyeing and Printing - II Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Know how to work with Dyeing Machines.
- Know how to apply a dye on different fabrics.
- Apply Printing methods on different fabrics.

## Fourth Semester

### TXTD 202 Dyeing and Printing – III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Explore different Printing materials, printing process according to its properties.
- Use various Printing styles for their further work.

### **TXTD 202L Dyeing and Printing -III Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply different Printing materials on fabric by using Printing processes.
- Make screen and apply this method on fabrics.

## **Fifth Semester**

### **Textile Designing (Printing)**

#### **Discipline Elective-I**

### **TXTD 301 Dyeing and Printing - IV**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Natural fibers, Synthetic dyes and dyeing processes.
- Understand Advance Printing Methods and Digital Printing.
- Get Knowledge of Traditional Rajasthani Textiles.

### **TXTD 301L Dyeing and Printing - IV Lab**

<b>Max. Marks :100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Apply Synthetic dyes with dyeing processes.
- Apply Advance Printing Methods on fabrics.
- Work with Traditional Rajasthani Textiles.

## Sixth Semester

### Textile Designing (Printing)

#### Discipline Electives – II

#### TXTD 302 Dying and Printing CATD

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Understand Basics of computer, Hardware and Software.
- Understand Computers Color Theory.
- Understand Application of Print Design by using Software before sampling

#### TXTD 302L Dyeing and Printing CATD Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Handle computer with its different application.
- Apply Computer Color Theory in various designs by using Software.
- Develop new Print designs by using given Software.

### Discipline Elective

**Learning Outcomes:** After the completion of the course, the students will be able to:

- Develop the final concept (soft-copy) based on the chosen design brief.
- Develop a product range/prototype based on the finalized concept.
- Select market and product knowledge to the student related to the interest area.
- Conceptualize the ideas in form of at-least 40 sketches (both hand & on soft wares).

## First Semester

### Education

#### EDU 401 Childhood and Growing Up

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>5 0 0 5</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- clarify development as a continuous process.
- explain childhood development in various aspects.
- describe the adolescent stage in reference to characteristics & problems.
- describe the causes of the problems in adolescent learner and imply the suitable solutions.
- recognize and appreciate adolescent learner's uniqueness and enshape them.
- illustrate the impact of social context upon growing child

## Second Semester

#### EDU 415 Learning and Teaching

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>5 0 0 5</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- differentiate between types of learner while teaching.
- analyze the different factors influencing teaching learning process during class interaction.
- apply different type of methods and media.
- plan according to Phases, level and maxims of teaching.
- manage the classroom as a professional.

## Third Semester

### EDU 503 Contemporary Indian Education

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
5	0	0	5

**Learning Outcomes:**

On successful completion of the course, students will be able to:

- reflect diversity in Indian Society.
- express the constitutional values (Secularism, Socialism, Democracy) as reflected in Education.
- analyze the roles of commissions and policies in Secondary Education.
- deal with inequality and marginalization related issues in India.
- analyze and appraise the policy framework for Public Education in India.

## Fourth Semester

### EDU 413 Knowledge and Curriculum

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
5	0	0	5

**Learning Outcomes:**

On successful completion of the course, students will be able to:

- explain the conceptual basis of knowledge and as a process.
- analyze various approaches of knowledge structuring.
- describe the form of knowledge.
- discuss the epistemological bases of education and implementing the different learner driven pedagogies.
- explain the concept and various kinds of curriculum.
- analyze and synthesize the different phases of curriculum.
- critically analyze the curriculum frame work as a policy decisions.

## **Fifth Semester & Sixth Semester Discipline Elective Courses-I & II**

### **Discipline Electives (Focal Area)**

#### **EDU 414 Language across the Curriculum**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- employ language according to its nature and function to acquaint with language diversity in classroom.
- carry out classroom interaction in reference to first, second and third language,
- appreciate multilingualism and culture in their class
- resolve Communication Problem of school Students.
- appreciate challenges of language across the curriculum(LAC).
- analyze barriers of Listening, Speaking, Reading and Writing ( LSRW) skills

#### **EDU 508 Understanding Discipline and Subjects**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- utilize the nature and importance of Disciplinary Knowledge in class
- differentiate present content of teaching subject in school with its history
- appreciate the paradigm shift in disciplines
- critically appraise the Disciplinary and Interdisciplinary Subjects
- appraise the phenomenon of Interdisciplinary approach to Subjects

## **EDU 504 Gender, School and Society**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- approve and appreciate gender equality .
- elucidate the constitutional and legal provisions related to women.
- disapprove the gender bias in family, workplace and educational institution.
- appreciate the role of education in eradicating gender bias.
- reflect roles and responsibilities of various agencies in promoting gender equalities.

## **EDU 402 Creating an Inclusive School**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- Analyze and explain the diversity in Indian classroom, School and Society.
- Differentiate the concept of Special Education, Integrated Education and Inclusive education.
- Analyze and discuss about National initiatives and provisions for Inclusive Education.
- Use various aids and equipments in Inclusive Classroom.
- Create learning environment of an Inclusive Classroom.
- Discuss the role of supportive services in Inclusive Schools.

## **EDU 405 Educational Guidance and Counseling**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- develop conceptual understanding of guidance and counselling.
- familiarize with the process and procedures being used in guidance & counselling.
- develop competence of providing guidance and counselling to school Students.
- develop conceptual understanding and skills of organizing guidance services at school level.
- develop conceptual understanding of barriers of guidance and counselling.

## **EDU 406 Educational Technology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- explain basic concepts related to Educational Technology.
- match appropriate strategies to Teaching Levels.
- clarify the concept of Communication & its relation to Instruction.
- demonstrate improvement in teaching behavior.
- develop and use Instructional Support Materials.

## **Seventh Semester**

### **EDU 502 Assessment for Learning**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>5 0 0 5</b>

### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- interpret concept of assessment in education, evaluation and its related term.
- differentiate between kinds of evaluation.
- apply appropriate tools of evaluation in field.
- elucidate different forms and characteristics of achievement test.
- organize an effective evaluation program.
- apply ICT skills during evaluation program.
- conduct an action research related to problems at school level.

## **Discipline Elective (Main Pedagogy)-I**

### **EDU 436 Pedagogy of English-I**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcome:**

On successful completion of the course, students will be able to:

- acquire insight of nature & perspective of Teaching English
- frame the objectives of Teaching English
- apply teaching strategies in different context
- appreciate different forms of planning for ELT.
- assess ELT learning materials.

### **EDU 440 Pedagogy of Hindi-I**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcome:**

On successful completion of the course, students will be able to:

- **fgñh ds fof/k : ila, oalBkr fo'nrk vds ifr fo| lBZ/nea ftKR kñlo tkz dj Bkl ñ; Zl sifjpr djkl dala**
- **fgñhBkdsfof/k : ilaesfoñ dj l dala**
- **fo| lBZ/neaBkdkl leñ o l lallñ vBZg.krBkvññDr djus dh{lerknññ dj l dala**



- **ifjffRR kqkj mi; q' fofk la, oaifofk ladk izk dj l hdr x|] i| o Qkdj.kf kkkdlsj] l jy , oavfzvvcukl dala**
- **l hdr x|] i| o Qkdj.kf kkkdsfy, fo| HfZ& nleqk& iB ; k ukfufez dj l dala**
- **l hdr dksvREL k djkusdsfy, f kkrRk f kksj dk Dela dkvk ku , oav klu djudh{lerkfodfl r dj l dala**
- **n'; &JQ l lexh ds l qfpivZ mi; k }jk iMoh f kkk dj l dala**

### EDU 446 Pedagogy of Social Science-I

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- describe the nature of Social Science as a Subject and as a Discipline.
- discuss the relevance of Social Science at School level and daily life.
- formulate Instructional Objectives in behavioral terms in social science teaching.
- plan their teaching on different methods in Social Science at Secondary Stage.

### Discipline Elective (Main Pedagogy)-II

#### EDU 437 Pedagogy of English-II

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

On successful completion of the course, students will be able to:

1. recognize English in School curriculum as L1, L2, L3 so as to teach differentially
2. discern the different language forms and dissemination through language skills
3. utilize media and resources in ELT according to the content
4. appreciate text book of English
5. employ reflective and remedial teaching in class accordingly







## **EDU 420 Pedagogy of Drawing and Painting**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- explain the nature and importance of Drawing & Painting in school education
- discuss the correlation of Drawing & Painting with other school subjects
- formulate instructional objectives in behavioral terms
- design unit plan and lesson plan based on different methods.
- acquaint skill in planning and organize Drawing & Painting labs for Sec. and Sr. Sec. class
- prepare Blue print and question paper

## **EDU 421 Pedagogy of Economics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- interpret concept of Economics.
- correlate Economics with other subjects.
- frame instructional objectives for economics teaching at Senior Secondary Level.
- develop the curriculum of Economics at Senior Secondary Level.
- plan the lesson for teaching Economics using different methods and media.
- construct an achievement test for Senior Secondary Learners.

### EDU 422 Pedagogy of English

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- acquire insight of nature & perspective of Teaching English
- develop the objectives of Teaching English
- apply teaching strategies in ELT
- appreciate different forms of planning for ELT.
- comprehend the role of assessment in ELT.

### EDU 423 Pedagogy of Geography

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- describe the nature of content in Geography subject.
- formulate Instructional objectives and plan for Geography teaching at Senior Secondary Level.
- apply different methods of teaching Geography in classroom.
- select and use appropriate resources and media for Geography teaching.
- use various resources for enrichment of Geography teaching.
- reflect on framing and marking test items of achievement test in Geography.

### EDU 425 Pedagogy of Hindi

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- **fgñh ds fof/k : ila, oaHkkkr fo'krvks ds ifr fo| HZ/nea ftKH kñho tkz dj Hkk l; Zl sifjpr djkl dñA**
- **fgñhHkkdsfof/k: ilaefoñ dj l dñA**
- **fo| HZ/neaHkkdkl leU o l hññ vñZg.krHkvññDr dñs dh{lerknññ dj l dñA**

- **1 nLZ, oaijffHr dsvuLj fgul&f kkk dh mi; Dr , oavfko fo/k lo i fo/k kdkizk dj l dala**
- **fguhf kkkdsn's; kdkQ loglj d y\$lu dj l dala**
- **fo| kLZla ea Hk,h dKyla dk fodR dj l dal ftlds ifj. lelo: i fo| kLZla ea l hffM vHkg.k , oavff) dr {lerk nR lu dj l dala**
- **fofo/k l fgB d fo/lv la ¼ | & i | Qldj.k vlnr ½ dsf kkk m's; la ds;/ lu eaj [ldj mi; Dr ; k uk dk fueZk , oanl dk Ø; Hb; u dj l dala**

### EDU 426 Pedagogy of History

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- discuss the nature of History.
- construct different lesson planning in History teaching.
- apply different methods for teaching History.
- state various appropriate innovative learning resources for teaching History.
- apply alternative assessment tools for teaching learning evaluation in History.

### EDU 427 Pedagogy of Home Science

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- explain the Nature and Relevance of Home Science.
- formulate IOs in Behavioural Terms.
- design appropriate Instructional Process.
- discuss various Teaching Methods and activities.
- prepare plans based on different Teaching Methods.

- describe the Importance and Role of Lab and Other (Aids) ISM in Home Science Teaching.
- preparation of Blue Print and Question Paper.

### **EDU 428 Pedagogy of Mathematics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- discuss the nature of Mathematics.
- critically analyze the Mathematics Text Book.
- reflect on different methods of teaching Mathematics.
- prepare the lesson plan in teaching mathematics.
- reflect on framing and marking test items of achievement test in mathematics.

### **EDU 429 Pedagogy of Music**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- explain the importance and place of Music in the school curriculum.
- discuss the aims & objectives, principles of teaching Music at secondary, senior secondary stages.
- formulate instructional objective for music-learning
- apply different methods of Music teaching.
- design the unit & lesson plan for music teaching.
- appreciate to human and physical resources in Music Teaching.
- prepare the blue print and test paper for written and performance test.

### **EDU 432 Pedagogy of Political Science**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- analyse the importance of teaching Political Science at Higher Secondary level.

- apply the basic concepts of teaching in the subject.
- develop instructional objectives and plan for teaching accordingly.
- apply appropriate methods in teaching the subject.
- select and use relevant teaching aids to make learning meaningful.
- develop competency in organising effective evaluation programme in the subject.

### EDU 433 Pedagogy of Sanskrit

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- **fo| 107Zlaeal hdir dh 100kr fo' 107v lads ifr ft 100 k 100 tkr dj 100&l 10; Zl sijfpr djkl dala**
- **l hdir 100k f 100k ds mms; lads 0 ogjxr iforZ ds: i ea fy [kl dala**
- **100k, oal 100 d nfv lsl hdir dhleir fo/ 100t \$ &x | i | o 0kj.kdkbuds f 100k mms; lads/; lu eaj [dj f 100k dj l dala**
- **ifj 100 100j ni; 100 fo/ 100, oal fo/ 100 lads kizk dj l hdir x | i | o 0kj.kf 100k dsljl | l jy , oav 100v 100cukl dala**
- **l hdir x | i | o 0kj.k f 100k ds fy, fo| 100n 100k i 100 ; k 100f 100Z dj l dala**
- **l hdir dksv 100l k dj kus ds fy, f 100kr 100k f 100k dj dk 100ela dksv k 100 , oav 100 l 100 dj l dala**
- **n'; & 100 l hexh ds l q 100v 100 mi; k } 100k i 100h f 100k dj l dala**

## Discipline Electives (Enhancing Professional Capacity Courses)

### EDU 301L Reading and Reflecting on Texts

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- read and respond to a variety of texts in different ways by learning to think together, depending on the text and the purposes of reading.
- enhance their capacities as readers and writers by becoming participants in the process of reading.
- develop the skill of critical thinking by offering opportunities to read a wide variety of texts,
- write with a sense of purpose and audience, through tasks such as, responding to a text with one's own opinions or writing within the context of other's ideas.

### EDU 459L Aesthetic Appreciation through Art and Drama

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### Learning Outcomes:

On successful completion of the course, students will be able to:

- discuss the concepts of Art and Type of Arts
- apply Fundamentals of Visual Art
- explain Drama, Its Elements and Types of Drama
- apply different type of Arts in teaching.
- create Various Products by Using Art
- perform Various Type of Drama by Organizing the Stage

## EDU 467L Understanding the Self and Yoga

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

### Learning Outcomes:

On successful completion of the course, students will be able to:

- facilitate student to understand the self.
- develop capacity to identify the values for a good teacher.
- facilitate student to perform self reflected activities.
- discuss students with the meaning and importance of yoga.
- develop essential skills to perform various asanas.

## Eighth Semester Reading Electives

### EDU 461R Disaster Management Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

### Learning Outcomes:

On successful completion of the course, students will be able to:

- interpret causes, effects and prevention of natural and man-made disaster.
- clarify the meaning and need of disaster management.
- appreciate the governmental efforts for disaster management.
- discuss the role of educational institutions, Pre-service and In-service teacher education Institute in disaster management.

### EDU 468R Women Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

### Learning Outcomes:

On successful completion of the course, students will be able to:

- critically analyze the status of women in Indian society.
- discuss the problems of women education at different levels.

- analyze and appraise the recommendations of committees, commissions and policies formed for women education.
- analyze the legal provisions for women in India.

### **EDU 466R Peace Education**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

On successful completion of the course, students will be able to:

- Clarify the concept of Peace education
- Assess need for peace education
- Appraise the peace initiatives and movements for peace
- Organize curricular and co-curricular activities for promotion of peace in school

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# BANASTHALI VIDYAPITH

## Bachelor of Arts (Journalism and Mass Communication)



### Curriculum Structure

- First Semester Examination, December, 2019
- Second Semester Examination, April/May, 2020
- Third Semester Examination, December, 2020
- Fourth Semester Examination, April/May, 2021
- Fifth Semester Examination, December, 2021
- Sixth Semester Examination, April/May, 2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## **Programme Educational Objectives**

Journalism and Mass Communication education at Vidyapith is aimed to create women professionals with ethical values to contribute to the society and lead the industry. Media is a massive force that influences our society at each and every level. Journalism and Mass Communication process helps to understand how different elements of communication provide new development in social, political and economic context. The curriculum offers a systematic progression of hands-on production work, conceptual skills and artistic expression required to become an accomplished media practitioners in a social and technological environment. It also includes various on-field activities like real-time news reporting, on-field TV news coverage, industrial training, developing actual advertising campaigns etc.

- To promote journalism and mass communication education as a culture that attracts wider participation and focus to women with a view to empower them towards bridging the prevalent gender disparity.
- To prepare students to recognize and analyze the problems prevailed in society and effectively design media strategies that will provide solution to the problems.
- To emphasize on the development of critical thinking, professional writing skills and effective oral communication.
- To enable the learner to write, deliver and direct media programmes for the benefit of the society.
- To inculcate the values and attitudes that makes them representatives of social change and make competent to cope with ethical dilemmas of Mass Media.
- To acquaint with the latest technology incorporated and used in Mass Media.

## Programme outcomes

After completion of the course, the student will achieve the following:

- **PO1. Domain Knowledge:** Imbibe domain-specific knowledge and develop globally-relevant skills for academic and professional enhancement and understand the history, development, and practice of the print media, electronic media, and the new media.
- **PO2. Problem analysis:** Understand the media critically and recognize how media shape and are shaped by politics, society, culture, economics, and daily lives.
- **PO3. Analyzing Complex problems:** Use domain based knowledge to analyze the real life problems in the profession and society to provide effective solutions using available resources.
- **PO4. Usage of Modern IT tools:** Use MS Office tools, Design softwares like In design, Photoshop, Quark Xpress, Coral Draw, Multimedia Softwares for designing, interpretation of data, audio-video, text, pictures, graphics and simulation tools for smooth functioning in different media industry.
- **PO5. Environment and sustainability:** Understand the impact of the mass communication channels in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **PO6. Ethics:** To recognize the power of persuasion and ethical responsibilities of communicators in communication at all levels.
- **PO7. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO8. Communication:** To understand the role of communication in fostering interaction and interdependence across gender, race, and culture.
- **PO9. Project Management:** Demonstrate knowledge of journalism & mass communication application and management principles to apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **PO10. Life-long learning:** Demonstrate effective writing, speaking and listening skills for communication in personal, public, and media areas.

*First Semester***JMC 102 Introduction to Communication and Mass Communication**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After the completion of the course, Student will be able to :

- Enhance the knowledge of students with regard to fundamentals of communication and its various forms.
- Develop an understanding of the concepts and processes of communication.
- Understand communication better through various theories and models.
- Give learners an exposure to the diverse areas of mass communication.

**JMC 103 Introduction to Journalism and Mass Media**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After the completion of the course, Student will be able to :

- Acquaint themselves with the origin and history of mass media with special reference to India
- Acquire the basic skills to explain the creation of Broadcasting in India

**POL 109 Indian Polity and Constitution**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:**

After the completion of the course, Student will be able to :

- Describe Indian Constitution.
- Explain the characteristics of the Indian Political System.
- Co-relate the theory and practice of Parliamentary System in India.
- Summarize Indian Judicial System.
- Explore major issues in Indian Politics.

### TSKL 102 Language Skills (English)

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

2 0 0 2

#### Learning Outcomes:

After the completion of the course, students will be able to:

- Comprehend the underlying rules and patterns of grammar through forms and functions of grammatical units
- Develop their communicative competence and their critical thinking abilities.
- Explain and apply some of the features of journalistic writings
- Identify and analyze different types of phrases and clauses in terms of structure and function in a sentence

### TSKL 103 Language Skills (Hindi)

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

2 0 0 2

#### विशेष बिंदु

- -नकलबद्धि (कल दस्यु एवमित्) गकल गनुह्यु, कम्प्लि.क एल्लह इल्लोदसकु लस्यु एल्लि द्ज ल दाल
- -वकलप इत्तुयुद गनुह्यु'क द कु एवमित्) गकल
- -इत्तुयुद गनुह्युसकु ल सिल्लि फिद इल्लसुल (लरक<किकुल

- -vklpud le; dsfofllu l lekt d ,ca'ld dh {leheajkxlj ds volj vftZ dj ik,yla
- -tul plj dsele e rHkfoKliu eac; q fgnhfo'k d Klu ds}lk vldpud H'ld n{lrkdkfodll gkka

## CS 101 Computer Applications for Mass Communication

## CS 112L Computer Applications for Mass Communication Lab

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Enhance the knowledge of student's fundamentals of computers its various applications in journalism and mass communications.
- Understand the concepts and processes of communication, Information and Internet Technology.
- understand the theoretical aspects of various software's such as MS Word , Excel, Power Point , coral draw e.tc.
- develop their professional skills which lead to employability.

## Second Semester

### JMC 101 Hindi Evam Bhashai Patrakarita

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

After the completion of the course, Student will be able to :

- **गूँही=दल्लरकदशरुँह दसल्लसेनलत लुदल्लहल**
- **गूँहल=दल्लरकललल्लरुँहल एरुल्लुँह मल्ल एल्लरुँह दल्ल हल्लरक दल्ल तल्लल**
- **गूँहल हल्लरक दल्लदल्ल दल्लसुँह, लुँहल लल्लुँहल ल=लल्लुँहल लल्लरक दल्लदल्ल एगुँह दल्ल ए>लल**
- **गूँही=दल्लरकदल्लरुँह दल्लकुँहल लुदल्लल**

### JMC 104 Media Laws and Ethics

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

After the completion of the course, Student will be able to :

- Critically analyze the legal and regulatory restrictions on expression and their impact on journalism practice.
- Explain and apply the laws of defamation and contempt of court, privacy law, broadcasting law and intellectual property to your practice.
- Compare and contrast the different roles of courts, tribunals and regulatory bodies in relation to journalism.
- Evaluate the role and impact of self-regulation on the media and journalists.

## **POL 101 Contemporary Issues and Current Affairs**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Explore the Contemporary Issues and Current Affairs of the world.
- Identify the major concerns of India.
- Explain the security issues of India.

## **JMC 105 Photo Journalism**

### **JMC 105L Photo Journalism Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Exercise and practice photo journalistic techniques and skills
- Demonstrate a broad knowledge of Digital photography and Image editing.

## **JMC 106 Print Media: Reporting and Writing**

### **JMC 107L Print Media: Reporting and Writing Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Demonstrate their intellectual abilities to analyze the print media through group and discussion work.
- Evaluate current print media practices.
- Learn to work within the given deadline

## Third Semester

### ECO 206 Economic Development and Planning in India

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Understand Economic Growth and Development
- Define measures of economic development.
- Understand the objectives of Five Year Plan.
- Explain the relationship between Environment and Economic Development.

### TSKL 202 Communicative English

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After the completion of the course, Students will be able to:

- Understand and apply different features of discourse
- Develop communicative competence and critical thinking abilities.
- Explain and apply the features of cohesion and coherence in any form of writing.
- Understand the operations of the text and the rhetorical devices
- organize discourse using the relevant strategies effectively

### JMC 208 Creative Writing

#### JMC 202L Creative Writing Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Explore beyond News Writing.
- Conceptualize and develop the skill for Editorial Writing.
- Write the Columns
- Write in different formats

## **JMC 203 Editing and Layout Design**

### **JMC 203L Editing and Layout Design Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Edit a news copy for print media
- Do Proof reading
- Plan, create and use photography, illustration and typography in design layout.
- Produce Lab Journal

## **JMC 207 Radio Journalism and Production**

### **JMC 207L Radio Journalism and Production Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Write and report the news stories for radio news bulletins of 5, 10 and 15 minutes duration.
- Produce and present radio programmes in different formats.
- Record, edit and mix of audio programmes using single track and multi-track audio software.
- Work as professionals in private/community FM radio stations in the country and abroad.

## Fourth Semester

### SOC 202 Indian Society and Culture

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

After the completion of the course, Student will be able to :

- Discuss and explain Indian social structure and contemporary issues.
- Understand thoroughly socio-political system of India
- Evaluate and analyze the socio-economic status of India in the international arena.

### JMC 206 Public Relations and Corporate Communication

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

After the completion of the course, Student will be able to :

- Explain the role of public relations professional in the corporate environment
- Describe the strategies, tactics and techniques of public relations programmes
- Write proposals, press release, notices etc. for specific audiences and purposes

### JMC 201 Advertising and Commercial Communication

#### JMC 201L Advertising and Commercial Communication Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

After the completion of the course, Student will be able to :

- Explore the role and functions of Advertising.
- Conceptualize, Plan and Produce an advertising campaign.
- Explain the importance of Advertising Agencies.
- Recognize the societal impact of advertising and commercial communication and need for ethical practitioners.

### **JMC 209 Film Studies**

#### **JMC 204L Film Studies Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**2 0 0 2**

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Explain how film has changed over time as an aesthetic form, as an industry, and as a social institution.
- Develop general conclusions by synthesizing specific cases and by utilizing film-studies methods.
- Recognize formal elements; they acquire and apply tools (terminology, methods) to carry out rigorous formal analysis of film.

### **JMC 205 New Media Journalism**

#### **JMC 205L New Media Journalism Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Comprehend the significance of New Media Journalism of various New Media
- Explain the genesis of New Media in India
- Describe the evolution and growth of New Media in India
- Evaluate the significance and nature of New Media.

## Fifth Semester

### JMC 304 Communication Research

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Explain Meaning, Objective and Types of Research
- Define the Research Process
- Explain the importance of Primary and Secondary research
- Comprehend the Methods of Research.
- Understand Data Analysis and Report Writing and Measures of Central Tendency

### JMC 305 Community Media

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

Explain Meaning, Objective and Types of Research

- Define the Research Process
- Explain the importance of Primary and Secondary research
- Comprehend the Methods of Research.
- Understand Data Analysis and Report Writing and Measures of Central Tendency

### JMC 319 Media Organization and Management

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Manage Media Organization

- Exercise and practice their leadership qualities
- Understand different structure of media organization

### **JMC 327 TV Journalism and Production**

#### **JMC 327L TV Journalism and Production Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Produce and present TV Programmes of different genres
- Demonstrate production planning, budgeting and management skills.
- Produce and present TV News packages/bulletins in contemporary formats

## **Sixth Semester**

### **JMC 308 Development Communication**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Analyze the development indicators - national and international perspectives
- Critically analyze the selected development initiatives
- Analyze media for development communication
- Design media for development communication

### **JMC 328P UIL Project**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>20</b>	<b>10</b>

To provide the students with exposure to real life working environment as a part of an academic curriculum helps the students to develop and enhance

academic, personal and professional competencies. Through this orientation students will understand the importance of industrial project.

## **Discipline Elective Courses**

### **JMC 301L Advertising Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Identify and discuss a range of creative strategies in advertising
- Discuss the social and ethical problems in advertising.
- Appreciate the ways that communication through advertising influences and persuades consumers.
- Develop an advertising plan for assigned clients.

### **JMC 309L Digital Photo Journalism Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Develop, edit and ensure printing quality images.
- Work on news coverage and complete given task.
- Work effectively in the current photography practices

### **JMC 315L Film Direction Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

- Work as Cameraperson and film editor.

- Work as an independent film maker.
- Manage film production and planning for production houses.

### **JMC 320L Public Relations (Film, Corporate) Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Identify the ethical factors involved in responsible public relations practices.
- Recognize the fundamental functions of community, human relations, crisis management etc.

### **JMC 321L Radio Jockeying/Anchoring Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Work as radio jockey/anchor at any FM radio station in India and abroad.
- Operate and manage any FM radio station in India and abroad.
- Setup new FM radio stations to strengthen the FM radio Industry.

### **JMC 326L TV Journalism Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Produce News graphics and television graphic Presentation.
- Work as an Animator, game Designer and Graphics Editor.

- Edit and develop 2D and 3D Motion Graphics.

### **JMC 302L Animation and Graphics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Understand the multi-disciplinary nature of event management
- Coordinate and manage university programmes/functions/events/conferences

### **JMC 313L Event Management Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Understand the multi-disciplinary nature of event management
- Coordinate and manage university programmes/functions/events/conferences

### **JMC 322L Rural Reporting Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Write and report the news stories covering social/political/economic issues of rural areas.
- Understand the issues of local communities of rural areas.
- Raise the voices of voiceless through their journalistic skills and learning.

### **JMC 325L Travel and Tourism Journalism Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Utilize their journalistic skills to prepare travel reports, travelogue, features etc.
- Explain the diverse nature of tourism, including culture and place, global/local perspectives, and experience design and provision.

### **JMC 331L Web Journalism Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

- Define the elements of various New Media
- Explain the genesis of New Media in India
- Describe the evolution and growth of New Media in India
- Evaluate the significance and nature of New Media.

### **JMC 332L Campus Reporting Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>10</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course, Student will be able to :

Report and write news covering the events activities and functions taking place in the university/college campus

# BANASTHALI VIDYAPITH

## Bachelor of Arts and Bachelor of Laws



### Curriculum Structure

- First Semester Examination, December, 2019
- Second Semester Examination, April/May, 2020
- Third Semester Examination, December, 2020
- Fourth Semester Examination, April/May, 2021
- Fifth Semester Examination, December, 2021
- Sixth Semester Examination, April/May, 2022
- Seventh Semester Examination, December, 2022
- Eighth Semester Examination, April/May, 2023
- Ninth Semester Examination, December, 2023
- Tenth Semester Examination, April/May, 2024

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## **Programme Educational Objective**

The Vidyapith has long history of nurturing women leaders in all walks of life. Of late its IT, Management and Technology graduates have won accolades for themselves and their alma mater. In consonance with the value education imparted at Banasthali Vidyapith, it conceptualized an all women's law school to nurture legal professionals of the highest order.

The B.A. LL.B. programme has been conceptualized with a vision of creating dedicated professionals who are well trained in legal studies. The five year integrated programme designed amidst the five-fold education model of Vidyapith would comprise a unique mix of foundational, vocational and variety of disciplinary courses in field of Law to enable the students of diverse backgrounds to find a new perspective of life and play a leading role in administration of justice and upholding the ideals of the Indian Constitution in the promising time to come.

The main objectives of B.A. LL.B. programme are:

1. To provide holistic development of the students by providing a combination of technology and value based traditional education.
2. To present a wider perspective of law before students by focusing on law subjects along with the subjects like political science, sociology, economics etc.
3. To train women for the legal profession and to provide a centre where scholars might contribute to an understanding of law and participate creatively in its growth and improvement.
4. To demonstrate how the legal rules have developed, the reasons underlying them and to make them understand the nexus between legal and social history.
5. To inculcate the principles underlying the existing legal rules and to point the right road for future development and preparing the students to take up leadership roles especially in judicial services.
6. To acquaint students with the operative legal rules, both substantive and procedural and to equip them with adequate experience to apply these rules.
7. To equip the students with sufficient knowledge of the historical and sociological background of the country's legal system and to provide understanding of other legal systems of the world so that the students do not find themselves at a complete loss when it comes to adopting a comparative approach.
8. To develop ability amongst the students to participate in Moot Courts, Debates & discussions and Seminars with a good level of

confidence and challenge the very premise of legal concepts and their applications.

## Programme Outcomes

- PO1: Knowledge:** The student will be able to understand the fundamentals and implications of various legal rules along with the intricacies involved in legal profession.
- PO2: Planning abilities:** The student will be equipped with different legal abilities after the completion of the course by which they can deal with the different legal issues associated with the society and individuals.
- PO3: Problem Analysis:** They will be able to apply legal principles in real life issues through the analytical skills which will be developed by analysis of case laws and critical understanding of statutory provisions.
- PO4: Modern Tool Usage:** Case analysis, Moot Court exercises, Debates, Alternate Dispute Resolution methods, Internships *etc.* will be used to improve their argumentative and writing skills.
- PO5: Leadership Skills:** Today legal education is getting redefined in terms of information technology, globalisation, environment and start-ups; the focus of this programme is on developing professional leaders among women in consonance with value education imparted at Banasthali Vidyapith with traditional as well as modern approach.
- PO6: Professional Identity:** Legal profession is a noble profession and it is not limited to the technical knowledge of legal rules. The prescribed course will help in nurturing the students in a way so that they can meet the standards of different avenues opening in legal profession.
- PO7: Ethics:** The learner will be imbued with the ethical standards of legal profession & the values nurture at the Vidyapith that are required for practical and impartial behaviour of a law graduate.

- PO8: Communication:** Students will be able to express complex ideas effectively and accurately in every wake of life whether it is professional or social.
- PO9: Local and Global Citizenship:** Students will be able to assess the way in which legislation and government policies are formed and influenced the social, economical and legal order in national as well as global context. They will be able to understand and empathise cultural differences and practices required to work effectively in multi-cultural environment.
- PO10: Environment and sustainability:** Learners will involve in various co-curricular activities like Legal Aid Camps, regular Legal Aid Clinic at departmental as well as institutional level to gain practical exposure that will help them in adapting the socio-economic, legal and political environment.
- PO11: Life Long Learning:** The habit of continuous learning & life-long useful practical skills developed and acquired through the course that will motivate the students for further researches in the field of law, performing different professional roles, ultimately for leading a successful life.

**Detailed Syllabus**  
**First Semester**

**ECO 105 Micro Economics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

Upon completion of the course the student will be able to

- Understand the economics activities.
- The relationship of economics activities with policy framework.
- Take better economical and feasible decisions.

**LAW 103 Law of Contract – I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will be able to understand various general principles related to contract law.
- The students will be able to deal effectively with the various disputes related to contracts.

**LAW 105 Law of Torts**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will be able to understand the fundamental principles of tortious liability.

- The students will understand the difference between the law of torts and other laws.

### **POL 107 Political Theory**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

- Understand in depth knowledge about ideas and concept of political theory.
- Identify the significance and relevance of political theory in present scenario.

Analyze various concepts and theory of political science

### **CS 111 Introduction to Computer Applications**

#### **CS 111L Introduction to Computer Applications Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Understand input and output devices of computers and recognize the basic terminology used in computer programming
- Understand the Microsoft Office package, MS-DOS and Unix Systems
- Understand concept of Database and Networking

## Second Semester

### ECO 103 Macro Economics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to:

- Understand the perspectives of macroeconomics.
- Understand about the financial markets and banking system in India.
- Know about the concept and measurement of money supply and inflation.
- Understand latest trends and impact of monetary, fiscal and globalization policies.
- Know about the concept of international trade as well as significance of various institutions (WTO, IMF, WB, and ADB).

### LAW 102 Law of Consumer Protection and Motor Vehicle Act, 1988

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### Learning Outcomes:

- The students will have a comprehensive understanding about the existing law on consumer protection in India.
- The students will be aware of the basic procedures for handling consumer dispute and issues on motor vehicle.
- The students will be able to appreciate the emerging questions and policy issues in consumer law and motor vehicle law for future research

## **LAW 104 Law of Contract – II (Special Contract)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to analyze the implications of a contractual arrangement falling under any of the discussed head of special contracts.
- The students will be able to determine the legality of the transactions and also the rights and duties of the parties thereto
- The students will be able to purposefully deal with the disputes arising out of such contractual arrangements.

## **LAW 106 Legal English**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The Students will be able to Command the language which is an essential quality of a lawyer.
- The Students will be able to understand writings of eminent jurists.
- The Students will be able to develop skill of articulation and effective writing.

## **POL 106 Political Obligations**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

After completion of the course students will be able to

- Understand the concept and theories of political obligation.
- Aware about political obligation of individual towards state.
- Analyze the political obligation in present scenario.

## Third Semester

### ECO 205 Theories of Development and Indian Economics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to

- Acquainted with comprehensive knowledge of the conditions and limitations of the developing system of India.
- Understand the indicators to measure economic development
- To impart the knowledge of capital formation in India
- Understand different aspects of agricultural sector and industrial sector

### LAW 202 Constitutional Law – I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### Learning Outcomes:

- The student will be able to understand the need for the constitution
- The student will be able to explain the role of the constitution in a democratic society
- The student will be able to list the key features of the constitution
- The student will be able to appreciate the fundamental rights of the citizens of India.

### **LAW 204 Family Law – I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will be able understand the vast discipline of Hindu Law and other Personal Laws.
- The students will be able understand the significance of Hindu Law and other Personal Laws.
- The students will be able get insight into various concepts of Hindu Law and other Personal Laws which will help in shaping their career as Judges, Lawyers, Academicians and Jurists.

### **LAW 206 Law of Crimes – I (IPC)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will get familiar to the principles of criminal law.
- The students will be able to expose the range of mental states that constitutes mens-rea essential for committing crime.
- The students will get acquainted to the latest developments and changes in the field of criminal law.

### **POL 203 International Relations**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

After completion of the course student will be able to:

- Understand the concept of international relations and foreign policies.
- Aware about India's relation with US, Pakistan and china.

- Analyze the international relations and foreign policies.

## **Fourth Semester**

### **LAW 203 Constitutional Law – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### **Learning Outcomes:**

- The student will develop an understanding of Fundamental rights, directive principles and fundamental duties.
- The students will learn the reasonable restriction imposed on various organs so far as the rights are being concerned.
- The students will be able to acquaint the scope and parameters of part III and part IV and part IV A of the Constitution.

### **LAW 205 Family Law – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### **Learning Outcomes:**

- The students will be able to understand the vast discipline of Muslim Law. Understanding the significance of Muslim Law.
- The students will be able to understand the significance of Muslim Law.
- The students will be able to get insight into various concepts of Muslim Law which will help in shaping their career as Judges, Lawyers, Academicians and Jurists.

### **LAW 207 Law of Crimes – II (IPC)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### **Learning Outcomes:**

- The students will get familiarize with the key concepts regarding crime and criminal law.
- The students will be able to learn various offences punishable under IPC.
- The students get acquainted to the latest developments and changes in the field of criminal law.

### **PUB 203 Basics of Public Administration**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

After completion of the course student would be able to

- Understand the foundation of subject in proper fashion.
- Comprehend the concept and application of good governance.
- Develop interdisciplinary insight about the subject.

### **SOC 201 Essentials of Sociology**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

After the completion of the course, the students will be able to

- Trace the development of sociology as a discipline.
- To explain the key concepts in sociology and its relationship with other social science disciplines.
- Write about the role of various institutions such as religion, marriage, family and kinship.
- Describe forms of stratification in society.

## **LAW 210P Internship Report and Viva-Voce**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

- The students will get familiarize with the various stages of trial in civil and criminal cases.
- The students will be exposed to real court experience and client interviewing at advocate chamber.
- The students will be get the exposure to the functioning of Law Firms, NGO and other institution where Law is Practiced.

## **Fifth Semester**

### **LAW 301 Company Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- Demonstrate comprehensive and accurate knowledge, understanding of those areas of company law identified in the indicative syllabus.
- Critically analyse complex problems in relation to regulation of companies, apply the legal principles studied to these problems, evaluate competing arguments or solutions and present well supported conclusions both orally and in writing.
- Form a critical judgment on areas of controversy within the topics studied

### **LAW 303 Forensic Science**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will be able to know the importance of forensic science and medicine in resolving the legal matters, both civil as well as criminal.
- The students will be able to impart knowledge of the relation between law and medicine.
- The students will be able to understand the basic principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence form scene of crime

**LAW 305 Jurisprudence – I****Max. Marks : 100****L T P C****(CA: 40 + ESA: 60)****4 1 0 5****Learning Outcomes:**

After the completion of the course student will be able to:

- Develop their intellectual skills by developing a critical understanding of law.
- Realize the great potential for interaction between legal philosophy and legal practice.
- Formulate what relevant questions to be asked when laws are being discussed or legal reforms are being proposed.
- Analyze the consequences of law and its administration on social welfare and may think about changes for the betterment of the superstructure of laws.

**LAW 307 Labour Law – I****Max. Marks : 100****L T P C****(CA: 40 + ESA: 60)****4 1 0 5****Learning Outcomes:**

- The students will be able to define the provisions of Constitutional Safeguards on Social Security & Labour Welfare.
- The students will be aware about the Trade Unions Act, 1926, Industrial Disputes Act, 1947, Workmen's Compensation Act, 1923, The Employees' Provident Funds and Miscellaneous Provisions Act, 1952 and the Payment of Gratuity Act, 1972, Unorganised Workers' Social Security Act 2008.

### **PUB 302 Central, State and District Administration**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After completion of the course student will be able to:

- Discuss the administrative set-up of Indian Administration.
- Evaluate the working of Indian administration since independence.
- Explore the knowledge about the administrative set-up and functioning of various institutions.
- Explore the knowledge about the administrative set-up and functioning of various institutions.

### **SOC 306 Theoretical Perspective of Sociology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After the completion of the course, the students will be able to

- Identify and explain classical sociological thought.
- Interpret concepts and theory to understand societal problems.
- Develop an understanding towards contemporary relevance of sociology.

## **Sixth Semester**

### **LAW 302- Environmental Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

**Learning Outcomes:**

- The students will be able to evaluate and formulate environmental law and policy.
- The students will be able to understand effectively the working of the Institutions relating to environment.
- The students will be able to develop ability to assess the social and ecological impacts of environmental law and policy.

### **LAW 304 Interpretation of Statutes and Principles of Legislation**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

**Learning Outcomes:**

- The student will be able to Locate, identify and critically analyse relevant statutes, statutory provisions and legislative instruments, as well as pertinent judicial authority;
- The student will be able to interpret the appropriate provisions using the accepted tools and techniques of statutory interpretation;
- The student will be able to apply statutory provisions to fact scenarios and communicate the interpretation, nature and effect of statutory provisions to relevant stakeholders, such as clients and courts.

## **LAW 306 Jurisprudence – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to resolve typical legal conflicts, select and interpret codes and other current legislation.
- The student not only will be able to use this skill in practice but will also be motivated to take up detailed historical studies on his own after the course.
- The logical analysis of legal concepts sharpens the logical technique of the students.
- They will be able to find the difference between enforcement of codes and cases.

## **LAW 308 Labour Law – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to understand the provisions of the Factories Act, 1948.
- The students will be able to know the provisions and procedure about the factory inspection.
- The students will be able to understand the provisions and procedure of the Minimum Wage Act, 1948, Maternity Benefits Act, 1961, Employees' State Insurance Act, 1948.

## **PUB 304 Rural-Urban Development**

<b>Max. Marks : 100</b>	<b>L T P C</b>

(CA: 40 + ESA: 60) 

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 4 0 0 4

**Learning Outcomes:**

After completion of the course student will be able to:

- Evaluate the status of administration in India.
- Examine the working of the local bodies in their areas
- Analyze the condition of agriculture in rural areas.
- Evaluate the working of various institutions and commissions in India

**SOC 304 Society in India**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

After the completion of the course, the students will be able to

- Understand the ethnic and cultural heritage of India.
- Identify the tribal culture and traditions of Indian society.
- Discuss the features of rural and urban society and their continuum.
- Critically analyze social issues in rural,urban and tribal communities in India.

**Seventh Semester**

**LAW 402 Civil Procedure Code – I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- To analyze, outline and assess the structure and purpose of the civil courts system as it presently operates.

- To assess the sources of procedural rules and practices in the Supreme Court. Assessment criteria.
- To analyze and evaluate the steps prior to litigation, the process of preparation for trial and the enforcement of judgments or orders and costs.

### **LAW 404 Criminal Procedure Code– I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be made aware about constitution of Criminal Courts & requisites for institution of criminal proceedings.
- The students will be able to initiate various procedures for seeking justice in criminal cases.

### **LAW 409 Principles of Taxation Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to understand procedure of direct tax assessment.
- The students will get thorough knowledge about the means and techniques of computing the total income and define tax complicacies and structure.
- The students will be imbued with the understanding of amendments made from time to time in Finance Act

### **LAW 508 Professional Ethics and Accountancy for Lawyers**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will demonstrate comprehensive and accurate knowledge and understanding of code of conduct required for Legal Profession.
- The students will be able to exhibit understanding of Lawyers in the whole process of administration of justice.
- The students will study the provisions of Advocates Act, Contempt of Courts Act & Rules of Bar Council

### **LAW 410 Public International Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to get in-depth knowledge of Public International Law.
- The students will be able to pursue careers in government agencies, international organisations, non-governmental organisations and the private law firms which are dealing in global legal issues.
- The students will be able to get theoretical knowledge and handle the complexity of drafting of various instruments which encouraged them to think creatively about the challenges within the Public International law.
- The students will be able to understand a system regulating interstate interactions.

## Eighth Semester

### LAW 401 Administrative Law

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will be able to analyse the advanced principles of administrative law, undertake self-directed legal research at primary level and evaluate complex legal information with a particular emphasis upon legislation.
- The students will be able to apply principles of Administrative law to complex legal problems.
- The students will be able to analyse the impact and operation of administrative law for government accountability
- The students will be made aware about the legal remedies under Administrative law.

### LAW 403 Civil Procedure Code – II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will be able to understand the practical aspects of Civil Procedure.
- The students will be able to research properly and cite Legal authorities, such as cases, statutes and secondary sources.
- The students will be able to understand the remedial procedure under the Civil Procedure.
- The students will get aware with the provisions related to Law of Limitation.

## **LAW 405 Criminal Procedure Code – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be aware with the intricacies of trial proceedings.
- The concept of plea bargaining, double jeopardy etc under criminal justice system will be imbibed in the learner.
- The students will understand remedial measures under criminal justice system.

## **LAW 407 Human Rights Law and Practice**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to think analytically about the implementation and development of international human rights law and to apply this body of law in your own professional and national setting.
- The students will be able to promote an advanced and complex understanding of the theoretical, conceptual and practical challenges facing the fields of human rights law and sustainable development, adopting an interdisciplinary approach.
- The students will be able to analyze complex problems, find and deploy a variety of legal authorities, and communicate effectively in a variety of settings.

## **LAW 408 Intellectual Property Laws**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The learners will be able to use the principles of various IP laws while analyzing a problem related to IPR.
- Proficiency with the ability to engage in competitive exams like Patent Attorney Trade Mark Agent etc will be developed.

### **LAW 501 Alternative Dispute Resolution**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to understand various methods of resolving disputes under ADR system.
- The students will develop understanding of participants' negotiating behavior
- The students will be able to use such processes to advance the interests of clients.

## **Ninth Semester**

### **LAW 504 Information Technology Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be made aware about different aspects of Information Technology Law.
- The students will become acquainted with the ongoing issues under law managing in innovative perspective and the subject will urge them to do work in research field.
- The students will learn different domains managed by information technology law, for example e-contract, digital signature.

## **LAW 503 Drafting, Pleading and Conveyancing**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- The students will be able to draft legal documents.
- The students will be able to guide and advise client regarding effect and enforcement of deeds and documents.
- The students will be able to structure a commercial contract, draft notices and pleadings.

## **LAW 505 Law of Evidence**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- The student will be able to analyse and define the concept and general nature of evidence, and illustrate the different types of evidence and court procedures relating to evidence.
- The student will be able to determine and analyse the standard of proof and burden of proof in civil and criminal cases, and specify types of presumptions.
- The student will be able to understand rules governing examination in chief, cross examination and re-examination, and establish the procedures in civil or criminal trial.

## **LAW 509 Property Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- The students will be able to know how to apply knowledge and able to solve practical problems related to property.
- The students will be able to integrate theoretical knowledge and handle the complexity of drafting the various instruments of transfer of property.
- The students will possess, understand and develop their skill in property related issues and can establish themselves in civil cases as their specific area.

## **Tenth Semester**

### **LAW 512P Moot Court, Internship and Corporate Legal Training**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	48	24

**Learning Outcomes:**

- The students will be able to develop advocacy skills.
- The students will get familiarize with the various stages of trial in civil and criminal cases.
- The students will be exposed to real court experience and they should imbibe the skills of client interviewing.

## **Discipline Electives**

### **LAW 411 Banking Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
4	1	0	5

**Learning Outcomes:**

- The students will be able to understand the banking operations that form the part of day today life.

- The students will get the knowledge of the banking and exposure to legal and regulatory aspects that have a bearing on banking.
- The students will be able to advice and guide in basic banking operation and will be job ready for banking jobs.

### **LAW 414 Financial Market Regulations**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:** After the completion of the course student will be able to

- Explain the main concepts of overall financial sector.
- Describe financial sector developments in India.
- Examine the role of market regulators in Indian financial sector.

### **LAW 506 Media and Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:**

- The students will be able to evaluate the role and impact of self-regulation on the media and journalists.
- The students will be able to understand the role of the press in a democracy.
- The students will be able to explain and apply the laws of defamation and Contempt of court, privacy law, broadcasting law and intellectual property to practice.

### **LAW 406 Health Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:**

- The students will have appropriate level of knowledge of various laws relating to health care, including Mental Health, Transplantation of Organs & Tissues Act, AIDS Act, etc.
- The students develop their understanding regarding medical ethics and medical profession, and topics like medical negligence, euthanasia, surrogacy, etc.

### **LAW 413 Energy Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students are able to develop legal awareness about the rapidly expanding energy sectors and its future along with various alternatives of energy system.
- The students are able to develop mastery in negotiating investment deals for energy companies and frame energy policies for companies.
- The students are able to understand the effects of Global warming and Green house gas emissions.

### **LAW 415 Penology and Victimology**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

After the completion of the course student will be able to:

- Explain the main concepts of victimisation and penology, and describe their trends in criminal justice.
- Describe historical developments in penology, with regards to the reasons for punishment.

- Examine victimisation and punishment as complimentary aspects of the criminal process and their reciprocal effect on social perceptions.

### **LAW 416 Sports Law**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 1 0 5**

#### **Learning Outcomes :**

After the completion of the course student will be able to:

- Enhance knowledge in Sports law
- Understand vital rules and regulations of the sporting authorities of India and the world
- Understand the practical aspects of the sporting world vis a vis Law.

### **LAW 412 Comparative Constitution**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 1 0 5**

#### **Learning Outcomes:**

After the completion of the course student will be able to

- Familiarize with key political concepts like political obligation, sovereignty, Rule of Law, etc. which interlace the idea and the institution of State. Knowledge of such concepts become imperative for any student of law and politics as some of these political concepts are constitutive of the idea of law.
- Understand the law as a political and social category while students of politics interested in theory and history of ideas will find it engaging to study the dialectics between law and State as it unfolds within the politico-legal institutional framework and processes.

## Reading Electives

### LAW 513R Women and Law

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### Learning Outcomes:

- The students will be able to understand the socio-legal position of women and special provisions made for them.
- The students will be able to get the knowledge of efforts made for the betterment of women at International level.

### LAW 511R Law of Equity and Trust

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### Learning Outcomes:

- The student will be able to demonstrate an advanced and integrated understanding of equity and trust principles.
- They will be able to analyse and research complex problems relating to equity and trust principles.

### LAW 510R Law And Public Policy

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### Learning Outcomes:

- The student will be aware about Parliamentary Democracy and the law making process.
- The students will get the knowledge of Law & Public policy in today's context.

### **MGMT 526R Managing the Personal Finance**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

- The students will get exposure regarding preparing and filing tax returns, banking services etc.
- The students will get the knowledge of money management.

### **MGMT 524R Foundation of Indian Ethos and Culture**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

- The students will get exposure regarding foundational ideas of Indian culture and rationale for studying Indian ethos.
- The students will get the knowledge of the foundation of Indian culture.

# BANASTHALI VIDYAPITH

## Bachelor of Business Administration



### Curriculum Structure

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December-2021  
Sixth Semester Examination, April/May-2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

July, 2019

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## **Programme Educational Objectives**

The intellectual and behavioural competencies ensuring employability of students are prime learning goals associated with this course. This ensures both professional and personal development among students and hence allows preparing women leaders in all walks of life intertwined with the core values of Banasthali Vidyapith. The aim is to facilitate students for a better understanding about global trends, changes and their impact as well. Preparing the graduates for a constantly changing world with the fundamental knowledge is the key driver of this programme. The programme offers ample of opportunities to develop upon skills of leadership, communications, critical thinking, and fact based decision making.

Amidst a local setting the approach is of global mindset to prepare students for exciting careers in international business and further studies. Various measurable learning objectives are also established in consonance with the exclusive educational philosophy of Banasthali Vidyapith. Through the program, we inculcate competitive management skills and transform them into business professionals capable of successfully growing in the dynamic business environment.

### **The main objectives of BBA programme are:**

1. To inculcate critical thinking and decision making skills in students to learn management efficiently.
2. To enhance the writing and listening skills among students to enable them for proficient communication.
3. To educate students about ethical behavior and social responsibility streamlined with value creation.
4. To reflect upon core business knowledge and demonstrate competency in the underlying concepts of management.
5. To integrate both functional and the theoretical side of management to prepare students for a global mind-set.
6. To administer development of entrepreneurial society by delivering management lessons in the most efficient manner.
7. To enhance the overall personality of students for encouraging professional orientation and ensures professional and personal success.

## Programme Outcomes

**PO1: Education:** The programme is designed in a way to impart the managerial learning's in both theoretical and functional manner. Foundational knowledge of functional domains of management will enable in preparing future managers.

**PO2: Leadership and Problem Solving:** The student will learn to seek ample of opportunities to showcase her talent in the field of management. Both on professional and personal front the need to make use of managerial skills amalgamated with leadership skills is fulfilled this way.

**PO3: Critical Thinking:** Implementing the lessons of management derived from classroom learning in the business arena will allow the students to invoke critical thinking among them.

**PO4: Global Mindset:** The approach to think local and act global in the modern business world is the rock stone of success. The students will be facilitated to dwell upon the modern ideas so as to attain success in every sphere of life.

**PO5: Enchanting Personality:** Learning new skills in managerial domain with reference to communication, strategy formulation, decision making and alliance formation develops personality extensively.

**PO6: Professional Code of Conduct:** Students will learn to present themselves with higher levels of professional ethics and will learn to follow the desirable code of conduct which makes them industry ready.

**PO7: Business Ethics:** Ethics are essential in every sphere of life and professional success attained through ethical behaviour in line with Indian Culture is sustainable in nature. This core value is the mantra of education imparted by Banasthali Vidyapith.

**PO8: Communication Skills:** The appropriate selection and usage of words and skills for adapting the message for different set of audiences with ease is a sure shot outcome of bachelor of business administration at Banasthali Vidyapith.

**PO9: Responsible Citizenship:** The critical thinking and efficient decision making goes hand in hand with concern for people, planet and profit. This emphasized concern for people and planet makes Banasthali Graduates responsible citizens as well.

**PO10: Employability:** Key learning's derived from the management lessons, decision making, stress management, conflict management etc. definitely increases the degree of employability in Banasthali Graduates.

**PO11: Emotional Intelligence:** Being mentally stable and sustainable in both success and failure is the need of today's competitive world. This rule of thumb is garnered in the mindset of each and every student enrolled in this programme throughout the course itself.

## First Semester Disciplinary Courses

### COM 104 Financial Accounting

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

**Course Objectives:**

1. To understand the basics of financial accounting, book-keeping and the accounting principles of GAAP (i.e. concepts and convention).
2. To have an understanding of the rules of debit credit, preparation of various books of accounts (i.e. Journals and ledgers) and statements (i.e. Trial balance, rectification, etc).
3. To foster an understanding of the concept of depreciation including its types and preparation of bills of exchange and bank reconciliation statements.
4. To develop skills for preparation of final accounts through practice of comprehensive questions.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand book keeping and financial accounting.
- Maintain basic books of account
- Prepare and present final accounts.

### CS 105 Computer for Management

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

**Course Objectives:**

1. The students will be introduced to the basic concepts of computers including software, hardware, and various other elements.

2. An insight will be developed on the Programming Languages along and Problem-Solving ability will be developed using various peripherals of computers.
3. The students will be trained in using MS Word and Excel along with the knowledge of applying various mathematical and statistical formulas using excel.
4. To develop the understanding of Microsoft Power point presentation for making an effective presentation including various novel concepts and methods to present the idea.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Use the basic computer for the daily working.
- Design and use worksheet for management and finance.
- Give Presentation effectively using the tools the power point presentation.
- Effectively use technology.
- Develop the conceptual understanding of operating system like DOS, Windows and UNIX and their commands.

## **ECO 108 Micro Economics for Managers**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To understand the basics of micro economics.
2. To understand the structure of economy and economic activities within economy.
3. To understand the structure of market and its functions in Indian economy.
4. To understand the effect of economics activities on managerial decision making.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the economics activities.
- The relationship of economics activities with policy framework.
- Take better managerial decisions.

## **MGMT 102 Foundation of Management**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To introduce the students to the foundation of principles of management.
2. Practice the process of management's four functions: planning, organizing, leading and controlling.
3. Observe and evaluate the influence of historical forces on the current practice of management.
4. Provide the students with the capability to apply theoretical knowledge in simulated and real-lifettings.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership.
- Understand application of theories and management principles.

## **MGMT 105 Human Behaviour**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To analyze individual human behavior in the workplace as influenced by personality, values, perception, decision making and motivation

2. To enrich students with the essential content and experiences they need to become a motivating student, successful manager and an effective employee in any type of work they do in the future.
3. To enhance the critical thinking and analysis skills through the use of management case studies.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Learn about organizational behaviour.
- Exhibit analytical skills, and application of theories in organizational context.

**CS 105L Computer for Management Lab****Max. Marks: 100****L T P C****(CA: 40 + ESA: 60)****0 0 4 2****Course Objectives:**

1. The objective of the course is to enable the students to learn the concepts of Word, Excel, Power Point.
2. To provide students a practical outlook and understanding of the computers.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Use the basic computer for the daily working.
- Give Presentation effectively using various computer software.

## Second Semester Disciplinary Courses

### COM 101 Business Environment

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

#### **Course Objectives:**

1. To acquaint the students with the critical elements of business environment and their impact on Business Decisions.
2. To provide students with an awareness of current Business trends and an overview on Indian Economy, MNC's and Union Budget.
3. To exposing students about general principles of Company Law Such as Company, Memorandum of Association, Article of Association and winding up of companies.
4. To understand the role of Director in a company according to Company Law and understanding of meetings, resolutions and dividends.

#### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Interpret the impact of Micro & Macro environment on Business Decision
- Learn about factors affecting social orientation of Business
- Understand the basic concepts related with Indian economy, Industrial Policy, 1991 and Union Budget.
- Learn about Company registration process.
- Understand process of winding up of a company.

## **ECO 104 Macro Economics for Managers**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To understand the meaning of Macro Economics and its relation with Microeconomics.
2. Develop the knowledge about the financial markets and Banking system in India.
3. To understand the supply of money and inflation, tools, latest trends monetary, fiscal and globalization policies.
4. To understand perspective of international trade and the concept and significance of various institution like WTO, IMF, WB, and ADB.
5. To understand the structure, features and trends of Indian economy.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the perspectives of macroeconomics.
- Understand about the financial markets and banking system in India.
- Know about the concept and measurement of money supply and inflation.
- Understand latest trends and impact of monetary, fiscal and globalization policies.
- Know about the concept of international trade as well as significance of various institutions (WTO, IMF, WB, and ADB).

## **MGMT 103 Foundations of Marketing Management**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives**

1. The objective of this course is to demonstrate and stimulate students to appreciate the various issues and activities involved in marketing management.
2. To provide an understanding of the underlying concepts, strategies and issues involved in exchange of products and services between the firm and markets.
3. To understand the distribution process, its types and factors affecting the choice of distribution channels.
4. To understand the promotion, mix and various components of promotion mix.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand various issues and activities involved in marketing management
- Understand different concepts, strategies involved in exchange of products and services between the firm and the markets.
- Understand distribution process and distribution channels.
- Understand various components of promotion mix.

## **MGMT 104 Group Behaviour**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To familiarize the students with the fundamentals of group and group dynamics.
2. To develop the understanding of students on how people as a group can be managed in teams for organizational effectiveness.
3. To help students to develop the competencies they will need to become successful employees, managers, and leaders.
4. To expose students to various group management activities for better understanding of team dynamics.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand group dynamics and basics of teamwork.
- Understand organizational culture and change management within the organizations.
- Understand stress and reasons behind stress within organization.

**STAT 108 Statistics for Management****Max. Marks: 100****L T P C****(CA: 40 + ESA: 60)****4 0 0 4****Course Objectives:**

1. To familiarize students with the meaning, importance and limitations of statistics
2. To understand the difference between Primary and Secondary data, Census and Sample Survey, with their respective advantages and disadvantages.
3. To learn the calculation and interpretation the meaning of different measures of dispersion.
4. To introduce the classification and tabulate given data along with being able to calculate its average and interpret its meaning.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the meaning, importance and limitations of statistics.
- Understand classification and Tabulation of data.
- Analyze qualitative variables techniques from theory of attributes.
- Understand Correlation and Regression analysis.

**STAT 111L Statistics for Management Lab****Max. Marks: 100****L T P C****(CA: 40 + ESA: 60)****0 0 4 2****Course Objectives:**

1. To develop understanding of practical aspects of statistics.
2. To understand the development of statistical tables using softwares.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Solve the statistics problem using technology.
- Use statistical tools for the purpose of research.

## **Third Semester**

### **Disciplinary Courses**

#### **COM 204 Cost Accounting**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

**Course Objectives:**

1. To understand the concept of material handling in manufacturing organization.
2. To understand the labor and overhead management in different organization.
3. To study the different strategic decision by using marginal costing.
4. To understand the concepts of standard costing and budgetary control.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand cost accounting in manufacturing and other industries.
- Understand the concept of material, labor and overheads used in manufacturing.
- Advice and guide on strategic decisions in cost accounting.

## **COM 211 Principles and Practices of Banking**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To understand the basics of banking system of India.
2. To understand the functionalities associated with banking which affect the normal individuals' life.
3. To understand the banking operations and various norms related to banking instruments and negotiable instruments.
4. To provide the knowledge about credits, deposits and other important aspects related to retail banking.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- To understand the banking operations.
- To advice and guide in basic banking operation.

## **MGMT 205 Foundation of Human Resource Management**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To provide the students with the basic knowledge of Human Resource Management frameworks and overall role of HRM in business,
2. To develop insight into the managerial skills required to effectively manage people in an organization, in order to achieve corporate goals successfully.
3. To advance students' cognitive skills and processes, their knowledge of theory and application, and develop their professional skills.
4. To strengthen the student's understanding how the alignment of human resources strategy within the organization as a whole.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Effectively manage and plan key human resource functions within organizations
- Proficiency in fundamental HR policies and practices that help to promote the organization's strategic goals
- Understand Human Resource Development.

### **LAW 209 Intellectual Property Law**

**Max Marks: 100**

**L T P C**

**(CA: 40+ESA: 60)**

**4 0 0 4**

**Course Objectives:**

1. To create consciousness amongst the learners about Intellectual Property and different rights relating to it.
2. To create awareness regarding the jurisprudential basis of the intellectual property rights.
3. To familiarize the learners with the history of IPR and different aspects of GATT, WTO and TRIPS.
4. To familiarize the learners about the registration procedures and the administrative procedures relating to IPR in India.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the laws related to Intellectual Property Rights
- Use the principles of various IP laws.
- To assess the ways in which legislation and global policy influence the socio-economic environment in India and abroad.

### **TSKL 101 Business Communication**

**Max. Marks: 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives:**

1. To understand the basics of communication as a process.
2. To understand the implementation of business communication in professional settings.
3. To enhance the listening skills for better communication.
4. To develop upon the written and oral forms of communication with wise selection and usage of words.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the essential of efficient communication mechanism.
- Know about drafting resumes and business letters.
- Make mindful selection when it comes to listen and write for communication purposes.

## **TSKL 204L Business Communication Lab**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

**L T P C**  
**0 0 4 2**

**Objective:** To acquaint the students with the skills necessary to become a good writer, speaker, listener and reader.

## **Fourth Semester Disciplinary Courses**

### **COM 210 Emerging Banking Services**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

**L T P C**  
**4 0 0 4**

### **Course Objectives**

1. To understand the global banking system and the emerging Indian scenario in banking industry.
2. To understand changing service dynamics of banks in India, alternative banking channels, smart apps, payment banks.

3. To study the concepts of banking, third party products, credit & Investment services etc.
4. To study Asset Reconstruction Companies (ARC's), its model and benefits to the parties involved, NPA Management, SARFESI Act and MSME.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Know about banking scenario in India as well as globally.
- Know about various banking products including third party products.
- Know about the recent financial reforms for NPA management.

## **CS 203 Application Software for Management**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. The main objective of this course is to provide students with the background to design, implement, and use database management systems
2. Provide an introduction of DBMS and their use;
3. Describe the main features and function of the DBMS;
4. Describe & Design of relational database and E-R diagrams;
5. To enable students to learn the concept of application software for business.
6. To work with basic application software tools like MS Excel, MS Access, Tally, Photoshop and its relevance in organizational functioning.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the use and basic designing of a database system

- Understand the concept of relational databases and normalization
- Design a database and run queries using MS Access
- Create ledger accounts and balance sheets using Tally
- Use Photoshop for simple image editing and creating collages.

### **MGMT 202 Basics of Financial Management**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

**L T P C**  
**4 0 0 4**

#### **Course Objectives:**

1. To introduce the students to the basics of financial management.
2. To understand the role of financial manager to give them an input into various concepts.
3. To develop an understanding about techniques of financial analysis.
4. To understand the practicality of the capital structure planning, cost of capital, dividend policies and working capital.

#### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Aware about capital structure and theories of capital structure.
- Understand the cost of capital in wide aspects.
- Understand working capital management

### **CS 219L Application Software for Management Lab**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

**L T P C**  
**0 0 4 2**

#### **Course Objectives:**

1. The objective of the course is to enable the students to learn the concepts of Excel, Tally, Photoshop.
2. To develop understanding of the computers for practical purpose.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Use computer for better business presentations.
- Get ready for the entry level jobs where computer knowledge is necessary.

## **Fifth Semester Disciplinary Courses**

### **COM 303 Business Taxation**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

**Course Objectives:**

1. To understand basic of direct as well indirect tax.
2. To understand income from various heads and their computations.
3. To understand various facets of indirect tax like GST.
4. To prepare income tax return of an individual and firm.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand computation of income under various heads.
- Understand assessment of individual and firm.
- Practical orientation to direct as well indirect tax.

### **MATH 306 Mathematics for Management**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

**Course Objectives:**

1. The subject will focus on developing the mathematical ability of the students by making them understand the concept and implication of Math.

2. The students will be trained in using Matrix for problem solving.
3. The students will be introduced to the concept of differentiation and integration and will be enabled to use the same for problem solving.
4. The students will be introduced to the concept of permutation and combination.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Determine the particular progression work (AP, GP, HP)
- Demonstrate the determinant of a matrix up to third order.
- Identify the notations. Operations and applications of sets, Functions and relations.
- Use differentiation and integration techniques in problem solving
- Apply factorial, permutation and combinations and uses.

## **MGMT 305 E-Business**

**Max. Marks: 100**  
**(CA: 40 + ESA: 60)**

**L T P C**  
**4 0 0 4**

### **Course Objectives:**

1. To understand the various concepts involved in e-Business & e-Commerce.
2. To develop an understanding about the aspects like business models, advantages, payment system, legal issues of e-business.
3. To gain insight into the concepts of E-CRM, E-SCM, ERP, E-Procurement in E-Business.
4. To understand the meaning of concepts like online promotion-banking and crowd-sourcing.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Compare and evaluate both offline and on-line modes of shopping.
- Know about Marketing & Branding in digital age, e-banking-CRM, e-SCM and ERP

- Understand about upcoming areas like digital marketing, e-commerce logistics, e-supply chain management as their career option.

### **MGMT 315P Term Paper**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 12 6</b>

#### **Course Objectives:**

1. To encourage the students to undertake research work in area of their interest.
2. To develop basic understanding of Research and analytical statistical techniques amongst students.

#### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand mechanism of identifying a problem and evolving the solution using standardized Quantitative and Qualitative tools.
- Comprehend the process of writing a term paper document.

## **Sixth Semester Disciplinary Courses**

### **MGMT 313 Foundation of Bhartiya Prabandhan**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Course Objectives:**

1. The primary purpose is understanding merit of Self-Realization
2. To introduce the students to the basics of Bhartiya Management thought and practice.
3. To generate awareness about the cultural and spiritual values of Indian society and their implications for modern managers.
4. To understand Indian Philosophical Thoughts from Vedant and Bhagwad Geeta.

- To provide the knowledge about eastern and western management, social management, wisdom worker and other important aspects related to Bhartiya Prabandhan.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand ancient Indian spiritual teachings and their relevance in present day life.
- Have a value oriented approach in their everyday life.

## **MGMT 304 Business Policy**

**Max. Marks :100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Course Objectives:**

- To understand the nature of business policy.
- To understand the meaning of business strategies.
- To deliver knowledge about different strategic models.
- To understand the different framework of strategic implementation.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the business and business policies
- Understand how organizations formulate and implement strategies.
- Apply and evaluate relevant theories and tools in the context of case studies.

## **LAW 311 Information Technology Law**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Course Objectives:**

- To make students aware so that they can identify and analyze statutory, regulatory, constitutional and organizational laws relating to information technology.

2. To acquaint the students with the ongoing issues under law in managing innovative perspective in the field of information technology.
3. To impart professional knowledge in locating and enabling the student to apply case laws, common law and diverse viewpoints in handling current legal and ethical dilemmas in the field of information technology.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Build up a comprehension about the different aspects of Information Technology Law and all the measures taken to create legitimate structure in innovation progression.
- Learn different domains managed by Information Technology law, for example, e-contract, digital signature, authorities deal with granting of electronic signature and cyber crimes.
- Grow their urge to do work in research field.

## **MGMT 206 International Business**

**Max. Marks: 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Course Objectives:**

1. To develop an understanding of concepts of international business and to stimulate the students by discussing current business scenarios and events in the field of international business.
2. To develop an understanding of political, legal system and cultural influences on international business.
3. To develop an understanding of macroeconomic issues and trade theories on international business to stimulate better understanding international marketing, finance, HRD, exports, manufacturing and WTO on international business
4. To stimulate thought process of students by using different case studies on international business.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the concept of international business in different settings.
- Understand about culture and its dynamics in international business scenarios.
- Apply the knowledge of political, legal and economic scenarios in business activities.

**MGMT 313L Foundation of Bhartiya Prabandhan Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

**Course Objectives:**

- 1) To familiarize the students with the practical aspects of Bhartiya Prabandhan.
- 2) To familiarize students with the Indian scriptures and Management lessons hidden in them.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the practical use of the Bhartiya Prabandhan in day today life.
- Get a better perspective towards the Indian culture and its value system

## Discipline Electives

### COM 312 Personal Finance

**Max. Marks: 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives:**

1. To understand the concept of personal finance, personal financial planning process & personal financial statement analysis.
2. To understand the concept of retirement planning and estate planning.
3. To understand the concept of tax planning and investment planning
4. To understand the concept of financial literacy and role of regulators in promoting financial literacy.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the requirements of Personal Financial Plan can develop and implement a budget.
- Use retirement planning calculators and other financial calculators.
- Understand Proactive and reactive ways to deal with Investment frauds and low quality financial services.

### LAW 312 Law of Torts

**Max. Marks: 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives:**

1. The students will be able to understand the private law and what it makes it different from other laws.
2. The students will be able to understand the major principle fundamental to the operation of Law of tort

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the major fundamentals of law concerning to compensate those who have been injured by the wrongdoing of others.
- Understand the difference between the law of torts and other laws.

**LAW 309 Banking Laws****Max. Marks: 100****L T P C****(CA: 40 + ESA: 60)****4 0 0 4****Course Objectives:**

1. To understand the basics of banking system in India.
2. To understand the role of banking regulator.
3. To understand the legal framework associated with banking
4. To understand the banking operations and payment system in banking sector.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the banking operations that form the part of day today life.
- Know banking, banking laws and exposure to legal and regulatory aspects that have a bearing on banking.
- Advice and guide in basic banking operation.

**MGMT 308 Operations Management****Max. Marks: 100****L T P C****(CA: 40 + ESA: 60)****4 0 0 4****Course Objectives:**

1. To familiarise students with the important functions of production and operations management.
2. To understand factors influencing plant location, layout and capacity decisions.
3. To know about the production systems in the manufacturing organization..
4. To study how scheduling and sequencing of the activities are done in the manufacturing facility.
5. To understand about the need of inventory and quality control.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the important functions of the Production and operations management.
- Deals with the decision making in planning for Location, process,
- Plan layout, scheduling and sequencing of facility.
- Control the inventory, and manufacturing process, in both manufacturing and service organization

**MGMT 309 Organizational Studies**

**Max. Marks: 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives:**

1. To develop the knowledge about corporate social responsibility and growth of Indian companies
2. To understand the role and importance of building social institutions and their critical role in society.
3. To equip students with multiple perspectives on leadership and organization.

4. To study the role of corporate and managerial communication in the context of innovation, entrepreneurship and change.

### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Develop the concept on organizational studies and need of CSR and strengthen the knowledge about the growth of Indian companies.
- Make the role clarity of consumer and brands in building trust for each other and the strategies implemented to gain consumer loyalty.
- Equip students with multiple perspectives on leadership and organization.
- Understand the role of corporate and managerial communication in the context of holistic approach.
- Know about the CSR approaches adopted by the individuals

## **LAW 310 Human Rights Law and Practice**

**Max Marks: 100**

**L T P C**

**(CA: 40+ESA:60)**

**4 0 0 4**

### **Course Objectives:**

1. To develop the understanding that how and why the implementation of international human rights norms differs between India and other countries and regions by considering historical and other differences.
2. To understand human rights at regional and country levels through an in-depth study of jurisprudence and procedural laws in relation to India.
3. To have knowledge about human rights and intended to provide an introduction to the normative and institutional frameworks of IHL.
4. It also attempts to give a general overview of the status of individual criminal responsibility under international law, the applicability of IHL to UN peacekeeping/peace building/enforcement missions as well as the recent challenges before IHL

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Think analytically about the implementation and development of international human rights law
- Develop an understanding about challenges faced in the field of human rights law and sustainable development
- Analyze complex problems related to HR

**MGMT 314 Marketing in Special Domains**

**Max Marks: 100**

**L T P C**

**(CA: 40+ESA:60)**

**4 0 0 4**

**Course Objectives:**

1. To enhance the knowledge about various domains of Marketing.
2. To introduce the aspects of Service Marketing, Agriculture and rural Marketing.

**Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand various new dimensions of marketing
- Learn and understand service marketing and non profit marketing
- Understand rural and agricultural marketing and its difference from traditional marketing

**COM 313 Basics of Audit**

**Max Marks: 100**

**L T P C**

**(CA: 40+ESA:60)**

**4 0 0 4**

**Course Objectives:**

1. To establish the understanding on the concepts and techniques of auditing.

2. To develop the knowledge of internal control system, control activity, to provide on how the financial reporting assertions are related to internal controls, and how the effectiveness of internal controls is assessed.
3. To device the view on audit risk assessment, its calculation and importance for audit strategy.

**Learning Outcomes:**

- To discuss need for an external audit and its importance.
- Describe the various levels of persuasiveness of different types of audit evidence.
- Identify appropriate assertions at risk and apply appropriate audit procedures to test the assertions identified
- Understand auditors' legal liabilities, and be able to apply case law in making a judgment whether auditors might be liable to certain parties.

# **BANASTHALI VIDYAPITH**

## **Bachelor of Business Administration and Bachelor of Laws**



### **Curriculum Structure**

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022  
Seventh Semester Examination, December, 2022  
Eighth Semester Examination, April/May, 2023  
Ninth Semester Examination, December, 2023  
Tenth Semester Examination, April/May, 2024

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## **Programme Educational Objective**

The Vidyapith has long history of nurturing women leaders in all walks of life. Of late its IT, Management and Technology graduates have won accolades for themselves and their alma mater. In consonance with the value education imparted at Banasthali Vidyapith, it conceptualized an all women's law school to nurture legal professionals of the highest order.

The B.B.A. LL.B. programme has been conceptualized with a vision of creating dedicated professionals who are well trained in legal studies. The five year integrated programme designed amidst the five-fold education model of Vidyapith would comprise a unique mix of foundational, vocational and variety of disciplinary courses in field of Law to enable the students of diverse backgrounds to find a new perspective of life and play a leading role in administration of justice and upholding the ideals of the Indian Constitution in the promising time to come.

The main objectives of B.B.A. LL.B. programme are:

1. To provide holistic development of the students by providing a combination of technology and value based traditional education.
2. To present a wider perspective of law before students by focusing on law subjects along with courses in Business Management.
3. To train women for the legal profession and to provide a centre where scholars might contribute to an understanding of law and participate creatively in its growth and improvement.
4. To demonstrate how the legal rules have developed, the reasons underlying them and to make them understand the nexus between legal and social history.
5. To inculcate the principles underlying the existing legal rules and to point the right road for future development and preparing the students to take up leadership roles especially in corporate world and also in judicial services.
6. To acquaint students with the operative legal rules, both substantive and procedural and to equip them with adequate experience to apply these rules.
7. To equip the students with sufficient knowledge of the historical and sociological background of the country's legal system and to provide understanding of other legal systems of the world so that the students do not find themselves at a complete loss when it comes to adopting a comparative approach.
8. To develop ability amongst the students to participate in Moot Courts, Debates & discussions and Seminars with a good level of confidence and challenge the very premise of legal concepts and their applications.

## Programme Outcomes

- PO1: Knowledge:** The student will be able to understand the fundamentals and implications of various legal rules along with the intricacies involved in legal profession.
- PO2: Planning abilities:** The student will be equipped with different legal abilities after the completion of the course by which they can deal with the different legal issues associated with the society and individuals especially related to management and commerce.
- PO3: Problem Analysis:** They will be able to apply legal principles in real life issues through the analytical skills which will be developed by analysis of case laws and critical understanding of statutory provisions.
- PO4: Modern Tool Usage:** Case analysis, Moot Court exercises, Debates, Alternate Dispute Resolution methods, Internships *etc.* will be used to improve their argumentative and writing skills.
- PO5: Leadership Skills:** Today legal education is getting redefined in terms of information technology, globalisation, environment and start-ups; the focus of this programme is on developing professional leaders among women in consonance with value education imparted at Banasthali Vidyapith with traditional as well as modern approach.
- PO6: Professional Identity:** Legal profession is a noble profession and it is not limited to the technical knowledge of legal rules. The prescribed course will help in nurturing the students in a way so that they can meet the standards of different avenues opening in legal profession.
- PO7: Ethics:** The learner will be imbibed with the ethical standards of legal profession & the values nurture at the Vidyapith that are required for practical and impartial behaviour of a law graduate.
- PO8: Communication:** Students will be able to express complex ideas effectively and accurately in every wake of life whether it is professional or social.

- PO9: Local and Global Citizenship:** Students will be able to assess the way in which legislation and government policies are formed and influenced the social, economical and legal order in national as well as global context. They will be able to understand and empathise cultural differences and practices required to work effectively in multi-cultural environment.
- PO10: Environment and sustainability:** Learners will involve in various co-curricular activities like Legal Aid Camps, regular Legal Aid Clinic at departmental as well as institutional level to gain practical exposure that will help them in adapting the socio-economic, legal and political environment.
- PO11: Life Long Learning:** The habit of continuous learning & life-long useful practical skills developed and acquired through the course that will motivate the students for further researches in the field of law, performing different professional roles, ultimately for leading a successful life.

## First Semester

### ECO 105 Micro Economics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to

- Understand the economics activities.
- The relationship of economics activities with policy framework.
- Take better economical and feasible decisions.

### MGMT 203 Bhartiya Prabandhan

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to:

- Understand ancient Indian spiritual teachings and their relevance in present day life.
- Have a value oriented approach in their everyday life.

### LAW 103 Law of Contract – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### Learning Outcomes:

- The students will be able to understand various general principles related to contract law.
- The students will be able to deal effectively with the various disputes related to contracts.

## LAW 105 Law of Torts

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### Learning Outcomes:

- The students will be able to understand the fundamental principles of tortious liability.
- The students will understand the difference between the law of torts and other laws.

## CS 111 Introduction to Computer Applications

### CS 111L Introduction to Computer Applications Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

On successful completion of the course students will be able to

- Understand input and output devices of computers and recognize the basic terminology used in computer programming
- Understand the Microsoft Office package, MS-DOS and Unix Systems
- Understand concept of Database and Networking

## Second Semester

### ECO 103 Macro Economics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

Upon completion of the course the student will be able to:

- Understand the perspectives of macroeconomics.

- Understand about the financial markets and banking system in India.
- Know about the concept and measurement of money supply and inflation.
- Understand latest trends and impact of monetary, fiscal and globalization policies.
- Know about the concept of international trade as well as significance of various institutions (WTO, IMF, WB, and ADB).

### **LAW 102 Law of Consumer Protection and Motor Vehicle Act, 1988**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	1	0	5

#### **Learning Outcomes:**

- The students will have a comprehensive understanding about the existing law on consumer protection in India.
- The students will be aware of the basic procedures for handling consumer dispute and issues on motor vehicle.
- The students will be able to appreciate the emerging questions and policy issues in consumer law and motor vehicle law for future research

### **LAW 104 Law of Contract – II (Special Contract)**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	1	0	5

#### **Learning Outcomes:**

- The students will be able to analyze the implications of a contractual arrangement falling under any of the discussed head of special contracts.
- The students will be able to determine the legality of the transactions and also the rights and duties of the parties thereto

- The students will be able to purposefully deal with the disputes arising out of such contractual arrangements.

### **LAW 106 Legal English**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The Students will be able to Command the language which is an essential quality of a lawyer.
- The Students will be able to understand writings of eminent jurists.
- The Students will be able to develop skill of articulation and effective writing.

### **MGMT 108 Organizational Behaviour and Behavioral Psychology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the basic of organizational behaviour.
- Develop an outlook towards leadership and group dynamics.
- Understand the concept of conflict and resolution.

## **Third Semester**

### **ECO 205 Theories of Development and Indian Economics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course the student will be able to

- Acquainted with comprehensive knowledge of the conditions and limitations of the developing system of India.
- Understand the indicators to measure economic development
- To impart the knowledge of capital formation in India
- Understand different aspects of agricultural sector and industrial sector

### **LAW 202 Constitutional Law – I**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The student will be able to understand the need for the constitution
- The student will be able to explain the role of the constitution in a democratic society
- The student will be able to list the key features of the constitution
- The student will be able to appreciate the fundamental rights of the citizens of India.

### **LAW 204 Family Law – I**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to understand the vast discipline of Hindu Law and other Personal Laws.
- The students will be able to understand the significance of Hindu Law and other Personal Laws.
- The students will be able to get insight into various concepts of Hindu Law and other Personal Laws which will help in shaping their career as Judges, Lawyers, Academicians and Jurists.

## **LAW 206 Law of Crimes – I (IPC)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will get familiar to the principles of criminal law.
- The students will be able to expose the range of mental states that constitutes mens-rea essential for committing crime.
- The students will get acquainted to the latest developments and changes in the field of criminal law.

## **MGMT 204 Business Strategy**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon completion of the course the student will be able to

- Understand the business and business strategy
- Understand how organizations formulate and implement strategies.
- Apply and evaluate relevant theories and tools in the context of case studies.

## Fourth Semester

### LAW 203 Constitutional Law – II

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	1	0	5

**Learning Outcomes:**

- The student will develop an understanding of Fundamental rights, directive principles and fundamental duties.
- The students will learn the reasonable restriction imposed on various organs so far as the rights are being concerned.
- The students will be able to acquaint the scope and parameters of part III and part IV and part IV A of the Constitution.

### LAW 205 Family Law – II

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	1	0	5

**Learning Outcomes:**

- The students will be able to understand the vast discipline of Muslim Law and other Personal Laws. Understanding the significance of Muslim Law.
- The students will be able to understand the significance of Muslim Law.
- The students will be able to get insight into various concepts of Muslim Law which will help in shaping their career as Judges, Lawyers, Academicians and Jurists.

## LAW 207 Law of Crimes – II (IPC)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### Learning Outcomes:

- The students will get familiarize with the key concepts regarding crime and criminal law.
- The students will be able to learn various offences punishable under IPC.
- The students get acquainted to the latest developments and changes in the field of criminal law.

## COM 104 Financial Accounting

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

Upon completion of the course the student will be able to

- Understand book keeping and financial accounting.
- Maintain basic books of accounts
- Prepare and present final accounts.

## MGMT 207 Principles of Marketing Management

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

Upon completion of the course the student will be able to

- Understand various issues and activities involved in marketing management

- Understand different concepts, strategies involved in exchange of products and services between the firm and the markets.
- Understand distribution process and distribution channels.
- Understand various components of promotion mix.

### **LAW 210P Internship Report and Viva-Voce**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

- The students will get familiarize with the various stages of trial in civil and criminal cases.
- The students will be exposed to real court experience and client interviewing at advocate chamber.
- The students will be get the exposure to the functioning of Law Firms, NGOs & other irrututions where law is practiced.

## **Fifth Semester**

### **LAW 301 Company Law**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	1	0	5

#### **Learning Outcomes:**

- Demonstrate comprehensive and accurate knowledge, understanding of those areas of company law identified in the indicative syllabus.
- Critically analyse complex problems in relation to regulation of companies, apply the legal principles studied to these problems, evaluate competing arguments or solutions and present well supported conclusions both orally and in writing.

- Form a critical judgment on areas of controversy within the topics studied

### **LAW 303 Forensic Science**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to know the importance of forensic science and medicine in resolving the legal matters, both civil as well as criminal.
- The students will be able to impart knowledge of the relation between law and medicine.
- The students will be able to understand the basic principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence form scene of crime

### **LAW 305 Jurisprudence – I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

After the completion of the course student will be able to:

- Develop their intellectual skills by developing a critical understanding of law.
- Realize the great potential for interaction between legal philosophy and legal practice.
- Formulate what relevant questions to be asked when law are being discussed or legal reforms are being proposed.
- Analyze the consequences of law and its administration on social welfare and may think about changes for the betterment of the superstructure of laws.

## **LAW 307 Labour Law – I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to define the provisions of Constitutional Safeguards on Social Security & Labour Welfare.
- The students will be aware about the Trade Unions Act, 1926, Industrial Disputes Act, 1947, Workmen’s Compensation Act, 1923, The Employees’ Provident Funds and Miscellaneous Provisions Act, 1952 and the Payment of Gratuity Act, 1972, Unorganised Workers’ Social Security Act 2008.

## **MGMT 301 Advertisement and Media Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon completion of the course, the student will be able to:

- Select appropriate promotion mix to meet marketing objectives
- Analyze and implement branding strategies to solve business problems
- Understand various issues and limitations involved in promotion mix

## **COM 312 Personal Finance**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon completion of the course the student will be able to

- Understand the requirements of Personal Financial Plan can develop and implement a budget.

- Use retirement planning calculators and other financial calculators.
- Understand Proactive and reactive ways to deal with Investment frauds and low quality financial services.

## **Sixth Semester**

### **LAW 302 Environmental Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### **Learning Outcomes:**

- The students will be able to evaluate and formulate environmental law and policy.
- The students will be able to understand effectively the working of the Institutions relating to environment.
- The students will be able to develop ability to assess the social and ecological impacts of environmental law and policy.

### **LAW 304 Interpretation of Statutes and Principles of Legislation**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### **Learning Outcomes:**

- The student will be able to Locate, identify and critically analyse relevant statutes, statutory provisions and legislative instruments, as well as pertinent judicial authority;
- The student will be able to interpret the appropriate provisions using the accepted tools and techniques of statutory interpretation;
- The student will be able to apply statutory provisions to fact scenarios and communicate the interpretation, nature and effect of statutory provisions to relevant stakeholders, such as clients and courts.

## **LAW 306 Jurisprudence – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to resolve typical legal conflicts, select and interpret codes and other current legislation.
- The student not only will be able to use this skill in practice but will also be motivated to take up detailed historical studies on his own after the course.
- The logical analysis of legal concepts sharpens the logical technique of the students.
- They will be able to find the difference between enforcement of codes and cases.

## **LAW 308 Labour Law – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to understand the provisions of the Factories Act, 1948.
- The students will be able to know the provisions and procedure about the factory inspection.
- The students will be able to understand the provisions and procedure of the Minimum Wage Act, 1948, Maternity Benefits Act, 1961, Employees' State Insurance Act, 1948.

## **MGMT 302 Audit Practice**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon completion of the course, the student will be able to:

- To discuss need for an external audit and its importance.
- Describe the various levels of persuasiveness of different types of audit evidence.
- Identify appropriate assertions at risk and apply appropriate audit procedures to test the assertions identified
- Understand auditors' legal liabilities, and be able to apply case law in making a judgment whether auditors might be liable to certain parties.

### **MGMT 303 Business Ethics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

Upon Completion of the course the students will be able to:

- Understand the aspect of Indian values and ethics.
- Understand the aspects of business ethics and its compliance.
- Correlate law and ethics and its practices in life.

**Objective :**The objective of the course is to give a basic idea about the principles of business ethics. The students will learn about the importance of ethics its evolution and its relation with Law and business disciplines.

## Seventh Semester

### LAW 402 Civil Procedure Code – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:**

- To analyze, outline and assess the structure and purpose of the civil courts system as it presently operates.
- To assess the sources of procedural rules and practices in the Supreme Court. Assessment criteria.
- To analyze and evaluate the steps prior to litigation, the process of preparation for trial and the enforcement of judgments or orders and costs.

### LAW 404 Criminal Procedure Code – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:**

- The students will be made aware about constitution of Criminal Courts & requisites for institution of criminal proceedings.
- The students will be able to initiate various procedures for seeking justice in criminal cases.

### LAW 409 Principles of Taxation Law

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:**

- The students will be able to understand the procedure of direct tax assessment.

- The students will get thorough knowledge about the means and techniques of computing the total income and define tax complicacies and structure.
- The students will be imbued with the understanding of amendments made from time to time in Finance Act

### **LAW 410 Public International Law**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to get indepth knowledge of Public International Law.
- The students will be able pursue careers in government agencies, international organisations, non-governmental organisation and the private law firms which are dealing in global legal issues.
- The students will be able get theoretical knowledge and handle the complexity of drafting of various instruments which encouraged them to think creatively about the challenges within the Public International law.
- The students will able to understand a system regulating interstate interactions.

### **LAW 508 Professional Ethics and Accountancy for Lawyers**

**Max. Marks : 100**  
**(CA : 40 + ESA : 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcome:**

- The students will demonstrate comprehensive and accurate knowledge and understanding of code of conduct required for Legal Profession.
- The students will be able an exhibit understanding of Lawyers in the whole process of administration of justice.

- The students will study the provisions of Advocates Act, Contempt of Courts Act & Rules of Bar Council

## **Eighth Semester**

### **LAW 401 Administrative Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to analyse the advanced principles of administrative law, undertake self-directed legal research at primary level and evaluate complex legal information with a particular emphasis upon legislation.
- The students will be able to apply principles of Administrative law to complex legal problems.
- The students will be able to analyse the impact and operation of administrative law for government accountability
- The students will be made aware about the legal remedies under Administrative law.

### **LAW 403 Civil Procedure Code – II**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to understand the practical aspects of Civil Procedure.
- The students will be able to research properly and cite Legal authorities, such as cases, statutes and secondary sources.
- The students will be able to understand the remedial procedure under the Civil Procedure.

- The students will get aware with the provisions related to Law of Limitation.

### **LAW 405 Criminal Procedure Code – II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be aware with the intricacies of trial proceedings.
- The concept of plea bargaining, double jeopardy etc under criminal justice system will be imbibed in the learner.
- The students will understand remedial measures under criminal justice system.

### **LAW 407 Human Rights Law and Practice**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to think analytically about the implementation and development of international human rights law and to apply this body of law in your own professional and national setting.
- The students will be able to promote an advanced and complex understanding of the theoretical, conceptual and practical challenges facing the fields of human rights law and sustainable development, adopting an interdisciplinary approach.
- The students will learn the concepts of the status of individual criminal responsibility under international law, the applicability of IHL to UN peacekeeping/peace building/enforcement missions as well as the recent challenges before IHL

## **LAW 408 Intellectual Property Laws**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The learners will be able to use the principles of various IP laws while analyzing a problem related to IPR.
- Proficiency with the ability to engage in competitive exams like Patent Attorney, Trade Mark agent etc will be developed.

## **LAW 501 Alternative Dispute Resolution**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to understand various methods of resolving disputes under ADR system.
- The students will develop understanding of participants' negotiating behaviour.
- The students will be able to use such processes to advance the interests of clients.

## **Ninth Semester**

### **LAW 504 Information Technology Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be made aware about different aspects of Information Technology Law.
- The students will become acquainted with the ongoing issues under law managing in innovative perspective and the subject will urge them to do work in research field.

- The students will learn different domains managed by information technology law, for example e-contract, digital signature.

### **LAW 505 Law of Evidence**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The student will be able to analyse and define the concept and general nature of evidence, and illustrate the different types of evidence and court procedures relating to evidence.
- The student will be able to determine and analyse the standard of proof and burden of proof in civil and criminal cases, and specify types of presumptions.
- The student will be able to understand rules governing examination in chief, cross examination and re-examination, and establish the procedures in civil or criminal trial.

### **LAW 509 Property Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to know how to apply knowledge and able to solve practical problems related to property.
- The students will be able to integrate theoretical knowledge and handle the complexity of drafting the various instruments of transfer of property.
- The students will possess, understand and develop their skill in property related issues and can establish them self in civil cases as their specific area.

## **LAW 503 Drafting, Pleading and Conveyancing**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to draft legal documents.
- The students will be able to guide and advise client regarding effect and enforcement of deeds and documents.
- The students will be able to structure a commercial contract, draft notices and pleadings.

## **Tenth Semester**

### **LAW 512P Moot Court, Internship and Corporate Legal Training**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 48 24</b>

### **Learning Outcomes:**

- The students will be able to develop advocacy skills.
- The students will get familiarize with the various stages of trial in civil and criminal cases.
- The students will be exposed to real court experience and they should imbibe the skills of client interviewing.

## Discipline Electives

### LAW 411 Banking Law

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### Learning Outcomes:

- The students will be able to understand the banking operations that form the part of day today life.
- The students will get the knowledge of the banking and exposure to legal and regulatory aspects that have a bearing on banking.
- The students will be able to advice and guide in basic banking operation and will be job ready for banking jobs.

### LAW 414 Financial Market Regulations

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### Learning Outcomes:

After the completion of the course student will be able to

- Explain the main concepts of overall financial sector.
- Describe financial sector developments in India.
- Examine the role of market regulators in Indian financial sector.

### LAW 506 Media and Law

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### Learning Outcomes:

- The students will be able to evaluate the role and impact of self-regulation on the media and journalists.

- The students will be able to understand the role of the press in a democracy.
- The students will be able to explain and apply the laws of defamation and Contempt of court, privacy law, broadcasting law and intellectual property to practice.

### **LAW 406 Health Law**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will have appropriate level of knowledge of various laws relating to health care, including Mental Health, Transplantation of Organs & Tissues Act, AIDS Act, etc.
- The students develop their understanding regarding medical ethics and medical profession, and topics like medical negligence, euthanasia, surrogacy, etc.

### **LAW 413 Energy Law**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students are able to develop legal awareness about the rapidly expanding energy sectors and its future along with various alternatives of energy system.
- The students are able to develop mastery in negotiating investment deals for energy companies and frame energy policies for companies.
- The students are able to understand the effects of Global warming and Green house gas emissions.

## **LAW 415 Penology and Victimology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

After the completion of the course student will be able to:

- Explain the main concepts of victimisation and penology, and describe their trends in criminal justice.
- Describe historical developments in penology, with regards to the reasons for punishment.
- Examine victimisation and punishment as complimentary aspects of the criminal process and their reciprocal effect on social perceptions.

## **LAW 416 Sports Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes :**

After the completion of the course student will be able to:

- Enhance knowledge in Sports law
- Understand vital rules and regulations of the sporting authorities of India and the world
- Understand the practical aspects of the sporting world vis a vis Law.

## **LAW 412 Comparative Constitution**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

After the completion of the course student will be able to

- Familiarize with key political concepts like political obligation, sovereignty, Rule of Law, etc. which interlace the idea and the institution of State. Knowledge of such concepts become imperative for any student of law and politics as some of these political concepts are constitutive of the idea of law.
- Understand the law as a political and social category while students of politics interested in theory and history of ideas will find it engaging to study the dialectics between law and State as it unfolds within the politico-legal institutional framework and processes.

## **Reading Electives**

### **LAW 513R Women and Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

- The students will be able to understand the socio-legal position of women and special provisions made for them.
- The students will be able to get the knowledge of efforts made for the betterment of women at International level.

### **LAW 510R Law and Public Policy**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

- The student will be aware about Parliamentary Democracy and the law making process.
- The students will get the knowledge of Law & Public policy in today's context.

### **LAW 511R Law of Equity and Trust**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

- The student will be able to demonstrate an advanced and integrated understanding of equity and trust principles.
- They will be able to analyse and research complex problems relating to equity and trust principles.

### **MGMT 524R Foundation of Indian Ethos and Culture**

**Max. Marks : 100**  
**(ESA: 100)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

- The students will get exposure regarding foundational ideas of Indian culture and rationale for studying Indian ethos.
- The students will get the knowledge of the foundation of Indian culture.

### **MGMT 526R Managing the Personal Finance**

**Max. Marks : 100**  
**(ESA: 100)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

- The students will get exposure regarding preparing and filing tax returns, banking services etc.
- The students will get the knowledge of money management.

# BANASTHALI VIDYAPITH

## Bachelor of Computer Applications



### Curriculum Structure

First Semester Examination, December-2019  
Second Semester Examination, April/May-2020  
Third Semester Examination, December-2020  
Fourth Semester Examination, April/May-2021  
Fifth Semester Examination, December-2021  
Sixth Semester Examination, April/May-2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

July, 2019

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## **Programme Educational Objectives**

The main objectives of the programme are:

- › Design and develop applications to analyze and implement databases and write programs in different programming languages to solve all computer science related problems
- › Design applications for any desired needs with appropriate considerations for any specific need on societal and environmental aspects
- › Integrate and apply efficiently the contemporary IT tools to all computer applications
- › Solve and work with a professional context pertaining to ethics, society, culture, environment and business
- › Involve in perennial learning for a continued career development and progress as a computer professional
- › Communicate effectively and present technical information in oral and written reports
- › Function competently as an individual and as a leader in multidisciplinary projects to demonstrate computing and management skills
- › Create and design innovative methodologies to solve complex problems for the betterment of the society
- › Apply the inherent skills with absolute focus to function as a successful entrepreneur
- › BCA graduates who will exhibit effective work ethics and be able to adapt to the challenges of a dynamic job environment.
- › Acquire proficiency in the basic mathematics, statistics and probability employed in Computer Science.

## Program Outcomes

After completion of the course, the student will achieve the following:

- **PO1. Domain Knowledge:** Apply the knowledge of mathematics, strong fundamental concepts on data structures, database technologies, programming such as C, C++, Java, COBOL, etc., networking, multimedia in the modeling and design of IT applications. Also apply the knowledge gained on laboratory experiments.
- **PO2. Problem analysis:** Identify, formulate, and analyze existing algorithms for different real life problems using different domain knowledge
- **PO3. Design/development of solutions:** Design, develop, test and maintain desktop, web and cross platform software applications using modern tools and technologies that are technically sound, economically feasible, socially and industrially acceptable.
- **PO4. Analyzing Complex problems:** Use domain based knowledge to function effectively on various problems to achieve a common goal to provide effective solutions for complex real life problems using limited resources.
- **PO5. Usage of Modern IT tools:** Use MS Office tools such as Word, Excel, PowerPoint and Access for computing, analysis and interpretation of data and simulation tools for problem solving in different computer application domain.
- **PO6. The Professional and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional computer applications.
- **PO7. Environment and sustainability:** Understand the impact of the professional computer applications in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- **PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

- **PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO10. Communication:** Exhibit the critical thinking and communication skills required to enable the graduate to communicate business ideas to senior management and general public.
- **PO11. Project Management:** Demonstrate knowledge of the computer application and management principles to apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change

## First Semester

### CS 107 Computer Fundamentals and Programming

### CS 114L Computer Fundamentals and Programming Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On successful completion of the course students will be able to

- Develop conceptual understanding of input and output devices of computers and how it works and recognize the basic terminology used in computer programming
- Develop the ability to write, compile and debug programs in C language and use different data types for writing the programs.
- Formulate the programs based on structures, loops and functions.
- Conceptualize the understating of differentiating between call by value and call by reference.
- Develop the conceptual understanding of the dynamic behavior of memory by the use of pointers.

### MATH 108 Mathematics – I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of the course, the student will be able to:

- Solve mathematics problems related to integration, differentiation, Binomial theorem.
- Solve problems related to fundamentals of logarithms,
- Understand the concept of sets, relation and function and apply them for simple problems.
- Explain the concept of Boolean algebra.

## **MGMT 101 Accounting and Financial Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Have knowledge of book-keeping and financial accounting.
- Maintain the basic books of accounts and prepare various statements.
- Process and prepare final accounts i.e. trading, profit and loss accounts and balance sheet.

## **ELE 101L Basic Digital Electronics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

## **Second Semester**

### **CS 103 Computer Architecture and Object Oriented Programming**

### **CS 103L Computer Architecture and Object Oriented Programming Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On successful completion of the course students will be able to

- Equip the students to meet the requirement of corporate world and Industry standard.
- Engage in professional development and to pursue graduate education in the fields of Information Technology and Computer Applications
- Apply computing principles and business practices in software solutions, outsourcing services, public and private sectors

- Apply C++ features to program design and implementation.
- Explain object-oriented concepts and describe how C++ including identifying the features and Peculiarities of the C++ programming language support them.
- Use C++ to demonstrate practical experience in developing object-oriented solutions

### **STAT 102 Basic Statistics and Probability**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, the student will be able to,

- Learn the nature of statistics and how it plays an important role in our daily lives.
- Organize and summarize data, and represent graphically the important information contained in a data set.
- Compute numerical quantities that measure the central tendency and dispersion of a set of data.
- Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
- Understand and apply the basic concepts of statistical inference.

### **STAT 102L Basic Statistics and Probability Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### **Learning Outcomes:**

On completion of the course, the student will be able to,

- Express raw data in terms of frequency table by using exclusive and inclusive method of classification for continuous/discrete variable.
- Apply and justify the use of, various graphical representations such as Histogram, Frequency polygon etc.
- Interpret and analyze the data using various averages such as arithmetic Mean, Median and Mode.

- Compare different data sets using methods such as standard deviation, mean deviation, quartile deviation and coefficient of variation.
- Employ and interpret the measures of Skewness and Kurtosis.
- Fit the linear regression equation for real data sets arising in various fields of the populations.

### **MGMT 106 Management Principles**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership
- Understand various theories and management principles.

## Third Semester

### CS 208 Computer Oriented Numerical and Statistical Methods

#### CS 208L Computer Oriented Numerical and Statistical Methods Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Using appropriate numerical methods, determine the solutions to given non-linear equations, systems of linear equations, interpolation, numerical differentiation and integration and numerical solution of ordinary differential equations.
- Analyze the errors obtained in the numerical solution of problems.
- Apply appropriate algorithms to solve selected problems, both manually and by writing computer programs.
- Compare different algorithms with respect to accuracy and efficiency of solution.
- Implement numerical methods algorithm using programming language.

### CS 211 Data Structures

#### CS 211L Data Structures Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- choose appropriate data structure as applied to specified problem definition.

- handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- apply concepts learned in various domains like DBMS, compiler construction etc.
- use linear and non-linear data structures like stacks, queues , linked list etc.

### **MATH 204 Mathematics - II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On completion of the course, the student will be able to,

- Solve linear Equations by matrix Methods
- Understand the importance of LPP in daily life
- Recognize the connections between different branches of mathematics
- Recognize and appreciate the connections between theory and applications
- Appreciate the role of mathematical proof as a means of conveying mathematical knowledge

### **Fourth Semester**

#### **CS 201 Application Software and Visual Computing**

#### **CS 217L Application Software and Visual Computing Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Familiarity with windows environment while practicing on Windows
- Achieve operator skills in MS-Word, MS-Excel and MS-PowerPoint.
- Understand basic concepts of database system and its use as backend (MS-Access) in a project at any level.

- Gain knowledge of visual programming through VB.NET as a programming language in .NET framework.
- Develop a small (minor) project.

### **CS 206 Business Data Processing**

#### **CS 206L Business Data Processing Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Develop Business applications in Cobol.
- Identify all peripheral devices.
- Prepare of all documents developed during system development.

### **CS 215 System Programming**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- To define the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger.
- Define how computer and operating system handles the memory.
- Describe the various concepts of assemblers and microprocessors.
- To analysis the various phases of compiler and compare its working with assembler.
- To examine how linker and loader create an executable program from an object module created by assembler and compiler.
- To identify various editors and debugging techniques

## Fifth Semester

### CS 320 Programming in Java

### CS 321L Programming in Java Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On successful completion of the course students will be able to

- Apply Object oriented features to program design and implementation.
- Explain object-oriented concepts and describe how Java including identifying the features and peculiarities of the Java programming language supports them.
- Use Java to demonstrate practical experience in developing object-oriented solutions using graphical components.
- 

### MATH 308 Quantitative Techniques (Math)

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Formulate and solve problems as networks and graphs.
- Define and formulate linear programming problems and appreciate their limitations.
- Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained and translate solutions into directives for action.
- Conduct and interpret post-optimal and sensitivity analysis and explain the primal-dual relationship.
- Develop abilities to think critically and analytically to address more challenging optimization problems.

## Sixth Semester

### CS 307 Multimedia and Web Designing

#### CS 307L Multimedia and Web Designing Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Design and develop a static and dynamic website
- Use java script to add dynamic content to website.
- Analyze the various latest interactive multimedia devices and the basic concepts about images and image format.
- Discuss various multimedia tools like Photoshop, Flash.
- Design interactive multimedia software using multimedia tools(Photoshop, Flash) and web programming languages (HTML, CSS, Java Script, PHP)

### MATH 309 Introduction to Discrete Mathematics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On completion of the course, the student will be able to,

- Write an argument using logical notation and determine if the argument is or is not valid.
- Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
- Understand the basic principles of sets and operations in sets.
- Prove basic set equalities.
- Apply counting principles to determine probabilities.
- Demonstrate an understanding of relations and functions and be able to determine their properties.
- Determine when a function is 1-1 and "onto".

- Demonstrate different traversal methods for trees and graphs.
- Model problems in Computer Science using graphs and trees.

### **CS 310L Project Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

## **Discipline Electives**

### **CS 319 Operating Systems**

#### **CS 319L Operating Systems Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Learn the fundamentals of Operating Systems.
- Learn the mechanisms of OS to handle processes and threads and their communication
- Learn the mechanisms involved in memory management in contemporary OS
- Gain knowledge on Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols
- Know the components and management aspects of concurrency management
- Learn Case study of Unix OS.

### **CS 303 Database Management Systems**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Describe data models and schemas in DBMS
- Learn the features of database management systems and Relational database.
- Use SQL-the standard language of relational databases.
- Learn the functional dependencies and design of the database.
- Learn the concept of Transaction and Query processing.

### **CS 303L Database Management Systems Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **CS 323 Web Development and .NET Framework**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to

- Develop working knowledge of C# programming constructs and the .NET Framework architecture.
- Develop, implement and create Applications with C#.
- Build and debug well-formed Web Forms with ASP. NET Controls
- Use of XML in ADO.NET and SQL server.

### **CS 323L Web Development and .NET Framework Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## List of Discipline Elective - II

### CS 301 Communication and Networking

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On successful completion of the course students will

- Be able to demonstrate knowledge of the network and its application areas.
- Have the ability to use various networks protocols.
- Have an understanding of the proper contents of a data communication and networking

### CS 322 System Analysis and Design

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On successful completion of the course students will be able to

- Understand the need of system Analysis.
- Design different tools associated with system analysis
- Design understand the requirement of computer center management.

### CS 318 Cloud Computing

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On successful completion of the course students will be able to

- Apply cloud computing model in real application.
- Use programming paradigms like Map Reduce to create applications.
- Operate cloud by installing virtual machines and apply migration.
- Understand the challenges of cloud
- Aware about the Access Control mechanisms of cloud.

# BANASTHALI VIDYAPITH

## Bachelor of Commerce



### Curriculum Structure

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022

**BANASTHALI VIDYAPITH**

**P.O. BANASTHALI VIDYAPITH**

**(Rajasthan)-304022**



July, 2019

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## **Programme Educational Objectives**

As commerce education is getting redefined in terms of analytical inputs and sustainable ecosystem, the focus of programme should be on developing leadership acumen among women in consonance with value education imparted at Banasthali Vidyapith. With the advent of time the area of commerce is getting broader and is redefining itself. In the dynamic environment setup, a person of commerce is expected to analyze and foresee the situation arising and act accordingly. The knowledge of commerce is now crossing the boundaries, where it used to be just limited to recording of financial transactions and now it has become an essential tool for any business decision. Commerce education has remained an essential element for any aspect related to business and economics. With the growing economy the requirement for the knowledge has also grown in past years.

The educational philosophy in commerce is rooted in Indian culture and the value education provided by Banasthali Vidyapith. The curriculum of commerce offered at Banasthali Vidyapith is designed keeping in view the existing and emerging requirements of different forms of organizations. On one hand the students are taught the traditional subjects related to commerce while on the other, new developments including the technology affecting the commerce and futuristic opportunities also form the choice of subjects offered to the students. With a focus to develop practical aspect an industrial training project is inculcated in the curriculum, while the curriculum also includes Term Paper as an element to nurture the research potential of the students.

The main objectives of Commerce programme are:

1. To provide holistic development of the students by providing a combination of technology and value based traditional education.
2. To enhance the computing and recording skills of the students by providing the best of curriculum in accounting and other relevant subjects.
3. To enhance the understanding of the Economic and business factors by inculcating the knowledge and information about various national and international standards of Business and Economics.

4. To develop the understanding of the various taxation and legal standards and their implications, which may further open various career avenues for the students.
5. To provide knowledge of industry and practical outlook, by implementing various industry accepted courses and industrial training for the better development of the students and making them job ready.
6. To enhance the critical thinking, nurture innovation and evaluating ability by imbibing the knowledge of research and statistics amongst the students.
7. To develop motivated and entrepreneurial young girls who have the acumen for leadership and development of the society in consonance with the values imparted at Vidyapith.

## Programme Outcomes

- PO1: Knowledge:** The commerce graduate will possess the knowledge and efficiency to understand the fundamentals and implications of commerce and finance, along with this they will be able to understand various intricacies associated with business which will develop through various tax and economics related subjects. The B.Com. graduates will be able to get holistic knowledge about the commerce aspect associated with society and business.
- PO2: Planning abilities:** The student will not only be equipped with business management abilities after the completion of the course rather they will be equipped with the knowledge to plan the financial and tax issues associated with business and individuals.
- PO3: Problem Analysis:** Learner will be able to use the principles of various commercial aspects while analysing a problem. The knowledge of various commercial subjects that they have will be put into use through research and industrial training. A scientific problem analysis method will be used for analysing the problems under study.
- PO4: Modern Tool Usage:** Modern statistical and analytical tools will be used for analysing various problem under study and understanding the concept of commerce and finance.
- PO5: Leadership Skills:** As commerce education is getting redefined in terms of analytical inputs, environment and start-ups, the focus of programmes is on developing leadership acumen among women in consonance with value education imparted at Banasthali Vidyapith. The course will impart the traditional and modern outlook amongst the students for various commercial and financial aspects.
- PO6: Professional Identity:** Learners will be able to recognise features and roles of businessmen, entrepreneur, managers, consultant, which will help learners to possess knowledge and other soft skills and to react aptly when confronted with critical decision making. Learners will be able to prove proficiency with the ability to engage in competitive exams like CA, CS, ICWA and other courses.

- PO7: Ethics:** The learners will be imbued with utmost professional ethics that are required for a practical and impartial behavior of the commerce graduates. Demonstrate behavior in consonance with the values and ethics nurtured at the Vidyapith, which are significant as the learner will function in the finance sector, and an ethical behavior of the highest level is expected from them.
- PO8: Communication:** Graduates can communicate complex ideas effectively and accurately in range of contexts research, plan, and produce written assignments to acceptable academic standards. Learner can apply advanced written communication skills in a public or private sector 'business' context and deliver professional quality presentations using appropriate technology. They will be able demonstrate oral communication and listening skills in small group learning environments.
- PO9: Local and Global Citizenship:** Commerce Graduates will be able assess the way in which legislation and government policy influences the business environment in national and global contexts. The learner will be able to demonstrate an awareness of cultural differences and the skills needed to work effectively in multi-cultural environments within India and internationally.
- PO10: Environment and sustainability:** Learners will involve in various co-curricular activities to demonstrate relevancy of foundational and theoretical knowledge of their academic major and to gain practical exposure. That will help in adapting the economic and business environment.
- PO11: Life Long Learning:** Learner will be able to gain the knowledge that will help in acquiring the practical skills to work as tax consultant, audit assistant and other financial supporting services. They will also be able to do higher education and advance research in the field of commerce and finance.

## First Semester Disciplinary Courses

### COM 104 Financial Accounting

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Course Objectives:

1. To understand the basics of financial accounting, book-keeping and the accounting principles of GAAP (i.e. concepts and convention).
2. To have an understanding of the rules of debit credit, preparation of various books of accounts (i.e. Journals and ledgers) and statements (i.e. Trial balance, rectification, etc).
3. To foster an understanding of the concept of depreciation including its types and preparation of bills of exchange and bank reconciliation statements.
4. To develop skills for preparation of final accounts through practice of comprehensive questions.

#### Learning Outcomes:

Upon completion of the course student will be able to:

- Get knowledge of book-keeping and financial accounting
- Maintain the basic books of accounts and prepare various statements.
- Process and prepare final accounts i.e. trading, profit and loss accounts and balance sheet.

### ECO 101 Fundamental of Micro Economics – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Course Objectives:

1. To develop the knowledge of and economic agent, namely, consumer and producer.

2. To understand the concepts of demand and elasticity of demand.
3. To understand the production function and cost function in manufacturing units.
4. Basic knowledge of different types of cost available in industries.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the utility approach and consumer equilibrium.
- Learn how the elasticity of the product affects the purchasing habits of the consumer.
- Determine consumption patterns of the consumer in relation to income effect and price effect.
- Understand the cost combinations in an industry.

## **LAW 101 Business Law**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Course Objectives:**

1. To enable students to know about Indian Contract Act, Sale of Goods Act, Indian Partnership Act, Negotiable Instruments Act and legal issues concerned with business activities.
2. To understand the legal regulations while entering into a contract.
3. To provide the knowledge about legal terminologies, basic concepts, practices in the field of Law.
4. To provide the students with practical legal knowledge of general business law issues.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the basic strategies that can be used to solve legal problems.
- Apply their knowledge in solving realistic problems.
- Explain the legal system and various fundamental concepts.

- Apply the rules of contract law to real-life and theoretical issues that may arise in connection with contracts.

## **MGMT 102 Foundation of Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Objectives:**

1. To introduce the students to the foundation of principles of management.
2. Practice the process of management's four functions: planning, organizing, leading and controlling.
3. Observe and evaluate the influence of historical forces on the current practice of management.
4. Provide the students with the capability to apply theoretical knowledge in simulated and real-lifettings.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership
- Understand various theories and management principles.

## **CS 105 Computer for Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Objectives:**

1. The students will be introduced to the basic concepts of computers including software, hardware, and various other elements.
2. An insight will be developed on the Programming Languages along and problem solving ability will be developed using various peripherals of computers.

3. The students will be trained in using MSWord and Excel along with the knowledge of applying various mathematical and statistical formulas using excel.
4. To develop the understanding of Microsoft Power point presentation for making an effective presentation including various novel concepts and methods to present the idea.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Use the basic computer for the daily working.
- Design and use worksheet for various purposes of management and finance.
- Give effective presentations using the tools in the power point presentation.
- Develop the conceptual understanding.

**CS 113L Computer for Management Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

**Course Objectives:**

1. The objective of the course is to enable the students to learn the concepts of Word, Excel, Power Point.
2. To provide students a practical outlook and understanding of the computers.

**Learning Outcomes:**

- Use computers in their daily life for better efficiency.
- Represent their knowledge with the help of the computers and various software's

## Second Semester

### Disciplinary Courses

#### COM 103 Cost and Management Accounting

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Course Objectives:

1. To understand the concept of management and cost accounting.
2. To understand the concept of material handling in manufacturing organization.
3. To understand the labor management in different organizations.
4. To understand the concept of allocation and apportionment of overheads.
5. To study the different strategic decision by using marginal costing.
6. To understand the new trends in management accounting.

#### Learning Outcomes:

Upon completion of the course student will be able to:

- Understand how to use cost and management accounting.
- Understand the concept of material, labor and overheads used in manufacturing.
- Advice and guide on strategic decisions.

#### ECO 102 Fundamentals of Micro Economics -II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Course Objectives:

1. To develop the knowledge about revenue curves under perfect market and imperfect markets

2. To understand the concepts of monopoly, duopoly oligopoly and monopolistic competition
3. To understand the classical theory and modern theory of wages and what is the role of trade unions in determining the wages for the labours
4. Basic knowledge of theories of profit, rent and interest.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the market structures and the current market scenario.
- Get the knowledge of the different types of sellers available in the markets.
- Determine the prices for the product available in the different types of markets.
- Understand the factor payments and their determination.

## **MATH 109 Mathematics for Business Applications**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives:**

1. The subject will focus on developing the mathematical ability of the students by making them understand the concept and implication of Math.
2. The students will be trained in using Matrix for problem solving.
3. The students will be introduced to the concept of differentiation and integration and will be enabled to use the same for problem solving.
4. The students will be introduced to the concept of permutation and combination.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Determine the particular progression work (AP, GP, HP)
- Demonstrate the determinant of a matrix up to third order.

- Identify the notations, Operations and applications of sets, Functions and relations.
- Use differentiation and integration techniques in problem solving
- Apply factorial, permutation and combinations and uses.

### **LAW 107 Law of Consumer Protection and MV Act**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Course Objectives:**

1. To understand the meaning of consumer, the concept of sovereignty and the legislative history that lead to the Implementation of Consumer Protection Act, 1986. Economic problems in these economics and their solution.
2. To understand how the consumer interest has been safeguarded under the tort, contract and criminal laws
3. To understand the composition and functioning of the consumer councils at different level
4. To understand the jurisdiction procedure and function of the State and National commission
5. To have the basic understanding about the Motor Vehicle Act

#### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the existing law on consumer protection in India.
- Aware of the basic procedures for handling consumer dispute and issues on motor vehicle

### **TSKL 101 Business Communication**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Course Objectives:**

1. To understand the basics of communication as a process.
2. To understand the implementation of business communication in professional settings.
3. To enhance the listening skills for better communication.
4. To develop upon the written and oral forms of communication with wise selection and usage of words.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the essential of efficient communication mechanism.
- Get the knowledge about drafting resumes and business letters.
- Make mindful selection when it comes to listen and write for communication purposes.

**COM 301 Business Environment and Strategy**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives**

1. To enable students identify with the critical elements of the business environment.
2. To focus on global environment.
3. To give an introduction to the students about strategic management of an organization.
4. To stimulate a field of inquiry that focuses on the organization as a whole and its interactions with its environment.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand business environment, its importance and how to scan the environment at micro and macro level to produce desirable results for their business.
- Learn why now a day's companies going for international operation, and challenges faced by the companies internally.

- To develop the strategic orientation among students for solving the business problem and they start thinking strategically.
- To develop practical implementation orientation of the concept among the students.

## **Third Semester**

### **Disciplinary Courses**

#### **COM 203 Corporate Finance - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Course Objectives:**

1. To understand the techniques of financial planning.
2. To understand the financial Position of company cash flow and fund flow analysis.
3. To understand the concept of Investment decision through capital budgeting method.
4. To enable students to get a deep insight about the structure and functioning of capital and money market

#### **Learning Outcomes:**

Upon Completion of the course student will be able to :

- Understand the financial planning.
- Analyze the financial position of company.
- Advice and guide in investment decision of firms.

#### **COM 207 Income Tax**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Course Objectives:**

1. To acquaint the students with the various basics of income tax.

2. To introduce the students to various heads of income as per tax norms.
3. To introduce various tax slabs and norms of taxation to the students.
4. To acquaint the students with various tax filing procedure and tax planning methods.

**Learning Outcomes:**

Upon Completion of the course student will be able to :

- Understand various intricacies associated with income tax.
- Plan and file income tax in a proper and legitimate way.
- Acquire knowledge of various legal formalities associated with Income Tax.

### **COM 211 Principles and Practices of Banking**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Course Objectives:**

1. To understand the basics of banking system of India.
2. To understand the functionalities associated with banking which affect the normal individuals' life.
3. To understand the banking operations and various norms related to banking instruments and negotiable instruments.
4. To provide the knowledge about credits, deposits and other important aspects related to retail banking.

**Learning Outcomes:**

Upon completion of the course student will be able to :

- To understand the banking operations.
- To advice and guide in basic banking operation.

### **MGMT 203 Bhartiya Prabandhan**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Course Objectives:**

1. The primary purpose is Self-Realization
2. To introduce the students to the basics of Indian Management thought and practice.
3. To generate awareness about the cultural and spiritual values of Indian society and their implications for modern managers.
4. To understand Indian Philosophical Thoughts from Vedant and BhagwadGeeta.
5. To provide the knowledge about eastern and western management, social management, wisdom workerand other important aspects related to BhartiyaPrabandhan.

**Learning Outcomes:**

Upon completion of the course student will be able to :

- Understand ancient Indian spiritual teachings and their relevance in present day life.
- Have a value oriented approach in their everyday life.

**STAT 201 Business Statistics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives:**

1. To familiarize students with the meaning, importance and limitations of statistics
2. To understand the difference between Primary and Secondary data, Census and Sample Survey, with their respective advantages and disadvantages.
3. To learn the calculation and interpretation the meaning of different measures of dispersion.
4. To introduce the classification and tabulate given data along with being able to calculate its average and interpret its meaning.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Differentiate between Primary and Secondary data, Census and Sample Survey, with their respective advantages and disadvantages.
- Classify and tabulate given data along with being able to calculate its average and interpret its meaning.
- Calculate and interpret the meaning of different measures of dispersion.
- Meaningfully analyze qualitative variables using techniques from theory of attributes.
- Identify the nature and degree of linear relationship between two concerned variables, using Curve fitting techniques, Correlation and Regression.

### **STAT 208L Business Statistics Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

**Course Objectives:**

1. To develop understanding of practical aspects of statistics.
2. To understand the development of statistical tables using software's.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Solve the statistics problem using technology.
- Use statistical tools for the purpose of research.

## Fourth Semester

### Disciplinary Courses

#### COM 201 Advanced Accountancy

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Course Objectives:

1. To understand the basics and working of partnership firm focusing on various accounts, adjustments and goodwill treatment.
2. To have an understanding of the effects of admission, retirement and death of a partner, including dissolution of the firm.
3. To foster an understanding of shares with respect to issue, redemption, underwriting and forfeiture. Also to understand issue and redemption of debentures.
4. To develop an understanding of amalgamation of companies focusing on valuation of shares. Also learning about the liquidation of companies

#### Learning Outcomes:

Upon completion of the course student will be able to:

- Learn the functionalities of a partnership firm.
- Learn about the various treatments and adjustments with respect to shares and debentures.
- Learn the process and working in case of amalgamation and liquidation of companies.

#### COM 210 Emerging Banking Services

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Course Objectives:

1. To understand the global banking system and the emerging Indian scenario in banking industry.

2. To understand changing service dynamics of banks in India, alternative banking channels, smart apps, payment banks.
3. To study the concepts of banking, third party products, credit & Investment services etc.
4. To study Asset Reconstruction Companies (ARC's), its model and benefits to the parties involved, NPA Management, SARFESI Act and MSME.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Know about banking scenario in India as well as globally.
- Know about various banking products including third party products.
- Know about the recent financial reforms for NPA management.

## **ECO 104 Macro Economics for Managers**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Course Objectives:**

1. To understand the meaning of Macro Economics and its relation with Microeconomics.
2. Develop the knowledge about the financial markets and Banking system in India.
3. To understand the supply of money and inflation , tools , latest trends monetary ,fiscal and globalization policies.
4. To understand perspective of international trade and the concept and significance of various institution like WTO, IMF, WB, and ADB.
5. To understand the structure, features and trends of Indian economy.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the various perspectives of macroeconomics.
- Understanding about the financial markets and banking system in India.

- Get the knowledge of money supply and inflation and how it is measured.
- Understand the macro economics as a policy science and latest trends of monetary , fiscal and globalization policies and how it impact different macro economic variables.
- The student will get the knowledge about the concept of international trade as well as significance of various institutions (WTO, IMF, WB, ADB)

### **LAW 208 Company Law and Secretarial Practice**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Course Objectives:**

1. To impart expert knowledge of the various provisions of the Companies Act.
2. To understand the procedural requirement for appointment of directors.
3. To study the role and responsibilities of chief managerial persons in company.
4. To understand the related party transactions, loans and investment by companies.
5. To study the framework of strategic decision of merger, amalgamation, demerger.
6. To understand the procedures of winding up of company.

#### **Learning Outcomes:**

Upon completion of the course student will be able to:

1. The students will be able to understand the various provisions of Company Law.
2. The students will be able to understand how appointment of directors takes place and legal matters associated with directors.
3. The students will be able to understand the procedural aspects in the merger and acquisition.
4. The students will be able to understand the procedures of winding up of company.

- The students will be able to advice and guide the company law matters and will be job ready for legal department of any company.

### **CS 218L Application Software for Business**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Course Objectives:**

- The main objective of this course is to provide students with the background to design, implement, and use database management systems
- Provide an introduction of DBMS and their use;
- Describe the main features and function of the DBMS;
- Describe & Design of relational database and E-R diagrams;
- To enable students to learn the concept of application software for business.
- To work with basic application software tools like MS Excel, MS Access, Tally, Photoshop and its relevance in organizational functioning.

#### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the use and basic designing of a database system
- Understand the concept of relational databases and normalization
- Design a database and run queries using MS Access
- Create ledger accounts and balance sheets using Tally
- Use Photoshop for simple image editing and creating collages.

### **CS 202L Application Software for Business Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Course Objectives:**

- The objective of the course is to enable the students to learn the concepts of Excel, Tally, Photoshop.

- To develop understanding of the computers for practical purpose.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Use computer for better business presentations.
- Get ready for the entry level jobs where computer knowledge is necessary.

## **Fifth Semester Disciplinary Courses**

### **COM 304 Corporate Finance - II**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives:**

- To understand the concept of investment decisions.
- To understand the concept of dividend for the market valuation.
- To understand the concept of International Financial management.
- To enable students to get a deep insight into emerging trends in mergers and takeovers

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the how to manage the capital with different investment opportunities.
- Understand the functioning of the Forex Market
- Advice and guide in valuation of stock/Shares listed in stock market
- Job ready as fundamental analysts.

## **COM 311 Investment Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Objectives**

1. This course seeks to introduce the students to the field of inquiry that focuses on the security markets and its development globally.
2. To highlight the functioning of the financial markets and its role in resource allocation.
3. To introduce the students to the various asset classes traded in financial markets and its importance.
4. Introducing and acquainting students with different theories, valuation and pricing models.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the dynamics of the markets and the role of the market participants bringing efficiency to the markets.
- Understand the concepts of valuation of financial securities.
- Understand portfolio allocation and how assets are priced in financial markets.

## **LAW 311 Information Technology Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Objectives:**

1. To make students aware so that they can identify and analyze statutory, regulatory, constitutional and organizational laws relating to information technology
2. To acquaint the students with the ongoing issues under law in managing innovative perspective in the field of information technology

- To impart professional knowledge in locating and enabling the student to apply case laws, common law and diverse viewpoints in handling current legal and ethical dilemmas in the field of information technology.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Build up a comprehension about the different aspects of Information Technology Law and all the measures taken to create legitimate structure in innovation progression.
- Learn different domains managed by Information Technology law, for example, e-contract, digital signature, authorities deal with granting of electronic signature and cybercrimes.

## **Sixth Semester Disciplinary Courses**

### **COM 307 Goods and Service Tax**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Objectives:**

- To understand the basics of GST, various definitions covered under it, its levy and the concept of reverse charge mechanism.
- To have an understanding of the concepts of time and place of supply, valuation of good, services and supplies. Also to understand the concept of deemed sales.
- To foster an understanding of the process of GST registration, maintenance of records, filing of returns. Also to understand the concept of payments, refunds, inspection and penalties.
- To develop an understanding of custom duty, its valuation, assessment, payment and procedures for clearances, penalties and offences.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Learn the various terminologies of GST, including its levy of GST and reverse charge mechanism.
- Valuation of goods, services and supplies and have an understanding of deemed sales.
- Learn the procedures of GST registration, filing of returns, refunds and have an understanding of payments, penalties and inspection under various circumstances.
- Have knowledge of custom duty, its valuation and various procedures involved.

### **MGMT 305 E-Business**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Course Objectives:**

1. To understand the various concepts involved in e-Business & e-Commerce
2. To develop an understanding about the aspects like business models, advantages, payment system, legal issues of e-business
3. To gain insight into the concepts of e-CRM, e- SCM, ERP, e-Procurement in e- business.
4. To understand the meaning of concepts like online promotion-banking and crowd-sourcing.

#### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Comparatively evaluate both offline and on-line modes of shopping which they encounter on daily basis.
- Get the knowledge of Marketing & Branding in digital age, e-banking, e-CRM, e- SCM and ERP.

### **COM 315P Term Paper**

**Max. Marks : 100**

**L T P C**

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(CA: 40 + ESA: 60)

0 0 16 8

**Course Objectives:**

1. To encourage the students to undertake research work in area of their interest.
2. To develop basic understanding of Research and analytical statistical techniques amongst students.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Identify a problem and evolving the solution using standardized Quantitative and Qualitative tools.
- Comprehend the process of writing a Term Paper document.

## Discipline Elective

### COM 308 Human Resource Management

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Course Objectives:

1. To provide the students with the basic knowledge relating to concept and practice of Human Resource Management.
2. To develop their understanding of basic tools used in human resource management in an organization in order to achieve corporate goals successfully.
3. To develop the knowledge, skills and concepts needed to resolve actual human resource management problems or issues.

#### Learning Outcomes:

Upon completion of the course student will be able to:

- Improve their ability to think about how HRM should be used as a tool to execute strategies and achieve a competitive advantage
- Get knowledge and skills needed to effectively manage human resources
- Design and formulate various HRM processes such as recruitment, selection, training, development, performance appraisals

### COM 312 Personal Finance

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Course Objectives:

1. To understand the concept of personal finance, personal financial planning process & personal financial statement analysis.
2. To understand the concept of Retirement planning and estate planning.
3. To understand the concept of tax planning and investment planning
4. To understand the concept of financial literacy and role of regulators in promoting financial literacy.

**Learning Outcomes:**

- Understand the requirements of Personal Financial Plan can develop and implement a budget.
- Use retirement planning calculators and other financial calculators.
- Understand Proactive and reactive ways to deal with Investment frauds and low quality financial services.

**LAW 309 Banking Laws****Max. Marks : 100****L T P C****(CA: 40 + ESA: 60)****4 0 0 4****Course Objectives:**

1. To understand the basics of banking system in India.
2. To understand the role of banking regulator.
3. To understand the legal framework associated with banking
4. To understand the banking operations and payment system in banking sector.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the banking operations
- Exposure to legal and regulatory aspects that have a bearing on banking.
- Advice and guide in basic banking operation and will be job ready for banking jobs.

**LAW 312 Law of Torts****Max. Marks : 100****L T P C****(CA: 40 + ESA: 60)****4 0 0 4****Course Objectives:**

1. The students will be able to understand the private law and what it makes it different from other laws.
2. The students will be able to understand the major principle fundamental to the operation of Law of tort

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the major fundamentals of law concerning to compensate those who have been injured by the wrongdoing of others.
- Understand the difference between the law of torts and other laws.

**MGMT 103 Foundation of Marketing Management**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Course Objectives**

1. The objective of this course is to demonstrate and stimulate students to appreciate the various issues and activities involved in marketing management.
2. To provide an understanding of the underlying concepts, strategies and issues involved in exchange of products and services between the firm and markets.
3. To understand the distribution process, its types and factors affecting the choice of distribution channels.
4. To understand the promotion mix and various components of promotion mix.

**Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand various issues and activities involved in marketing management and they stimulate their thinking in this direction specially those who wants to pursue their carrier in this field.
- Understand different concepts, strategies and issues they are involved in exchange of products and services between the firm and the markets.
- Understand distribution process and factors affecting the choice of distribution channels
- Understand promotion mix and various components of promotion mix.

## **COM 302 Business Forecasting**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Objectives:**

1. To introduce to the field of inquiry that focuses on business forecasting techniques.
2. To introduce the students with the available qualitative and quantitative techniques for decision making.
3. To provide inputs on how firms can use these tools to make qualitative decisions in today's business.

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Gauge the importance of quantitative tools.
- Learn the practical importance and application of the subject.
- Learn how business firms use these techniques to make informed decisions.

## **LAW 310 Human Rights Law and Practices**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Objectives:**

1. To develop the understanding that how and why the implementation of international human rights norms differs between India and other countries and regions by considering historical and other differences.
2. To understand human rights at regional and country levels through an in-depth study of jurisprudence and procedural laws in relation to India.
3. To have knowledge about human rights and intended to provide an introduction to the normative and institutional frameworks of IHL.
4. It also attempts to give a general overview of the status of individual criminal responsibility under international law, the applicability of IHL

to UN peacekeeping/peace building/enforcement missions as well as the recent challenges before IHL

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Think analytically about the implementation and development of international human rights law and to apply this body of law in your own professional and national setting.
- Promote an advanced and complex understanding of the theoretical, conceptual and practical challenges facing the fields of human rights law and sustainable development, adopting an interdisciplinary approach.
- Analyze complex problems, find and deploy a variety of legal authorities, and communicate effectively in a variety of settings.

## **LAW 209 Intellectual Property Law**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### **Course Objectives:**

1. To create consciousness amongst the learners about Intellectual Property and different rights relating to it.
2. To create awareness regarding the jurisprudential basis of the intellectual property rights
3. To familiarize the learners with the history of IPR and different aspects of GATT, WTO and TRIPS
4. To familiarize the learners about the registration procedures and the administrative procedures relating to IPR in India

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Learners will have understanding of laws related to Intellectual Property Rights
- The learners will be able to use the principles of various IP laws while analyzing a problem related to IPR.

- Learners will further be able to assess the ways in which legislation and global policy influence the socio-economic environment in India and abroad.
- Learners will be able to prove proficiency with the ability to engage in competitive exams like CLAT, Patent Attorney, Bar Council of India, and other higher education and specialized courses.

# BANASTHALI VIDYAPITH

## Bachelor of Commerce and Bachelor of Laws



### Curriculum Structure

- First Semester Examination, December, 2019
- Second Semester Examination, April/May, 2020
- Third Semester Examination, December, 2020
- Fourth Semester Examination, April/May, 2021
- Fifth Semester Examination, December, 2021
- Sixth Semester Examination, April/May, 2022
- Seventh Semester Examination, December, 2022
- Eighth Semester Examination, April/May, 2023
- Ninth Semester Examination, December, 2023
- Tenth Semester Examination, April/May, 2024

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## **Programme Educational Objectives**

The Vidyapith has long history of nurturing women leaders in all walks of life. Of late its IT, Management and Technology graduates have won accolades for themselves and their alma mater. In consonance with the value education imparted at Banasthali Vidyapith, it conceptualized an all women's law school to nurture legal professionals of the highest order.

The B.Com. LL.B. programme has been conceptualized with a vision of creating dedicated professionals who are well trained in legal studies. The five year integrated programme designed amidst the five-fold education model of Vidyapith would comprise a unique mix of foundational, vocational and variety of disciplinary courses in field of Law to enable the students of diverse backgrounds to find a new perspective of life and play a leading role in administration of justice and upholding the ideals of the Indian Constitution in the promising time to come.

The main objectives of B.Com. LL.B. programme are:

1. To provide holistic development of the students by providing a combination of technology and value based traditional education.
2. To present a wider perspective of law before students by focusing on law subjects along with the subjects like accounting, economics etc.
3. To train women for the legal profession and to provide a centre where scholars might contribute to an understanding of law and participate creatively in its growth and improvement.
4. To demonstrate how the legal rules have developed, the reasons underlying them and to make them understand the nexus between legal and social history.
5. To inculcate the principles underlying the existing legal rules and to point the right road for future development and preparing the students to take up leadership roles especially in corporate world and also in judicial services.
6. To acquaint students with the operative legal rules, both substantive and procedural and to equip them with adequate experience to apply these rules.

7. To equip the students with sufficient knowledge of the historical and sociological background of the country's legal system and to provide understanding of other legal systems of the world so that the students do not find themselves at a complete loss when it comes to adopting a comparative approach.
8. To develop ability amongst the students to participate in Moot Courts, Debates & discussions and Seminars with a good level of confidence and challenge the very premise of legal concepts and their applications.

## Programme Outcomes

- PO1: Knowledge:** The student will be able to understand the fundamentals and implications of various legal rules along with the intricacies involved in legal profession.
- PO2: Planning abilities:** The student will be equipped with different legal abilities after the completion of the course by which they can deal with the different legal issues associated with the society and individuals especially trade and commerce.
- PO3: Problem Analysis:** They will be able to apply legal principles in real life issues through the analytical skills which will be developed by analysis of case laws and critical understanding of statutory provisions.
- PO4: Modern Tool Usage:** Case analysis, Moot Court exercises, Debates, Alternate Dispute Resolution methods, Internships *etc.* will be used to improve their argumentative and writing skills.
- PO5: Leadership Skills:** Today legal education is getting redefined in terms of information technology, globalisation, environment and start-ups; the focus of this programme is on developing professional leaders among women in consonance with value education imparted at Banasthali Vidyapith with traditional as well as modern approach.
- PO6: Professional Identity:** Legal profession is a noble profession and it is not limited to the technical knowledge of legal rules. The prescribed course will help in nurturing the students in a way so that they can meet the standards of different avenues opening in legal profession.
- PO7: Ethics:** The learner will be imbibed with the ethical standards of legal profession & the values nurture at the Vidyapith that are required for practical and impartial behaviour of a law graduate.
- PO8: Communication:** Students will be able to express complex ideas effectively and accurately in every wake of life whether it is professional or social.

- PO9: Local and Global Citizenship:** Students will be able to assess the way in which legislation and government policies are formed and influenced the social, economical and legal order in national as well as global context. They will be able to understand and empathise cultural differences and practices required to work effectively in multi-cultural environment.
- PO10: Environment and sustainability:** Learners will involve in various co-curricular activities like Legal Aid Camps, regular Legal Aid Clinic at departmental as well as institutional level to gain practical exposure that will help them in adapting the socio-economic, legal and political environment.
- PO11: Life Long Learning:** The habit of continuous learning & life-long useful practical skills developed and acquired through the course that will motivate the students for further researches in the field of law, performing different professional roles, ultimately for leading a successful life.

## First Semester

### COM 104 Financial Accounting

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to

- Understand book keeping and financial accounting.
- Maintain basic books of accounts
- Prepare and present final accounts.

### COM 106 Principles and Practices of Banking For Law

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course student will be able to:

- Understand the banking operations
- Advice and guide in basic banking operation and will be job ready for banking jobs

### LAW 103 Law of Contract – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### Learning Outcomes:

- The students will be able to understand various general principles related to contract law.
- The students will be able to deal effectively with the various disputes related to contracts.

## **LAW 105 Law of Torts**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- The students will be able to understand the fundamental principles of tortious liability.
- The students will understand the difference between the law of torts and other laws.

## **CS 111 Introduction to Computer Applications**

### **CS 111L Introduction to Computer Applications Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

On successful completion of the course students will be able to

- Understand input and output devices of computers and recognize the basic terminology used in computer programming
- Understand the Microsoft Office package, MS-DOS and Unix Systems
- Understand concept of Database and Networking

## Second Semester

### COM 102 Cost Accounting for LAW

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Express the place and role of cost accounting in the modern economic environment.
- Select the cost according to their impact on business.
- Make cost sheet.
- Calculate the cost of stock consumption.

### COM 105 Management of Financial Institution and Services

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the Indian financial structure.
- Understand various markets aligned with Indian Financial system
- Understand the concept of development banks and non banking financial institutions.

### LAW 102 Law of Consumer Protection and Motor Vehicle Act, 1988

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### **Learning Outcomes:**

- The students will have a comprehensive understanding about the existing law on consumer protection in India.

- The students will be aware of the basic procedures for handling consumer dispute and issues on motor vehicle.
- The students will be able to appreciate the emerging questions and policy issues in consumer law and motor vehicle law for future research

### **LAW 104 Law of Contract – II (Special Contract)**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to analyze the implications of a contractual arrangement falling under any of the discussed head of special contracts.
- The students will be able to determine the legality of the transactions and also the rights and duties of the parties thereto
- The students will be able to purposefully deal with the disputes arising out of such contractual arrangements.

### **LAW 106 Legal English**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 1 0 5**

#### **Learning Outcomes:**

- The Students will be able to Command the language which is an essential quality of a lawyer.
- The Students will be able to understand writings of eminent jurists.
- The Students will be able to develop skill of articulation and effective writing.

## Third Semester

### COM 202 Corporate Accounting and Auditing

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to:

- Understand the aspect of share capital, and debentures.
- Understand various auditing aspects.
- Evaluate and recognize various types of audits
- Understand the aspect of valuation of share.

### COM 208 Legal Environment for Business

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to:

- Understand the business environment terminologies that form the part of day today life.
- Get the knowledge of the international business environment that can be used in practical way.
- Generate and analyse data relevant for strategic management decisions in the area of *international business and* will be prepared for careers in organisations that are engaged in *business* on a *global* scale.

### LAW 202 Constitutional Law – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

**Learning Outcomes:**

- The student will be able to understand the need for the constitution
- The student will be able to explain the role of the constitution in a democratic society
- The student will be able to list the key features of the constitution
- The student will be able to appreciate the fundamental rights of the citizens of India.

**LAW 204 Family Law – I****Max. Marks : 100****L T P C****(CA: 40 + ESA: 60)****4 1 0 5****Learning Outcomes:**

- The students will be able to understand the vast discipline of Hindu Law and other Personal Laws.
- The students will be able to understand the significance of Hindu Law and other Personal Laws.
- The students will be able to get insight into various concepts of Hindu Law and other Personal Laws which will help in shaping their career as Judges, Lawyers, Academicians and Jurists.

**LAW 206 Law of Crimes – I (IPC)****Max. Marks : 100****L T P C****(CA: 40 + ESA: 60)****4 1 0 5****Learning Outcomes:**

- The students will get familiar to the principles of criminal law.
- The students will be able to expose the range of mental states that constitute mens-rea essential for committing crime.
- The students will get acquainted to the latest developments and changes in the field of criminal law.

## Fourth Semester

### COM 312 Personal Finance

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to

- Understand the requirements of Personal Financial Plan can develop and implement a budget.
- Use retirement planning calculators and other financial calculators.
- Understand Proactive and reactive ways to deal with Investment frauds and low quality financial services.

### ECO 105 Micro Economics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

Upon completion of the course the student will be able to

- Understand the economics activities.
- The relationship of economics activities with policy framework.
- Take better economical and feasible decisions.

### LAW 203 Constitutional Law – II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### Learning Outcomes:

- The student will develop an understanding of Fundamental rights, directive principles and fundamental duties.

- The students will learn the reasonable restriction imposed on various organs so far as the rights are being concerned.
- The students will be able to acquaint the scope and parameters of part III and part IV and part IV A of the Constitution.

### **LAW 205 Family Law – II**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to understand the vast discipline of Muslim Law and other Personal Laws. Understanding the significance of Muslim Law.
- The students will be able to understand the significance of Muslim Law.
- The students will be able to get insight into various concepts of Muslim Law which will help in shaping their career as Judges, Lawyers, Academicians and Jurists.

### **LAW 207 Law of Crimes – II (IPC)**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will get familiarized with the key concepts regarding crime and criminal law.
- The students will be able to learn various offences punishable under IPC.
- The students get acquainted to the latest developments and changes in the field of criminal law.

## **LAW 210P Internship Report and Viva-Voce**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcomes:**

- The students will get familiarize with the various stages of trial in civil and criminal cases.
- The students will be exposed to real court experience and client interviewing at advocate chamber.
- The students will be get the exposure to the functioning of Law Firms, NGO & other institutions where law is practiced.

## **Fifth Semester**

### **LAW 301 Company Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- Demonstrate comprehensive and accurate knowledge, understanding of those areas of company law identified in the indicative syllabus.
- Critically analyse complex problems in relation to regulation of companies, apply the legal principles studied to these problems, evaluate competing arguments or solutions and present well supported conclusions both orally and in writing.
- Form a critical judgment on areas of controversy within the topics studied

### **LAW 303 Forensic Science**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- The students will be able to know the importance of forensic science and medicine in resolving the legal matters, both civil as well as criminal.
- The students will be able to impart knowledge of the relation between law and medicine.
- The students will be able to understand the basic principles of crime scene investigation, including the recognition, collection, identification, preservation, and documentation of physical evidence form scene of crime

### **LAW 305 Jurisprudence – I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

After completion of the course student will be able to:

- Develop their intellectual skills by develop a critical understanding of law.
- Realize the great potential for interaction between legal philosophy and legal practice.
- Formulate what relevant questions to be asked when laws are being discussed or legal reforms are being proposed.
- Analyze the consequences of law and its administration on social welfare and may think about changes for the betterment of the superstructure of laws.

### **LAW 307 Labour Law – I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to define the provisions of Constitutional Safeguards on Social Security & Labour Welfare.

- The students will be aware about the Trade Unions Act, 1926, Industrial Disputes Act, 1947, Workmen's Compensation Act, 1923, The Employees' Provident Funds and Miscellaneous Provisions Act, 1952 and the Payment of Gratuity Act, 1972, Unorganised Workers' Social Security Act 2008.

### **COM 309 International Business and Trade**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the concept of international business in different settings.
- Understand about culture and its dynamics in international business scenarios.
- Apply the knowledge of political, legal and economic scenarios in business activities.

### **ECO 103 Macro Economics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course the student will be able to:

- Understand the perspectives of macroeconomics.
- Understand about the financial markets and banking system in India.
- Know about the concept and measurement of money supply and inflation.
- Understand latest trends and impact of monetary, fiscal and globalization policies.

- Know about the concept of international trade as well as significance of various institutions (WTO, IMF, WB, and ADB).

## **Sixth Semester**

### **ECO 205 Theories of Development and Indian Economics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course the student will be able to

- Acquainted with comprehensive knowledge of the conditions and limitations of the developing system of India.
- Understand the indicators to measure economic development
- To impart the knowledge of capital formation in India
- Understand different aspects of agricultural sector and industrial sector

### **LAW 302 Environmental Law**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

- The students will be able to evaluate and formulate environmental law and policy.
- The students will be able to understand effectively the working of the Institutions relating to environment.
- The students will be able to develop ability to assess the social and ecological impacts of environmental law and policy.

## **LAW 304 Interpretation of Statutes and Principles of Legislation**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- The student will be able to Locate, identify and critically analyse relevant statutes, statutory provisions and legislative instruments, as well as pertinent judicial authority;
- The student will be able to interpret the appropriate provisions using the accepted tools and techniques of statutory interpretation;
- The student will be able to apply statutory provisions to fact scenarios and communicate the interpretation, nature and effect of statutory provisions to relevant stakeholders, such as clients and courts.

## **LAW 306 Jurisprudence – II**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

### **Learning Outcomes:**

- The students will be able to resolve typical legal conflicts, select and interpret codes and other current legislation.
- The student not only will be able to use this skill in practice but will also be motivated to take up detailed historical studies on his own after the course.
- The logical analysis of legal concepts sharpens the logical technique of the students.
- They will be able to find the difference between enforcement of codes and cases.

## **LAW 308 Labour Law – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to understand the provisions of the Factories Act, 1948.
- The students will be able to know the provisions and procedure about the factory inspection.
- The students will be able to understand the provisions and procedure of the Minimum Wage Act, 1948, Maternity Benefits Act, 1961, Employees' State Insurance Act, 1948.

## **MGMT 306 International Finance**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon completion of the course student will be able to:

- Understand the working of International economic Institution.
- Develop capacity to advice and guide in FOREX market.
- Understand the aspect of currency trade and its effect on economy.

## Seventh Semester

### LAW 402 Civil Procedure Code – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### Learning Outcomes:

- To analyze, outline and assess the structure and purpose of the civil courts system as it presently operates.
- To assess the sources of procedural rules and practices in the Supreme Court. Assessment criteria.
- To analyze and evaluate the steps prior to litigation, the process of preparation for trial and the enforcement of judgments or orders and costs.

### LAW 404 Criminal Procedure Code – I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### Learning Outcomes:

- The students will be made aware about constitution of Criminal Courts & requisites for institution of criminal proceedings.
- The students will be able to initiate various procedures for seeking justice in criminal cases.

### LAW 409 Principles of Taxation Law

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### Learning Outcomes:

- The students will be able to understand the procedure of direct tax assessment.
- The students will get thorough knowledge about the means and techniques of computing the total income and define tax complicacies and structure.

- The students will be imbued with the understanding of amendments made from time to time in Finance Act

### **LAW 410 Public International Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to get indepth knowledge of Public International Law.
- The students will be able pursue careers in government agencies, international organisations, non-governmental organisation and the private law firms which are dealing in global legal issues.
- The students will be able get theoretical knowledge and handle the complexity of drafting of various instruments which encouraged them to think creatively about the challenges within the Public International law.
- The students will able to understand a system regulating interstate interactions.

### **LAW 508 Professional Ethics and Accountancy for Lawyers**

**Max. Marks : 100**

**(CA : 40 + ESA : 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcome:**

- The students will demonstrate comprehensive and accurate knowledge and understanding of code of conduct required for Legal Profession.
- The students will be able an exhibit understanding of Lawyers in the whole process of administration of justice.
- The students will study the provisions of Advocates Act, Contempt of Courts Act & Rules of Bar Council

## Eighth Semester

### LAW 401 Administrative Law

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### Learning Outcomes:

- The students will be able to analyse the advanced principles of administrative law, undertake self-directed legal research at primary level and evaluate complex legal information with a particular emphasis upon legislation.
- The students will be able to apply principles of Administrative law to complex legal problems.
- The students will be able to analyse the impact and operation of administrative law for government accountability
- The students will be made aware about the legal remedies under Administrative law.

### LAW 405 Criminal Procedure Code – II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

#### Learning Outcomes:

- The students will be aware with the intricacies of trial proceedings.
- The concept of plea bargaining, double jeopardy etc under criminal justice system will be imbibed in the learner.
- The students will understand remedial measures under criminal justice system.

## **LAW 407 Human Rights Law and Practice**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to think analytically about the implementation and development of international human rights law and to apply this body of law in your own professional and national setting.
- The students will be able to promote an advanced and complex understanding of the theoretical, conceptual and practical challenges facing the fields of human rights law and sustainable development, adopting an interdisciplinary approach.
- The students will learn the concepts of the status of individual criminal responsibility under international law, the applicability of IHL to UN peacekeeping/peace building/enforcement missions as well as the recent challenges before IHL

## **LAW 408 Intellectual Property Laws**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The learners will be able to use the principles of various IP laws while analyzing a problem related to IPR.
- Proficiency with the ability to engage in competitive exams like CLAT, Patent Attorney, Trade Mark Agent etc. will be developed.

## **LAW 501 Alternative Dispute Resolution**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be able to understand various methods of resolving disputes under ADR system.
- The students will develop understanding of participants' negotiating behavior
- The students will be able to use such processes to advance the interests of clients.

## **Ninth Semester**

### **LAW 504 Information Technology Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The students will be made aware about different aspects of Information Technology Law.
- The students will become acquainted with the ongoing issues under law managing in innovative perspective and the subject will urge them to do work in research field.
- The students will learn different domains managed by information technology law, for example e-contract, digital signature.

### **LAW 505 Law of Evidence**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

### **Learning Outcomes:**

- The student will be able to analyse and define the concept and general nature of evidence, and illustrate the different types of evidence and court procedures relating to evidence.

- The student will be able to determine and analyse the standard of proof and burden of proof in civil and criminal cases, and specify types of presumptions.
- The student will be able to understand rules governing examination in chief, cross examination and re-examination, and establish the procedures in civil or criminal trial.

### **LAW 509 Property Law**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to know how to apply knowledge and able to solve practical problems related to property.
- The students will be able to integrate theoretical knowledge and handle the complexity of drafting the various instruments of transfer of property.
- The students will possess, understand and develop their skill in property related issues and can establish them self in civil cases as their specific area.

### **LAW 503 Drafting, Pleading and Conveyancing**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 1 0 5**

#### **Learning Outcomes:**

- The students will be able to draft legal documents.
- The students will be able to guide and advise client regarding effect and enforcement of deeds and documents.
- The students will be able to structure a commercial contract, draft notices and pleadings.

## Tenth Semester

### LAW 512P Moot Court, Internship and Corporate Legal Training

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>48</b>	<b>24</b>

#### Learning Outcomes:

- The students will be able to develop advocacy skills.
- The students will get familiarize with the various stages of trial in civil and criminal cases.
- The students will be exposed to real court experience and they should imbibe the skills of client interviewing.

## Discipline Electives

### LAW 411 Banking Law

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>5</b>

#### Learning Outcomes:

- The students will be able to understand the banking operations that form the part of day today life.
- The students will get the knowledge of the banking and exposure to legal and regulatory aspects that have a bearing on banking.
- The students will be able to advice and guide in basic banking operation and will be job ready for banking jobs.

## **LAW 414 Financial Market Regulations**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:** After the completion of the course student will be able to

- Explain the main concepts of overall financial sector.
- Describe financial sector developments in India.
- Examine the role of market regulators in Indian financial sector.

## **LAW 506 Media and Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will be able to evaluate the role and impact of self-regulation on the media and journalists.
- The students will be able to understand the role of the press in a democracy.
- The students will be able to explain and apply the laws of defamation and Contempt of court, privacy law, broadcasting law and intellectual property to practice.

## **LAW 406 Health Law**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 1 0 5</b>

**Learning Outcomes:**

- The students will have appropriate level of knowledge of various laws relating to health care, including Mental Health, Transplantation of Organs & Tissues Act, AIDS Act, etc.
- The students develop their understanding regarding medical ethics and medical profession, and topics like medical negligence, euthanasia, surrogacy, etc.

## LAW 413 Energy Law

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	1	0	5

### Learning Outcomes:

- The students are able to develop legal awareness about the rapidly expanding energy sectors and its future along with various alternatives of energy system.
- The students are able to develop mastery in negotiating investment deals for energy companies and frame energy policies for companies.
- The students are able to understand the effects of Global warming and Green house gas emissions.

## LAW 415 Penology and Victimology

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	1	0	5

### Learning Outcomes:

After the completion of the course student will be able to:

- Explain the main concepts of victimisation and penology, and describe their trends in criminal justice.
- Describe historical developments in penology, with regards to the reasons for punishment.
- Examine victimisation and punishment as complimentary aspects of the criminal process and their reciprocal effect on social perceptions.

## LAW 416 Sports Law

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	1	0	5

### Learning Outcomes :

After the completion of the course student will be able to:

- Enhance knowledge in Sports law
- Understand vital rules and regulations of the sporting authorities of India and the world
- Understand the practical aspects of the sporting world vis a vis Law.

## LAW 412 Comparative Constitution

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	1	0	5

### Learning Outcomes:

After the completion of the course student will be able to

- Familiarize with key political concepts like political obligation, sovereignty, Rule of Law, etc. which interlace the idea and the institution of State. Knowledge of such concepts become imperative for any student of law and politics as some of these political concepts are constitutive of the idea of law.
- Understand the law as a political and social category while students of politics interested in theory and history of ideas will find it engaging to study the dialectics between law and State as it unfolds within the politico-legal institutional framework and processes.

## Reading Electives

### LAW 513R Women and Law

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

- The students will be able to understand the socio-legal position of women and special provisions made for them.
- The students will be able to get the knowledge of efforts made for the betterment of women at International level.

### LAW 510R Law And Public Policy

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

- The student will be aware about Parliamentary Democracy and the law making process.
- The students will get the knowledge of Law & Public policy in today's context.

### LAW 511R Law of Equity and Trust

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

- The student will be able to demonstrate an advanced and integrated understanding of equity and trust principles.
- They will be able to analyse and research complex problems relating to equity and trust principles.

## **MGMT 524R Foundation of Indian Ethos and Culture**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

### **Learning Outcomes:**

- The students will get exposure regarding foundational ideas of Indian culture and rationale for studying Indian ethos.
- The students will get the knowledge of the foundation of Indian culture.

## **MGMT 526R Managing the Personal Finance**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

### **Learning Outcomes:**

- The students will get exposure regarding preparing and filing tax returns, banking services etc.
- The students will get the knowledge of money management.

# BANASTHALI VIDYAPITH

**Bachelor of Design (Fashion and Lifestyle Design)**  
**Bachelor of Design (Communication Design)**  
**Bachelor of Design (Industrial Design)**



## Curriculum Structure

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022  
Seventh Semester Examination, December, 2022  
Eighth Semester Examination, April/May, 2023

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## **Programme Educational Objectives**

The B.Des programme offers courses that endeavor to develop student's Knowledge and skills in a wide range of interdisciplinary studies such as **Communication Design, Fashion and Lifestyle Design and Interior Design**.

The curriculum has identified essential competencies in the respective areas for which holistic education will be provided to the students.

### **The main objectives of the Bachelor of Design programme are:**

- § Empower women to become professional Designer, Entrepreneur, Design Educator and many more.
- § Prepare students to design for contemporary market needs while keeping roots in Indian Culture thus create an individual identity
- § Enable students to apply global trends, market intelligence and technology tools for product development and innovations.
- § Prepare students for creative design development, promotion and integrate design and innovations on the national and international platforms.
- § Prepare students to meet the growing needs for design, technology and entrepreneurs.
- § Preparing students for the interdisciplinary nature of Design that includes product, information and environmental design.

## Programme Outcomes

- PO1: Comprehensive Knowledge:** Possess holistic knowledge in relation to the profession of Design, including Fashion and Lifestyle Design, Communication Design and Interior Design.
- PO2: Design Ethics:** Apply ethical principles in professional and social contexts.
- PO3: Design Process:** Utilize Design Process and Creative Thinking in intellectual, organizational, and personal context.
- PO4: Planning abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
- PO5: Problem analysis and Design/Development of solutions:** Utilize the principles of understanding the customer requirement, thinking analytically, clearly and critically while finding solutions for simple to complex problems considering cultural, societal and environmental aspects of design.
- PO6: Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern design-related computing tools with an understanding of the limitations.
- PO7: Leadership skills:** Understand and consider the human reaction to change, motivation issues, leadership and team building when planning changes required for fulfillment of practice, professional and societal responsibilities.
- PO8: Professional Identity:** Understand, analyze and communicate the value of their professional roles in society
- PO9: Communication:** Communicate effectively with the Design Community and with society at large, such as, being able to comprehend and write effective, make effective presentations and documentation, and give and receive clear instructions.
- PO10: Environment and sustainability:** Understand the impact of the professional Design solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for human-centric sustainable development.

## First Semester

### Bachelor of Design (Fashion and Lifestyle Design)

### Bachelor of Design (Communication Design)

### Bachelor of Design (Industrial Design)

#### DES 101 Art Appreciation

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**2 0 0 2**

#### **Learning Outcomes:**

Upon Completion of the course, the students will be able to:

- Recognize the visual art forms and their historical cultural contexts
- Appreciate the importance of art and its application in various disciplines of art education.
- Critically interpret and analyze works of art in terms of form and content.
- Utilize fundamental concepts of aesthetics toward the interpretation of art.
- Understand the basic and formal elements of art and key works of art.
- Identify the master artist's work with their style.

#### DES 103 Colour and Form studies

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**2 0 0 2**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand the definition of color, its source and difference between various types of color theories.
- Understand the value of colors, texture, visual composition, importance of line to divide composition and distinction between subject and object (figure-ground relationship)

## **DES 103L Colour and Form Studies Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand the definition of color and its source and difference between various color theories and application.
- Observe and practice values of colors, texture, and visual composition and
- Understand the importance of Design elements to divide composition.
- Understand of figure-ground relationship refers to the perceptual distinction between subject and object.

## **DES 104L Drawing I: Media Exploration Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop observation power and sense of proportion.
- Work with various mediums for visual execution.
- Develop hand and eye coordination.
- Incorporate design and composition theories.
- Understand and implement perspective in drawing.
- Draw human figures.

## **DES 107L Introduction to Photography Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:-

- Understand about the technical and creative aspects of photography.
- Use the lighting techniques for indoor and outdoor Photography.
- Execute different theme/subject (creative) based photographs.

## **DES 108L Material Studies - I Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand properties of various materials.
- Differentiate between shape and form and its application
- Apply various materials for design prototype and product making.

## **DES 112L Typography - I Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Utilize anatomy of a Typeface for creating new typefaces through lettering activity
- Understand the of basic Graphic Design rules to develop the manipulative-cum-illustrative mindset
- Understand the of the differences between Lettering & Typography and use the same as per the need
- Develop manipulative-cum-illustrative approach in Lettering which could be implemented for vector conversion
- Create the own Typeface for specific design purposes

## Second Semester

### DES 102 Color, Context and Composition

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Understand the role of color theories in different areas. Color effect, Color moods, Experiences and emotions with human beings in life.
- Learn Symbolism, effect of color in society culturally and universally.
- Use colors in product making and in different areas.

### DES 102L Color, Context and Composition Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Understand the Inspiration and depiction of colors in forms with color effects.
- Apply color in practice, study and explore color in context of different types of living and manmade things composition.
- Compose design applying different principles of Design.
- Develop new horizon, building concept and exploration of skills.

### DES 105L Drawing II: Representation Techniques Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### Learning Outcomes:

Upon Completion of the course, the students will be able to:

- Develop an understanding of how to use technical drawing and artistic drawing.
- Develop an understanding of hand and eye coordination for observational, human and animal anatomy drawing.
- Utilize drawing as a tool of representation and visual communication.

- Incorporate design, composition, and spatial organization theories in their design solutions.
- Utilize a variety of traditional drawing materials.

### **DES 106 History of Design**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
2	0	0	2

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand the origin and evolution of design and its influence in the world of design.
- Understand the need, importance and purpose of design.
- Understand the basic differences and similarities between Art and Design.
- Recognize the design forms and functional aspects with their cultural connections.
- Understand the design history in depth with the development of material, media and methods used in creative processes and thought.
- Identify eminent designers of their time with their style and selected design cum art works in historical context.
- critically interpret and analyze works of design in terms of form, function, space, time and structure.

### **DES 109L Material Studies-II Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	6	3

#### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Know the properties of various materials and its use accordingly.
- Handle material and use them for making design prototypes.
- Fuse various materials to create new aesthetic appealing and functional product.

## **DES 110 Narrative Structure**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:-

- Understand about characteristics of narrative design and narrative elements.
- Apply observation and individual experiences to write a narrative.
- Understand the characteristics of Narrative design.

## **DES 110L Narrative Structure Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:-

- Write a narrative with the understanding of narrative elements.
- Apply the art of narrative writing for masses.
- Give presentation on Narrative written.

## **DES 111L Software Skills Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Apply softwares as tool for design solution.
- Use Adobe Photoshop, Illustrator and in Design for creative purposes.

## **Bachelor of Design (Fashion and Lifestyle Design)**

### **Third Semester**

#### **DES 211L Drawing III: Analytical Drawing Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

#### **Learning Outcomes:**

Upon Completion of the course, the students will be able to:

1. Develop hand and eye coordination for Analytical Drawing
2. Incorporate design, composition, and spatial organization theories in their design solutions.
3. Utilize a variety of traditional drawing materials.
4. Develop drawing skill which could be implemented for design solution development.
5. Critically interpret and analyze design work in terms of form and structure.
6. Utilize fundamental concepts of aesthetics in creating design drawings. Understand the basic and formal elements of design and drawings.

#### **DES 212 Economics and Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

#### **Learning outcomes:**

Upon completion of the course, the students will be able to:

- Understand basic terminology related to Economics
- Understand basic principles of management
- Understand types of Business Organizations and its respective departments

## **DES 218 Introduction to Textile Fibers and Yarns**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
2	0	0	2

### **Learning Outcome:**

Upon completion of the course students will be able to:

- Understand the basics of Fibre Science.
- Understand the essential and desirable properties of Fibre and classification of Fibre.
- Understand the Longitudinal and Cross sectional structure of Natural and Manmade Fibres.
- Understand the relation between selection of fibre and its impact in designing the end product as per the customer requirements

## **DES 218L Introduction to Textile Fibers and Yarns Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	2	1

### **Learning Outcome:**

Upon completion of the course, students will be able to:

- Understand the basics of Fibre Science.
- Understand the essential and desirable properties of Fibre and classification of Fibres.
- Understand the Longitudinal and Cross sectional structure of Natural and Manmade Fibres.
- Understand the relation between selection of fibre and its impact in designing the end product as per the customer requirements.

### **DES 219L Material Studies – III Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

#### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Identify different materials for the end product.
- Select the appropriate material and use/apply it into the product from 2D to 3D
- Understand the product making process.

### **DES 221 Research Methodology and Craft Study**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand meaning & methodology of research
- Evaluate literature from a variety of sources, pertinent to the research objectives.
- Identify and justify the basic components of the research framework relevant to the tackled research problem majorly based on the Craft sector.
- Collect research data; analyze it, interpret the data, write research findings and conclusion.

## **DES 221L Research Methodology and Craft Study Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand meaning & methodology of research
- Evaluate literature from a variety of sources, pertinent to the research objectives.
- Identify and justify the basic components of the research framework relevant to the tackled research problem majorly based on the Craft sector.
- Collect research data; analyze it, interpret the data, write research findings and conclusion.

## **Fourth Semester**

### **DES 208 Design Methods and Processes**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop critical and lateral thinking approach.
- Develop a basic design concept, visualization and manipulation techniques.
- Develop an appreciation of function, aesthetics and technology in design.
- Develop basic design thinking and communication skills.
- Create activities and experiences for basic process of design, adapt in their abilities, interest and design in context of human society, economy, politics and socio-cultural aspect.

## **DES 208L Design Methods and Processes Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

### **Learning Outcomes:**

- Develop critical and lateral thinking approach.
- Develop a basic design concept, visualization and manipulation techniques.
- Develop an appreciation of function, aesthetics and technology in design.
- Develop basic design thinking and communication skills.
- Create activities and experiences for basic process of design, adapt in their abilities, interest and design in context of human society, economy, politics and socio-cultural aspect.

## **DES 209L Draping and Pattern Making-I Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to

- Understand the basics of converting a 2D fabric/paper into a 3D garment/product
- Understand the basics of cutting and finishing a fabric as basic stitching will be taught.

## **DES 213 Fabric Structure - I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Identify and work on Handloom with care.
- Identify and differentiate between basic weaves and modified weaves

- Identify suitable materials according to the end use of the product for apparel, furnishing and accessories
- Distinguish between different fabric construction methods and giving reasons, apply their properties to different fabric items and clothing.
- Surface Ornamentation using more than one or two weaves and variety of yarns like cotton, polyester, wool and blended etc.

### **DES 213L Fabric Structure - I Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 6 3**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Identify and work on Handloom with care.
- Identify and differentiate between basic weaves and modified weaves
- Identify suitable materials according to the end use of the product for apparel, furnishing and accessories
- Distinguish between different fabric construction methods and giving reasons, apply their properties to different fabric items and clothing.
- Surface Ornamentation using more than one or two weaves and variety of yarns like cotton, polyester, wool and blended etc.

### **DES 230 Textile Processing**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**2 0 0 2**

#### **Learning Outcome:**

Upon completion of the course, students will be able to:

- Understand basic concept of Dyeing & Printing Process on fabrics.
- Differentiate between various kinds of finishes on fabrics.
- Understand the theoretical & practical application of Processing Techniques on fabric.
- Understand the dyes applied on various Cellulosic fibres.
- Understand the dyes applied on various Synthetic and Protein fibres.

### DES 230L Textile Processing Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### Learning Outcome:

Upon completion of the course, students will be able to:

- Develop basic concept of Dyeing & Printing Process on Textile.
- Differentiate between different kinds of Finishes on Textile.
- Understand the Theoretical & Practical application of Processing Technique on Textile.
- Understand the dyes applied on various Cellulose Fibre
- Understand the dyes applied on various Synthetic and Protein Fiber

### DES 224 Traditional Indian Textiles

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course, students will be able to:

- Identify textiles from different states of India in reference to motifs and techniques.
- Understand procedure of weaving, printing and different type of dyeing process followed in Indian Textiles
- Create hand embroidery samples from different stitches.

### DES 224L Traditional Indian Textiles Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### Learning Outcomes:

Upon completion of the course, students will be able to:

- Identify textiles from different states of India in reference to motifs and techniques.
- Understand procedure of weaving, printing and different type of dyeing process followed in Indian Textiles

- Create hand embroidery samples from different stitches.

## **Fifth Semester**

### **DES 305L Art and Illustration Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Study basic proportion and drawing properly to improve drawing skills.
- Preview and visualize and thus draw the same in order to communicate thoughts
- Develop the understanding of new era, atmosphere, situations and observation of changing styles.

### **DES 308 Calculation and Costing**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Estimate the cost of products with different methods and elements.
- Cost the given sample of fabric according to its construction.
- Cost the end-product from fabric to apparels, including packaging and transport

### **DES 310L Construction Techniques (Soft Material) Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

#### **Learning outcomes:**

Upon completion of the course, the students will be able to:

- Cut the fabric as per the drape required or the final illustration.
- Operate an Automatic/semi-automatic Industrial Sewing machine.
- Understand the application of seams according to fabric and end product.

- Understand the construction and application of various necklines, collars and pockets.
- Do surface ornamentation using SNLS
- Stitch end-product applying different techniques of stitching

### **DES 337 Traditional Indian Costumes**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**2 0 0 2**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Identify Traditional Indian Costumes of different states with reference of the past clothing and illustrate the same.
- Illustrate prevailing designs of costumes worn by people of different states.
- Design contemporary costumes taking reference from the traditional ones.

### **Discipline Elective- I**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- Understand deadline sacrosanct.
- Develop sense of ownership and commitment.
- Develop the designer's skills and knowledge through a process of hands on-minds on.

## Discipline Elective- II

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- Understand deadline sacrosanct.
- Develop sense of ownership and commitment.
- Develop the designer's skills and knowledge through a process of hands on-minds on.

## Sixth Semester

### **DES 342L Construction Techniques (Hard Material) Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	6	3

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand the functional aspects and steps involved in transformation of concept to a fabricated product.
- Get hands-on experience to make final utility product from their own designs from provided hard materials.

## **DES 312 Design Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcome:**

Upon completion of the course, the students will be able to:

- Understand how Design and Management can be balanced to ensure professional success and better quality of life

## **DES 358 Introduction to Trends and Forecasting**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon successful completion of the course students will be able to:

- Critically assess and review the requirements and operational methods of the role of a trend forecaster relevant to fashion and textiles brands and companies.
- Identify, evaluate and communicate the potential impact of cultural, social, economic and technological components in the trend forecasting process.

## **DES 328L Introduction to Trends and Forecasting Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

### **Learning Outcomes:**

Upon successful completion of the course, students will be able to:

- Substantiate and apply appropriate research methodologies to identify and analyze alternative research sources for identifying global trend directions.
- Research and critically analyze the challenges and opportunities of translating trend scenarios into the development of textile and fashion products.

## DES 363L Surface Designing Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Understand the functions of different types of chemicals, dyes and other required ingredients, their properties and taking precautions during applications.
- Develop knowledge and skills of various methods and styles of Printing.
- Develop ability to transfer a design on fabric according to the design/concept made on paper.

## DES 336 Textile Testing and Quality Assurance

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### Learning Outcome:

Upon completion of the course, students will be able to:

- Apply principles and techniques of metrology (measurement), to determine the accuracy of product components.
- Gain basic understanding of Quality control and Quality Assurance.
- Use statistical process control techniques (SPC) recognized throughout industries to ensure the quality level of products.
- Gain Knowledge of comparative testing of Fabric.
- Gain Knowledge of various Quality Standard Organization and their significance in Textile Industries.
- Develop Concept of Customer Satisfaction.

## **DES 336L Textile Testing and Quality Assurance Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcome:**

Upon completion of the program students will be able to:

- Apply principles and techniques of metrology (measurement), to determine the accuracy of product components.
- Gain basic understanding of Quality control and Quality Assurance.
- Use statistical process control techniques (SPC) recognized throughout industries to ensure the quality level of products.
- Gain Knowledge of comparative testing of Fabric.
- Gain Knowledge of various Quality Standard Organization and their significance in Textile Industries.
- Develop Concept of Customer Satisfaction.

### **Discipline Elective- III**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- Understand deadline sacrosanct.
- Develop sense of ownership and commitment.
- Develop the designer's skills and knowledge through a process of hands on-minds on.

## Discipline Elective- IV

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- Understand deadline sacrosanct.
- Develop sense of ownership and commitment.
- Develop the designer's skills and knowledge through a process of hands on-minds on.

## Seventh Semester

### **DES 401 Advances in Fashion and Textiles**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand terminology used in Apparel & Textile Industry and sourcing hubs of Textiles & garments in the world
  - Understand role of technology and automation in Apparel & Textile Industry
- Apply/use different technical Textiles for their further projects

## DES 413 Fashion Marketing and Merchandising

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Understand the Marketing and Merchandising part of Fashion Industry

## DES 431L Innovation Workshop FLD Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### Learning outcomes

Upon completion of the course, the students will be able to:

- Generate innovative ideas and give alternate innovative form to the ideas generated.

## DES 420 Visual Merchandising

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

### Learning Outcomes:

Upon completion of the course, students will be able to:

- Understand the concept of Visual Merchandising
- Apply basic design principles and color theories to the construction of promotional displays and advertising.
- Appreciate how the history of art and design influence current display practice and contemporary images.
- Understand the basic functions of retail store operations including store location and layout, shopping centre analysis, retail market segmentation and strategies, and the merchandising mix.
- Prepare and execute displays for exhibitions and promotional events using the visual dynamics of light as a design element.

## DES 443L Visual Merchandising Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

### **Learning Outcomes:**

Upon completion of the course, students will be able to:

- Present and coordinate merchandise so that related goods are shown in a unique, desirable, and saleable manner.
- Apply basic design principles and color theories to the construction of promotional displays and advertising.
- Appreciate how the history of art and design influence current display practice and contemporary images.
- Understand the basic functions of retail store operations including store location and layout, shopping centre analysis, retail market segmentation and strategies, and the merchandising mix.
- Prepare and execute displays for exhibitions and promotional events using the visual dynamics of light as a design element.

## Discipline Elective-V

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- Understand deadline sacrosanct.
- Develop sense of ownership and commitment.

- Develop the designer's skills and knowledge through a process of hands on-minds on.

## **Discipline Elective-VI**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- Understand deadline sacrosanct.
- Develop sense of ownership and commitment.
- Develop the designer's skills and knowledge through a process of hands on-minds on.

## **Eighth Semester**

### **DES 442P UIL Project**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>48</b>	<b>24</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Application of Knowledge learned
- Acquire and develop practical skills
- Strengthen work values
- Gain interpersonal skills
- Get an understanding of how the market functions

## Reading Electives

### DES 432R Introduction to Behavioral Science

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>ESA : 100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of this course students should be able to:

- Grasp basic knowledge about behavioral science
- Appreciate the value of behavioral sciences in modern life
- Acquire “how to” discussions that address everyday problems.
- Develop critical thinking with logical reasoning and approach fundamental issues of health by multi-perspectives
- Show empathy to others and concern the health and well-being of others.

### DES 433R Introduction to Intellectual property Rights (IPR)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>ESA : 100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of this study students should be able to:

- Define intellectual property
- Identify and State reasons and ways to protect intellectual property
- Define the types such as: patents, copyrights, trademarks, designs, etc., found in everyday experiences
- Define piracy and counterfeit
- Understand the harm caused by piracy and counterfeit
- Identify the timelines and Duration of patents, copyrights, trademarks and designs
- Use the knowledge for getting IPR as per the requirement.

## **DES 427R Fundamentals of Retail Management**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>ESA : 100</b>	<b>0 0 0 2</b>

### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Describe retailing, the entities involved, and the impact of decisions on a retail business
- Analyze the evolution of the retail industry
- Recognize career opportunities available in the retail businesses

## **DES 434R Management Information System**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>ESA : 100</b>	<b>0 0 0 2</b>

### **Learning outcome:**

Upon completion of the course, the students will be able to:

- Describe the role of information technology and information systems in business
- Understand the current issues of information technology and relate those issues to the firm
- Reproduce a working knowledge of concepts and terminology related to information technology
- Analyze and apply information technology.

## **DES 444R Science and Liberal Arts** *(Except B.Des Communication Design)*

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>ESA : 100</b>	<b>0 0 0 2</b>

### **Learning Outcomes:**

After successful completion students should be able to:

1. Demonstrate understanding of different types of writing as a series of tasks, including finding, evaluating, analyzing, and synthesizing the subject and as a process that involves composing, editing, and revising.

2. Demonstrate research skills, integrate their own ideas with those of others, and apply the conventions of attribution and citation correctly
3. Use Standard Written English and edit and revise their own writing for appropriateness.
4. Able to clearly express ideas orally and in writing
5. Demonstrate an understanding of the methods of inquiry and analysis both within and among traditional liberal arts and science disciplines (Humanities, Natural Sciences, Social Sciences)
6. Understand and articulate how culture, society, and diversity shape the role of the individual within society and human relations across cultures
7. Demonstrate knowledge of how social science can be employed to: (a) analyze social change, (b) analyze social problems, and (c) analyze and develop social policies.

## **Bachelor of Design (Communication Design)**

### **Third Semester**

#### **DES 208 Design Methods and Processes**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop critical and lateral thinking approach.
- Develop a basic design concept, visualization and manipulation techniques.
- Develop an appreciation of function, aesthetics and technology in design.
- Develop basic design thinking and communication skills.
- Create activities and experiences for basic process of design, adapt in their abilities, interest and design in context of human society, economy, politics and socio-cultural aspect.

## **DES 208L Design Methods and Processes Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

### **Learning Outcomes:**

- Develop critical and lateral thinking approach.
- Develop a basic design concept, visualization and manipulation techniques.
- Develop an appreciation of function, aesthetics and technology in design.
- Develop basic design thinking and communication skills.
- Create activities and experiences for basic process of design, adapt in their abilities, interest and design in context of human society, economy, politics and socio-cultural aspect.

## **DES 210L Drawing as a Visual Language Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **Learning Outcomes:**

Upon Completion of the course, the students will be able to:

- Develop visual story telling like comic strips and graphic novel.
- Create digital illustration through computer software like Adobe Photoshop and Adobe Illustrator.
- Implement range of rendering techniques, as a mean of communicating ideas and thought effectively.
- Utilize drawing as a tool of representation and visual communication.
- Develop an understanding of variety of traditional drawing materials.
- Create character design for animation and other medium.
- Develop an expression of individual art and illustration.

## **DES 212 Economics and Management**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

### **Learning outcomes:**

- Enable students to understand what research is and how to proceed with it.
- Enable student students to evaluate literature, from a variety of sources, pertinent to the research objectives.
- Identify and justify the basic components of the research framework, relevant to the tackled research problem.
- Students will get to know about how to collect research data, analyze, interpretation and conclude it.

## **DES 221 Research Methodology and Craft Study**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand meaning & methodology of research
- Evaluate literature from a variety of sources, pertinent to the research objectives.
- Identify and justify the basic components of the research framework relevant to the tackled research problem majorly based on the Craft sector.
- Collect research data; analyze it, interpret the data, write research findings and conclusion.

## **DES 221L Research Methodology and Craft Study Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand meaning & methodology of research
- Evaluate literature from a variety of sources, pertinent to the research objectives.
- Identify and justify the basic components of the research framework relevant to the tackled research problem majorly based on the Craft sector.
- Collect research data; analyze it, interpret the data, write research findings and conclusion.

## **DES 226 Understanding Cinema**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

**Upon completion of the course, the students will be able to:-**

- Development of understanding about the social-economical-moral changes in the world through cinema.
- Able to analyze the poetics of cinema which includes character, plot and conflicts etc.
- Compare the impact of World Cinema on the Indian Cinema.

## DES 226L Understanding Cinema Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

### Learning Outcomes:

**Upon completion of the course, the students will be able to:-**

- Improve the understanding about the power of cinema and its impact on the masses.
- Able to analyze world view for storytelling in Cinema.
- Understanding about the writing proposal and final script for short films.
- Able to give pitching/presentation on the story & screenplay proposal.

## Fourth Semester

### DES 202L Basics of Animation Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### Learning Outcomes:

Upon Completion of the course, the students will be able to:

- Utilize the basic animation principle in their animation shorts.
- Utilize traditional and digital media in creation of variety of animation shorts and advertisement.
- Implement the process involved in creation of animation, teamwork, storyboarding, hand drawing, motion, camera skills, and computer editing.
- Construct creative strategy for cartoon animation short films and advertising campaign.

## **DES 229 Communication Studies and Semiotics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes**

**Upon completion of the course, the students will be able to:**

- Apply knowledge of various modes of communication
- Utilize the theories of Signs to create valuable and meaningful signs.
- Utilize the theories of communication and semiotics to construct the creative Messages for communication design media
- Convert those messages in to visual notes
- Utilize the theoretical concepts of Visual Metaphor to create illustrative visuals adopting the Manipulative-Cum-Illustrative approach.

## **DES 206L Conceptualization and Visualization Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Generate ideas and proper execution of the ideas.
- Understand the interconnected process of problem solving in design according to their perspective.
- Utilize design processes and principles.

## **DES 222L Sound Design and Video Editing Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

**Upon completion of the course, the students will be able to:-**

- Understand about the editing and sound designing for short film projects.

- Ability to use editing and sound techniques to make a short audio-video projects.
- Understand the importance of post production work for films.

### **DES 232L Visual Identity Design Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### **Learning Outcomes:**

Upon successful completion of the course, students will be able to,

- Understand the many theories that are the foundation of visual and/or graphic design.
- Understand various methods of creating brand identity products such as (but not inclusive of all) logos, posters, ad design and campaigns, business cards, and more which will be useful for personal and/or commercial publication.
- Learn what differentiates or sets a product apart from others. Know how to draw up a brand strategy, client brief and design strategy.

### **DES 231L Typography Applications Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Utilize Anatomy of a Typeface for creating new typefaces
- Use typography as per the Graphic Design fundamental rules for Communication Design Media
- Understand the differences between Lettering & Typography and use the same as per the need
- Implement the Manipulative Approach in Typography while doing the lettering design and implementing the same for vector conversion
- Create the own Typeface for specific design purposes
- Implement and maximize the Traditional lettering aspects such as calligraphic and its usage in Digital conversion

## **DES 227 Introduction to Printing Technology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Apply the knowledge of Printing Process to produce the print ready products such as Booklets, Magazines, Brochures, etc.
- Utilize the learning for publication design practical.

## **Fifth Semester**

### **DES 341 Advertising Design**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

**Upon completion of the course, the students will be able to:**

- Construct Advertising Strategy, big idea and creative execution aspects.
- Develop the state of understanding the consumer behavior for designing the effective advertising focusing on various cultural, social, personal and psychological factors based on decision making attributes.
- Improve the understanding of advertising activities as one of the major modes of communication.
- Develop the state of mind with the combination of terminologies related to being Manipulative-Cum-Illustrative simultaneously.
- Implement the creative strategy for developing the advertising campaign

## **DES 302L Advertising Design Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Interpret the target audiences for designing advertisements
- Utilize Graphic Design Rules for Advertising Design by demonstrating a practical knowledge of design fundamentals, inclusive of the elements and principles of design.
- Create design solutions for specific media demonstrating fundamental knowledge of trends in advertising.
- Develop the holistic approach in Communication Design through implementation of Design Thinking as constant attributes. On the other hand, practically implementing the theoretical aspects of the subject of Advertising.

## **DES 356L Introduction to 3D Software Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **Learning Outcome:**

**Upon completion of the course, the students will be able to:**

- Use Autodesk Maya with proficiency.
- Execute three dimensional rendering through the application of 3D software Maya.
- Create and manipulate 3D assets in the Application.

## **DES 357 Introduction to Interactive Media**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand the origins of interaction design, gestalt principles, Designing with grids, design patterns
- Explore how people respond to motion and color, Communicating through labels and icons for better content placement and decision making
- Understand mental models to avoid the cognitive overload and Defining behavior for interaction design
- Design for clicks and taps considering the Andoird and iOS
- Understand the iterative cycles and the feedback cycle

## **DES 357L Introduction to Interactive Media Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand the origins of interaction design, gestalt principles, Designing with grids, design patterns
- Explore how people respond to motion and color, Communicating through labels and icons for better content placement and decision making
- Understand mental models to avoid the cognitive overload and Defining behavior for interaction design
- Design for clicks and taps considering the Andoird and iOS
- Students will understand the iterative cycles and the feedback cycles.

## DES 332L Pre-Production Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### Learning Outcomes:

**Upon completion of the course, the students will be able to:-**

- Understanding about the professional pitching criteria and "Pre-production" importance for film.
- Ability to prepare schedule and budget for short film.
- Able to understand the importance of storyboarding, recce, casting, costume, actor handling, camera blocking, property requirement and permission for location etc. for the shooting work

## DES 366L Visual Effects Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### Learning Outcome:

**Upon completion of the course, the students will be able to:**

- Apply concepts and techniques in VFX for filmmaking, TV commercial, and Games.
- Meet the industry production requirements.

## Sixth Semester

### DES 303L Animation Techniques Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### Learning Outcome:

Upon completion of the course, the students will be able to:

- Mix up styles and techniques to produce something fresh and original.
- Utilize different medium of animation techniques.
- Develop concepts, characters and storyboards for basic animation techniques.

### DES 319L Guerilla Film Making Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes:

Upon completion of the course, the students will be able to:-

- Understand the techniques for Guerrilla filmmaking.
- Understand to make a "zero" budget short film.
- To understand the process of pre-production, production and post-production stages of digital filmmaking relate to each other creatively and practically.
- Execute (Pre to post production) a short film in limited time with limited resources.

### DES 329L Introduction to Web Design Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### Learning Outcomes:

Upon completion of this course, students will be able to

- Know how to create an HTML page and add content and images, links, tables and lists.

- Have a good understanding of the meaning of inheritance, cascade, pseudo classes, pseudo elements and selectors which are concepts that are commonly used in web pages.
- Familiar with using font, background styles and style sheets. This course will use Adobe Dreamweaver to create a website with HTML, CSS, JavaScript, and Flash.
- Understand naming conventions, index files, welcome screen, graphical user interface (GUI) and many more settings that are useful when creating a website successfully.

### **DES 360 Publication Design**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop the editorial direction of a publication based on research into the target market and/or intended readership
- Create compelling and appropriate visual concepts through the use of images and type
- Select a channel of delivery, format, materials, binding method, etc. that reflect the editorial direction and the visual concepts of a publication
- Recognize the importance of typographic detailing and grid structures and be able to apply them consistently and dynamically in publication design projects
- Build effective information hierarchies with typography, images, colours and graphic elements
- Avoid publishing related errors and to manage projects and time effectively

## **DES 360L Publication Design Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

**Upon completion of the course, the students will be able to:**

- Use of typography as per the Graphic Design fundamental rules for Communication Design Media
- Develop the ability to analyze and interpret the way complex information presentation in a range of publication forms, including print and digital screen based outcomes.
- Improve the state of ability applying a range of methods to construct hierarchies of information.
- Integrate the usage of type/font, image, color and flow of information in response to specific publication briefs.
- Evaluate the specific publication design briefs.

## **DES 365L User Experience Design Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

**Upon completion of the course, the students will be able to:**

- Understand the wide scope of UX and not just restricted till Websites.
- Improve the understanding of UX in overall and holistic manner using the themes, concepts, and principles to be applied to the digital products and services of all kinds.
- Understand the psychological aspects of UX
- Understand of mental models to avoid the cognitive overload and Defining behavior for interaction design
- Design for clicks and taps considering the Andoird and iOS
- Understand the iterative cycles and the feedback cycle
- Apply the overall learning of UX for different product needs.

## **Discipline Elective - I**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- understand deadline sacrosanct.
- develop sense of ownership and commitment.
- develop the designer's skills and knowledge through a process of hands on-minds on.

## Seventh Semester

### DES 312 Design Management

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning outcomes:**

Upon completion of the course, the students will be able to:

- Understand how balancing of Design and Management can ensure professional success and better quality of life.

### DES 417 Science and Liberal Arts

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

**Learning Outcome:**

Upon successful completion of the course, students will be able to,

- Demonstrate understanding of different types of writing as a series of tasks, including finding, evaluating, analyzing, and synthesizing the subject and as a process that involves composing, editing, and revising.
- Demonstrate research skills, integrate their own ideas with those of others, and apply the conventions of attribution and citation correctly
- Use Standard Written English and edit and revise their own writing for appropriateness.
- Clearly express ideas orally and in writing
- Demonstrate an understanding of the methods of inquiry and analysis both within and among traditional liberal arts and science disciplines (Humanities, Natural Sciences, Social Sciences)
- Understand and articulate how culture, society, and diversity shape the role of the individual within society and human relations across cultures
- Demonstrate knowledge of how social science can be employed to: (a) analyze social change, (b) analyze social problems, and (c) analyze and develop social policies.

## DES 422 Communication Design for Social Sector

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

### Learning Outcome

Upon completion of the course, the students will be able to:

- State behaviour change theories and models of BCC
- Define Situation analysis / needs assessment, social/ epidemiological assessment
- Identify “Key Behaviours”
- Describe communication objectives
- Segment audience
- Develop communication message
- Conduct concept testing/ pre-testing
- Plan its dissemination identifying key channels, medium, and strategic approach
- Design a strategy for Effective Planning, Implementation, Monitoring and Evaluation of a BCC plan.

## DES 422L Communication Design for Social Sector Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### Learning Outcome

Upon completion of the course, the students will be able to:

- State behaviour change theories and models of BCC
- Define Situation analysis / needs assessment, social/ epidemiological assessment
- Identify “Key Behaviours”
- Describe communication objectives
- Segment audience
- Develop communication message
- Conduct concept testing/ pre-testing
- Plan its dissemination identifying key channels, medium, and strategic approach

- Design a strategy for Effective Planning, Implementation, Monitoring and Evaluation of a BCC plan

### **Discipline Elective - II**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- understand deadline sacrosanct.
- develop sense of ownership and commitment.
- develop the designer's skills and knowledge through a process of hands on-minds on.

### **Discipline Elective - III**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.

- understand deadline sacrosanct.
- develop sense of ownership and commitment.
- develop the designer's skills and knowledge through a process of hands on-minds on.

## **Eighth Semester**

### **DES 436P UIL Project**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>48</b>	<b>24</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Application of Knowledge learned
- Acquire and develop practical skills
- Strengthen work values
- Gain interpersonal skills
- Get an understanding of how the market functions

## Reading Electives

### DES 432R Introduction to Behavioral Science

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>ESA : 100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

On completion of this course students should be able to:

- Grasp basic knowledge about behavioral science
- Appreciate the value of behavioral sciences in modern life
- Acquire “how to” discussions that address everyday problems.
- Develop critical thinking with logical reasoning and approach fundamental issues of health by multi-perspectives
- Show empathy to others and concern the health and well-being of others.

### DES 433R Introduction to Intellectual property Rights (IPR)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>ESA : 100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

On completion of this study students should be able to:

- Define intellectual property
- Identify and State reasons and ways to protect intellectual property
- Define the types such as: patents, copyrights, trademarks, designs, etc., found in everyday experiences
- Define piracy and counterfeit
- Understand the harm caused by piracy and counterfeit
- Identify the timelines and Duration of patents, copyrights, trademarks and designs
- Use the knowledge for getting IPR as per the requirement.

## **DES 427R Fundamentals of Retail Management**

**Max. Marks : 100**

**L T P C**

**ESA : 100**

**0 0 0 2**

### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Describe retailing, the entities involved, and the impact of decisions on a retail business
- Analyze the evolution of the retail industry
- Recognize career opportunities available in the retail businesses

## **DES 434R Management Information System**

**Max. Marks : 100**

**L T P C**

**ESA : 100**

**0 0 0 2**

### **Learning outcome:**

Upon completion of the course, the students will be able to:

- Describe the role of information technology and information systems in business
- Understand the current issues of information technology and relate those issues to the firm
- Reproduce a working knowledge of concepts and terminology related to information technology
- Analyze and apply information technology.

## **Bachelor of Design (Industrial Design)**

### **Third Semester**

#### **DES 201L Architectural Drafting - I Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

#### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Read and understand technical drawings.
- Use drawing instruments such as T-scale, Set square and conversion scale for drawing architectural design.
- Learn the style and mannerism in which a drawing is made and presented.
- Understand the orthographic projections, how to scale drawings and importance of same.
- Visualize and perceive an object in 2D and 3D.

#### **DES 208 Design Methods and Processes**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop critical and lateral thinking approach.
- Develop a basic design concept, visualization and manipulation techniques.
- Develop an appreciation of function, aesthetics and technology in design.
- Develop basic design thinking and communication skills.
- Create activities and experiences for basic process of design, adapt in their abilities, interest and design in context of human society, economy, politics and socio-cultural aspect.

## **DES 208L Design Methods and Processes Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

### **Learning Outcomes:**

- Develop critical and lateral thinking approach.
- Develop a basic design concept, visualization and manipulation techniques.
- Develop an appreciation of function, aesthetics and technology in design.
- Develop basic design thinking and communication skills.
- Create activities and experiences for basic process of design, adapt in their abilities, interest and design in context of human society, economy, politics and socio-cultural aspect.

## **DES 211L Drawing III: Analytical Drawing Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **Learning Outcomes:**

Upon Completion of the course, the students will be able to:

1. Develop hand and eye coordination for Analytical Drawing
2. Incorporate design, composition, and spatial organization theories in their design solutions.
3. Utilize a variety of traditional drawing materials.
4. Develop drawing skill which could be implemented for design solution development.
5. Critically interpret and analyze design work in terms of form and structure.
6. Utilize fundamental concepts of aesthetics in creating design drawings.
7. Understand the basic and formal elements of design and drawings.

## **DES 214L Form Space and Order Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Balance composition, by using design principles.
- Understand the importance of elements and principles of design, in application of making design composition.
- Develop ability to assess design in two dimension and third dimension.
- Demonstrate independence of judgment by producing unique designs.

## **DES 217 Introduction to Interior Design**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop understanding of concepts and process.
- Demonstrate interest in design by seeking related information.
- Identify characteristics of contemporary interiors.
- Develop critical thinking skills.

## **DES 221 Research Methodology and Craft Study**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand meaning & methodology of research
- Evaluate literature from a variety of sources, pertinent to the research objectives.

- Identify and justify the basic components of the research framework relevant to the tackled research problem majorly based on the Craft sector.
- Collect research data; analyze it, interpret the data, write research findings and conclusion.

### **DES 221L Research Methodology and Craft Study Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand meaning & methodology of research
- Evaluate literature from a variety of sources, pertinent to the research objectives.
- Identify and justify the basic components of the research framework relevant to the tackled research problem majorly based on the Craft sector.
- Collect research data; analyze it, interpret the data, write research findings and conclusion.

## Fourth Semester

### DES 204 Color Concepts

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
2	0	0	2

#### Learning Outcomes:

Upon Completion of the course, the students will be able to:

- Understand the theory of Colour and utilization of the same in spaces.
- Relate the colour as per culture and society, and relate the same with current trends.
- Understand the psychology and cultural association of colour
- Incorporate design, colour composition, and spatial organization theories in their design solutions.
- Utilize a variety of colour scheme for different interior spaces.

### DES 204L Color Concepts Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	6	3

#### Learning Outcomes:

Upon Completion of the course, the students will be able to:

1. Understand the theory of Colour and utilization of the same in spaces.
2. Relate the colour as per culture and society, and relate the same with current trends.
3. Understand the psychology and cultural association of colour
4. Incorporate design, colour composition, and spatial organization theories in their design solutions.
5. Utilize a variety of colour scheme for different interior spaces.

## DES 207 Cultural Anthropology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Inculcate the understanding of culture and its influence.
- Research and identify the basic elements.
- Do a comprehensive analysis of the design.

## DES 207L Cultural Anthropology Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Inculcate the understanding of culture and its influence.
- Identify the basic elements of different cultures.
- Do a comprehensive analysis of the design
- Comprehensive analysis of the design

## DES 215 Human Factors

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Develop understanding of human body and its surrounding.
- Identify the mentioned standards for different spaces.
- Do a comprehensive analysis of the design standards for a living, working and playing environment.
- Develop critical thinking skills.

## **DES 216 Interior Structures**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Determine the sizes, placements and design of structure in available spaces.
- Read and draw technical drawings and details with proper specifications
- Understand the construction details of various types of structures.
- Organize a space in respect to site and requirements.

## **DES 216L Interior Structures Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Determine the sizes, placements and design of structure in available spaces.
- Understanding of the process of building construction and materials to be used.

## **DES 218 Introduction to Textile Fibers and Yarns**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcome:**

Upon completion of the course students will be able to:

- Understand the basics of Fibre Science.
- Understand the essential and desirable properties of Fibre and classification of Fibre.
- Understand the Longitudinal and Cross sectional structure of Natural and Manmade Fibres.

- Understand the relation between selection of fibre and its impact in designing the end product as per the customer requirements

### **DES 218L Introduction to Textile Fibers and Yarns Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcome:**

Upon completion of the course, students will be able to:

- Understand the basics of Fibre Science.
- Understand the essential and desirable properties of Fibre and classification of Fibres.
- Understand the Longitudinal and Cross sectional structure of Natural and Manmade Fibres.
- Understand the relation between selection of fibre and its impact in designing the end product as per the customer requirements.

### **DES 220 Processing Techniques**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the program students will be able to:

- Develop basic concept of Dyeing & Printing Process on Textile.
- Understand the dyes applied on various Cellulose Fibre.
- Understand the dyes applied on various Synthetic and Protein Fiber
- Differentiate between different kinds of Finishes on Textile.
- Understand the Theoretical & Practical application of Processing Techniques on Textile, Paper and Other Material.

### **DES 220L Processing Techniques Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

Upon completion of the program students will be able to:

- Develop basic concept of Dyeing & Printing Process on Textile.
- Understand the dyes applied on various Cellulose Fibre
- Understand the dyes applied on various Synthetic and Protein Fiber
- Differentiate between different kinds of Finishes on Textile.
- Understand the Theoretical & Practical application of Processing Techniques on Textile, Paper and Other Material.

## **Fifth Semester**

### **DES 304L Architectural Drafting - II and CAD I Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Determine the sizes, placements and design of structure in available spaces.
- Understanding of the process of building construction and materials to be used.

### **DES 306 Building Codes and Standards**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- The students will focus to learn the importance of Byelaws and its relevance in design.
- Students will be able to justify the materials to be used for construction and why.

## **DES 306L Building Codes and Standards Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- The students will focus to learn the importance of Byelaws and its relevance in design.
- Students will be able to justify the materials to be used for construction and why.

## **DES 318 Furniture Design and Detailing**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Focused to learn the Knowledge of carpentry & develop working drawings of Furniture.
- Justify the materials to be used for construction.
- Showcase their designing/design ideas in live/3D manner to help understand /portray ideas better.

## **DES 318L Furniture Design and Detailing Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Learn the Knowledge of carpentry & develop working drawings of Furniture.
- Justify the materials to be used for construction.
- Showcase their designing/design ideas in live/3D manner to help understand /portray ideas better.

## **DES 331L Materials and Applications Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Identify materials and their behaviour to be considered while designing a space.
- Understand the importance of relation between material and design while planning.

## **Discipline Elective - I**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- understand deadline sacrosanct.
- develop sense of ownership and commitment.
- develop the designer's skills and knowledge through a process of hands-on-minds on.

## Sixth Semester

### DES 307 Business Practices

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Understand the Market environment in interior design Industry.
- Understand Customer centric approach in modern marketing

### DES 311 Critical Thinking

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Think critically the parameters to be considered while designing a space can be analyzed well functionally and conceptually. They will be able to create new ideas as per space.
- Understand the importance of relation between design and services while planning.

### DES 311L Critical Thinking Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Think critically the parameters to be considered while designing a space can be analyzed well functionally and conceptually. They will be able to create new ideas as per space.
- Understand the importance of relation between design and services while planning.

## **DES 330 Lighting Design**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand and learn to execute the entire process.
- Understand the parameters required to be considered during the selection of light for various space and design.
- Identify basis parameters for lighting design.

## **DES 330L Lighting Design Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand and learn to execute the entire process.
- Understand the parameters required to be considered during the selection of light for various space and design.
- Identify basis parameters for lighting design.

## **DES 335 Sustainable Environments**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Understand and learn to utilize material in a sustainable manner.
- Understand the parameters required to be considered during the designing of any sustainable projects.

## **DES 338 Trends and Forecasting for ID**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Identify the impact of trend in design.
- Apply critical thinking skills to forecast trend through research and analysis.

## **DES 338L Trends and Forecasting for ID Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Identify the impact of trend in design.
- Apply critical thinking skills to forecast trend through research and analysis.

## **Discipline Elective - II**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- understand deadline sacrosanct.
- develop sense of ownership and commitment.

- develop the designer's skills and knowledge through a process of hands on-minds on.

## **Seventh Semester**

### **DES 402 CAD - II: Walkthrough 3D Max**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**2 0 0 2**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop 3D Interior or Exterior.
- Knowledge about the coloring, transitions, textures, various kinds of models and professional skills.
- Develop the work habits even in the pressurized work environment.

### **DES 402L CAD - II: Walkthrough 3D Max Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop 3D Interior or Exterior.
- Knowledge about the coloring, transitions, textures, various kinds of models and professional skills.
- Develop the work habits even in the pressurized work environment.

## **DES 416 Portfolio and Presentation Techniques**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

### **Learning Outcomes:**

Upon successful completion of the course, students will be able to:

- Deal with nerves and think more positively about public speaking
- Use body language and tone of voice to enhance their presentations
- Use slides and visual aids effectively
- Deliver an enthusiastic and well-practiced presentation
- Determine and develop personal presentation style
- Find ways to overcome nervousness for presentation

## **DES 416L Portfolio and Presentation Techniques Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

Upon successful completion of the course, students will be able to,

- Learn, practice and acquire the skills necessary to deliver effective, presentation with clarity and impact.
- Use a structured presentation methodology to prepare presentation material and effective visual aids

## **Discipline Elective - III**

<b>Max. Marks : 100</b>
<b>(CA: 40 + ESA: 60)</b>

### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.

- Develop Professional skills and independent thinking for design problems and their solutions.
- understand deadline sacrosanct.
- develop sense of ownership and commitment.
- develop the designer's skills and knowledge through a process of hands on-minds on.

### **Discipline Elective - IV**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

#### **Learning Outcomes:**

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- understand deadline sacrosanct.
- develop sense of ownership and commitment.
- develop the designer's skills and knowledge through a process of hands on-minds on.

## Discipline Elective - V

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Develop competencies in understanding design process and learn to elicit and integrate requirements from people, technology and business in their projects.
- Apply design process and methods in all stages of their design project.
- Construct creative Compilation of assignments.
- Develop Professional skills and independent thinking for design problems and their solutions.
- understand deadline sacrosanct.
- develop sense of ownership and commitment.
- develop the designer's skills and knowledge through a process of hands on-minds on.

## Eighth Semester

### DES 436P UIL Project

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	48	24

### Learning Outcomes:

Upon completion of the course, the students will be able to:

- Application of Knowledge learned
- Acquire and develop practical skills
- Strengthen work values
- Gain interpersonal skills
- Get an understanding of how the market functions

## Reading Electives

### DES 432R Introduction to Behavioral Science

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>ESA : 100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of this course students should be able to:

- Grasp basic knowledge about behavioral science
- Appreciate the value of behavioral sciences in modern life
- Acquire “how to” discussions that address everyday problems.
- Develop critical thinking with logical reasoning and approach fundamental issues of health by multi-perspectives
- Show empathy to others and concern the health and well-being of others.

### DES 433R Introduction to Intellectual property Rights (IPR)

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>ESA : 100</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of this study students should be able to:

- Define intellectual property
- Identify and State reasons and ways to protect intellectual property
- Define the types such as: patents, copyrights, trademarks, designs, etc., found in everyday experiences
- Define piracy and counterfeit
- Understand the harm caused by piracy and counterfeit
- Identify the timelines and Duration of patents, copyrights, trademarks and designs
- Use the knowledge for getting IPR as per the requirement.

## **DES 427R Fundamentals of Retail Management**

**Max. Marks : 100**

**L T P C**

**ESA : 100**

**0 0 0 2**

### **Learning Outcome:**

Upon completion of the course, the students will be able to:

- Describe retailing, the entities involved, and the impact of decisions on a retail business
- Analyze the evolution of the retail industry
- Recognize career opportunities available in the retail businesses

## **DES 434R Management Information System**

**Max. Marks : 100**

**L T P C**

**ESA : 100**

**0 0 0 2**

### **Learning outcome:**

Upon completion of the course, the students will be able to:

- Describe the role of information technology and information systems in business
- Understand the current issues of information technology and relate those issues to the firm
- Reproduce a working knowledge of concepts and terminology related to information technology
- Analyze and apply information technology.

**DES 444R Science and Liberal Arts**  
*(Except B.Des Communication Design)*

**Max. Marks : 100**

**L T P C**

**ESA : 100**

**0 0 0 2**

**Learning Outcomes:**

After successful completion students should be able to:

1. Demonstrate understanding of different types of writing as a series of tasks, including finding, evaluating, analyzing, and synthesizing the subject and as a process that involves composing, editing, and revising.
2. Demonstrate research skills, integrate their own ideas with those of others, and apply the conventions of attribution and citation correctly
3. Use Standard Written English and edit and revise their own writing for appropriateness.
4. Able to clearly express ideas orally and in writing
5. Demonstrate an understanding of the methods of inquiry and analysis both within and among traditional liberal arts and science disciplines (Humanities, Natural Sciences, Social Sciences)
6. Understand and articulate how culture, society, and diversity shape the role of the individual within society and human relations across cultures
7. Demonstrate knowledge of how social science can be employed to: (a) analyze social change, (b) analyze social problems, and (c) analyze and develop social policies.

# BANASTHALI VIDYAPITH

## Bachelor of Education



## Curriculum Structure

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

July, 2019



## Programme Educational Objectives

Department of Education aims to develop human resource in terms of effective School Teachers, Educational Researchers, Teacher Educators and Educational Leaders so as to achieve the excellence in teaching, research and innovation with Indian ethos.

Teacher Education program at Banasthali Vidyapith intends to develop knowledge of Teaching Learning Process, competencies to transfer the knowledge, development of skills, organization and management of school system as well as to develop subject content and curriculum and maintain professional ethics and attitude towards Teaching as a 'noble profession'.

Department of Education purports to provide comprehensive inputs which are aimed;

- \* To study the education as a discipline.
- \* To prepare competent and enlightened teachers for different levels of education in India.
- \* To develop responsive, reflective and responsible teachers, educational administrators, researchers and academicians who will be able to work in collaboration with parents and community.
- \* To develop an understanding of focal concerns of education such as language diversity, inclusive education, gender-neutral attitude and education for sustainable development and global citizenship.
- \* To prepare teachers having an understanding of interact and instruct in class in the context of school organization and school education system at local and global level.
- \* Develop a sensitivity and appreciation amongst professionals about the larger societal context in which school education operates, the linkages, mutual pressure and influences of other sub systems.
- \* To provide a deep understanding of educational research and be competent to carry out independent need based quality field researches.
- \* To create digital competency amongst professionals in order to enhance their teaching, research, innovation and administration.
- \* To prepare effective teachers by integrating the academic studies with professional understanding, competencies and reflective visions.
- \* To nurture a temperament in the professionals to work toward self-driven performance goals, entrepreneurship and academic leadership for a noble mission 'Teaching'.
- \* To increase the sensitivity of professional ethics, code of conduct, social cultural values, human dignity and humanness.

## Programme Outcomes

At the end of B.Ed. Programme student teachers will be able to

- PSO-1:** apply their knowledge of core content and pedagogy to set goals and objectives for learning based on Curriculum, and design instruction that engages students in meaningful learning activities.
- PSO-2:** appreciate the diversity of learners and create appropriate learning environment to assure a focus on learning of all students.
- PSO-3:** deliver meaningful learning experiences for all students by integrating their knowledge and applying a variety of communication, instructional, and assessment strategies in their teaching.
- PSO-4:** demonstrate their commitment for continuous self-improvement by engaging in professional development activities and collaborative and reflective practices to improve teaching and learning that contribute to the revitalization of the teaching profession.
- PSO-5:** demonstrate leadership qualities by participating in the curriculum initiatives, student support and school management systems.
- PSO-6:** demonstrate their associations with school, family and community to foster student and community progression.
- PSO-7:** integrate ICT in teaching-learning and assessment process to enrich professional practice.
- PSO-8:** engage in value based and culturally responsive teaching practices.
- PSO-9:** use effective and appropriate verbal, nonverbal, written, and media communication techniques in their teaching, professional collaboration, and interactions with students, colleagues, parents, and the community.
- PSO-10:** demonstrate professional ethics and responsibilities as an educational practitioner.
- PSO-11:** recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of knowledge explosion and technological change.

## FIRST SEMESTER

### EDU 401 Childhood and Growing Up

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**5 0 0 5**

**Learning Outcomes:**

Student Teacher will be able to:

- clarify development as a continuous process.
- explain childhood development in various aspects.
- describe the adolescent stage in reference to characteristics & problems.
- describe the causes of the problems in adolescent learner and imply the suitable solutions.
- recognize and appreciate adolescent learner's uniqueness and enshape them.
- illustrate the impact of social context upon growing child

### EDU 460L Critical Understanding of ICT

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 6 3**

**Learning Outcomes:**

Student Teacher will be able to

- interpret concept and potential of ICT.
- integrate ICT in different types of classroom environment.
- apply ICT for Teaching Learning Process.
- reflect their skills in the creation of documents.
- construct question paper with the help of ICT.

**EDU 414 Language across the Curriculum**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

Student teacher will be able to -

- employ language according to its nature and function to acquaint with language diversity in classroom.
- carry out classroom interaction in reference to first, second and third language,
- appreciate multilingualism and culture in their class
- resolve Communication Problem of school Students.
- appreciate challenges of language across the curriculum (LAC).
- analyze barriers of Listening, Speaking, Reading and Writing (LSRW) skills

## Discipline Elective (Main Pedagogy)-I

### EDU 436 Pedagogy of English-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Enable Student Teachers to

- acquire insight of nature & perspective of Teaching English
- frame the objectives of Teaching English
- apply teaching strategies in different context
- appreciate different forms of planning for ELT.
- assess ELT learning materials.

### EDU 438 Pedagogy of General Science -I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Students will be able to-

- explain the nature and importance of general science.
- discuss and correlate the general science with other school subject.
- analyze the NCF 2005 with reference to science education.
- frame instructional objectives in behavioural terms.
- prepare unit plan and lesson plan based on different method.

### EDU 440 Pedagogy of Hindi-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

#### निक; शिक्ष; %

- शिक्षण के माध्यम से छात्रों को शिक्षण के महत्व और शिक्षण के विभिन्न विधियों के बारे में जानकारी देना।

- **fgnhHkdsfof/k: ilaesolla dj l dala**
- **fo|HYZlaeaHkdkl leUj o l haffH vHZg.krHkvffH)Dr djus dh{lerknHÜ dj l dala**
- **l nHZ, oafjffHr dsvuhj fgñk&f kkk dh ni; q , oavffko fofk,ao ifofk,adkizk dj l dala**
- **fgñhf kkkdsmñs; ldk0logfjd yfku dj l dala**
- **fo|HYZla ea HkKh dKyla dk fodd dj l dala ftlds ifj. lelo: i fo|HYZlaea l haffH vHZg.k , oavffH)fr {lerk nHÜ dj l dala**
- **fof/k l fgR d fo/lvñ¼| &i | Qkdj.k vñ¼dsf kkk mñs; la dls;/ku eaj [ldj ni; q ; k uk dk fueZk , oand dk 0; Hb; u dj l dala**

### EDU 442 Pedagogy of Mathematics-I

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

Student Teacher will be able to:

- Discuss the nature of Mathematics.
- Critically analyze the Mathematics Text Book.
- Eeflect on different methods of teaching Mathematics.
- Prepare the lesson plan in teaching mathematics.
- Reflect on framing and marking test items of achievement test in mathematics.

### EDU 444 Pedagogy of Sanskrit-I

Max. Marks : 100  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

**Nk;k; ki dk; %**

- **fo|HYZlaea l dr dhHkkr fo' Hkvwedsifr ftKH kñho tkir dj Hk&l H; Zl sijfr djkl dala**

- I dñr Æk f kkkds mäs; l dls 0 og jxr ifjor Æ ds: i eafy [k I dñA
- Æk, oal lgr d nV lsl Ær dhleir fo l v l t \$ & x || i | o 0 dj. k dk buds f kkk mäs; l dls /; lu eaj [dj f kkk dj I dñA
- if f l R k u j i mi; Ær fo f k l, oai fo f k l d k i z k dj I dñr x || i | o 0 dj. k f k k d s l j l | l j y , o a v Æ z Æ c u k l d ñ A
- I dñr x || i | o 0 dj. k f k k d s f y, fo | Æ z n e q k i B ; k u k f u e z dj I dñA
- I dñr d s v Æ l k d j h u s d s f y, f k k r Æ k f k k s j d k Æ e l d k v k k u , o a v Æ l u d j u s d h { l e r k f o d f l r dj I dñA
- n' ; & J 0 I l e x h d s l q f p i v Æ n i ; k } l j k i Æ h o f k k k d j I dñA

### EDU 446 Pedagogy of Social Science-I

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

Student teacher will be able to:

- describe the nature of Social Science as a Subject and as a Discipline.
- discuss the relevance of Social Science at School level and daily life.
- formulate Instructional Objectives in behavioral terms in social science teaching.
- plan their teaching on different methods in Social Science at Secondary Stage.

## Discipline Elective (Subsidiary Pedagogy)

### EDU 416 Pedagogy of Biology

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Students will be able to:

- explain the rationale of study of Biology.
- develop skill in framing instructional objective in behavioral terms.
- discuss the major principles of curriculum construction.
- identify and use various method of teaching Biology.
- develop skill in preparing unit and lesson plan.
- selection and use of ISM and related science activities.
- construct various test items for making question paper.

### EDU 417 Pedagogy of Chemistry

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Student Teacher will be able to:

- analyze concepts and generalization used in framing chemistry curriculum.
- analyze nature of chemistry and the relationship between nature of chemistry and objectives of teaching chemistry.
- discuss role of laboratory, text book and other resources in teaching of chemistry formulate IOs for cognitive, affective & psychomotor domain.
- frame test items for different types of test.
- reflect on different teaching methods used in Chemistry.

### **EDU 418 Pedagogy of Commerce**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Student Teacher will be able to

- clarify Commerce as a subject.
- frame instructional objectives for Commerce Teaching at Senior Secondary Level.
- plan for teaching Commerce at Senior Secondary Level.
- apply different methods and media for teaching Commerce.
- construct an achievement test for Senior Secondary Learners

### **EDU 419 Pedagogy of Computer Science**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Student Teacher will be able to

- Acquaint with the aims and objectives of pedagogy of computer science
- Familiarize with the various methods that can be employed for the pedagogy of computer science.
- Acquaint in preparation of instructional materials for Computer Science teaching.
- Acquire knowledge of latest trends in Information Technology and assessment practices.

### **EDU 420 Pedagogy of Drawing & Painting**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Student Teacher will be able to:

- explain the nature and importance of Drawing & Painting in school education
- discuss the correlation of Drawing & Painting with other school subjects
- formulate instructional objectives in behavioral terms
- design unit plan and lesson plan based on different methods.
- acquaint skill in planning and organize Drawing & Painting labs for Sec. and Sr. Sec. class
- prepare Blue print and question paper

### **EDU 421 Pedagogy of Economics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

Student Teacher will be able to

- interpret concept of Economics.
- correlate Economics with other subjects.
- frame instructional objectives for economics teaching at Senior Secondary Level.
- develop the curriculum of Economics at Senior Secondary Level.
- plan the lesson for teaching Economics using different methods and media.
- construct an achievement test for Senior Secondary Learners.

### **EDU 422 Pedagogy of English**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

Enable Student Teachers to

- acquire insight of nature & perspective of Teaching English
- develop the objectives of Teaching English
- apply teaching strategies in ELT



- **fo| lRZ/a ea lRk/h dKly/a dk foDR dj l dnl ftlds  
ifj. lolo: i fo| lRZ/a ea l lRfM vRZg.k , oa vRfR dr {lerk  
nRtU dj l dnlA**
- **fofo/k l lRfR d fo/lv/a ¼ | &i | | Qdj.k v lR ½ ds f lRk mS; la  
ds;/ lu eaj [ldj ni; dr ; k uk dk f ielZk , oanl dk Ø; lR; u  
dj l dnlA**

### EDU 426 Pedagogy of History

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

Student teacher will be able to:

- discuss the nature of History.
- construct different lesson planning in History teaching.
- apply different methods for teaching History.
- state various appropriate innovative learning resources for teaching History.
- apply alternative assessment tools for teaching learning evaluation in History.

### EDU 427 Padagogy of Home Science

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

Student Teacher will be able to:

- explain the Nature and Relevance of Home Science.
- formulate IOs in Behavioural Terms.
- design appropriate Instructional Process.
- discuss various Teaching Methods and activities.
- prepare plans based on different Teaching Methods.
- describe the Importance and Role of Lab and Other (Aids) ISM in Home Science Teaching.
- preparation of Blue Print and Question Paper.

## EDU 428 Pedagogy of Mathematics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

Student teacher will be able to:

- discuss the nature of Mathematics.
- critically analyze the Mathematics Text Book.
- reflect on different methods of teaching Mathematics.
- prepare the lesson plan in teaching mathematics.
- reflect on framing and marking test items of achievement test in mathematics.

## EDU 429 Pedagogy of Music

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

Student teacher will be able to:

- explain the importance and place of Music in the school curriculum.
- discuss the aims & objectives, principles of teaching Music at secondary, senior secondary stages.
- formulate instructional objective for music-learning
- apply different methods of Music teaching.
- design the unit & lesson plan for music teaching.
- appreciate to human and physical resources in Music Teaching.
- prepare the blue print and test paper for written and performance test.

## EDU 431 Pedagogy of Physics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

Student teacher will be able to:



- I h d r x | | i | o Q l d j . k f k k d s f y , f o | B E Z n e q k i B ; k u k f u e Z d j l d a l A
- I h d r d l s v B e l k d j h u s d s f y , f k k k r h k f k k s j d k B e l a d k v k k u , o a e v k l u d j u s d h { l e r k f o d f l r d j l d a l A
- n ' ; & J Q l e x h d s l q f p i v Z n i ; k } j k i h o h f k k k d j l d a l A

## SECOND SEMESTER

### EDU 402 Creating an Inclusive School

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

4 0 0 4

#### Learning Outcomes:

Student teacher will be able to:

- analyze and explain the diversity in Indian classroom, School and Society.
- differentiate the concept of Special Education, Integrated Education and Inclusive education.
- analyze and discuss about National initiatives and provisions for Inclusive Education.
- use various aids and equipments in Inclusive Classroom.
- create learning environment of an Inclusive Classroom.
- discuss the role of supportive services in Inclusive Schools.

### EDU 413 Knowledge and Curriculum

Max. Marks : 100

L T P C

(CA: 40 + ESA: 60)

5 0 0 5

#### Learning Outcomes:

Student Teacher will be able to

- explain the conceptual basis of knowledge and as a process.
- analyze various approaches of knowledge structuring.
- describe the form of knowledge.

- discuss the epistemological bases of education and implementing the different learner driven pedagogies.
- explain the concept and various kinds of curriculum.
- analyze and synthesize the different phases of curriculum.
- critically analyze the curriculum frame work as a policy decisions.

### **EDU 415 Learning and Teaching**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
5	0	0	5

#### **Learning Outcomes:**

Student Teacher will be able to

- differentiate between types of learner while teaching.
- analyze the different factors influencing teaching learning process during class interaction.
- apply different type of methods and media.
- plan according to Phases, level and maxims of teaching.
- manage the classroom as a professional.

### **EDU 301L Reading and Reflecting on Texts**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	6	3

#### **Learning Outcomes:**

Student Teacher will be able to:

- read and respond to a variety of texts in different ways by learning to think together, depending on the text and the purposes of reading.
- enhance their capacities as readers and writers by becoming participants in the process of reading.
- develop the skill of critical thinking by offering opportunities to read a wide variety of texts,

- write with a sense of purpose and audience, through tasks such as, responding to a text with one's own opinions or writing within the context of other's ideas.

## **Discipline Elective (Main Pedagogy)-II**

### **EDU 437 Pedagogy of English-II**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Enable Student Teachers to:

1. recognize English in School curriculum as L1, L2, L3 so as to teach differentially
2. discern the different language forms and dissemination through language skills
3. utilize media and resources in ELT according to the content
4. appreciate text book of English
5. employ reflective and remedial teaching in class accordingly

### **EDU 439 Pedagogy of General Science-II**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Students will be able to-

- select and use of various methods of teaching general science.
- select and use of ISM in teaching general science.
- construct improvised apparatus in teaching general science.
- explain and organize different strength activities in general science.
- analyze related subject content for framing different types of test items.
- discuss on different ways of professional development of Science teacher.





## THIRD SEMESTER

### EDU 459L Aesthetic Appreciation through Art and Drama Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	6	3

**Learning Outcomes:**

Student teacher will be able to:

- discuss the concepts of Art and Type of Arts
- apply Fundamentals of Visual Art
- explain Drama, Its Elements and Types of Drama
- apply different type of Arts in teaching.
- create Various Products by Using Art
- perform Various Type of Drama by Organizing the Stage

### EDU 502 Assessment for Learning

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
5	0	0	5

**Learning Outcomes:**

Student Teacher will be able to

- interpret concept of assessment in education, evaluation and its related term.
- differentiate between kinds of evaluation.
- apply appropriate tools of evaluation in field.
- elucidate different forms and characteristics of achievement test.
- organize an effective evaluation program.
- apply ICT skills during evaluation program.
- conduct an action research related to problems at school level.

### **EDU 503 Contemporary Indian Education**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>5</b>	<b>0</b>	<b>0</b>	<b>5</b>

#### **Learning Outcomes:**

The student teacher will be able to

- reflect upon diversity in Indian Society.
- express the constitutional values (Secularism, Socialism, Democracy) as reflected in Education.
- analyze the roles of commissions and policies in Secondary Education.
- deal with inequality and marginalization related issues in India.
- analyze and appraise the policy framework for Public Education in India.

### **EDU 504 Gender, School and Society**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Student Teacher will be able to

- approve and appreciate gender equality .
- elucidate the constitutional and legal provisions related to women.
- disapprove the gender bias in family, workplace and educational institution.
- appreciate the role of education in eradicating gender bias.
- reflect roles and responsibilities of various agencies in promoting gender equalities.

### **EDU 508 Understanding Discipline and Subjects**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

Student teacher will be able to:

- utilize the nature and importance of Disciplinary Knowledge in class
- differentiate present content of teaching subject in school with its history
- appreciate the paradigm shift in disciplines
- critically appraise the Disciplinary and Interdisciplinary Subjects
- appraise the phenomenon of Interdisciplinary approach to Subjects

**EDU 467L Understanding the Self and Yoga**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 6 3**

**Learning Outcomes:**

Student teacher will be able to:

- facilitate student to understand the self.
- develop capacity to identify the values for a good teacher.
- facilitate student to perform self reflected activities.
- describe the meaning and importance of yoga.
- develop essential skills to perform various asanas.

## FOURTH SEMESTER

### Reading Electives

#### EDU 461R Disaster Management Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

Student teacher will be able to:

- interpret causes, effects and prevention of natural and man-made disaster.
- clarify the meaning and need of disaster management.
- appreciate the governmental efforts for disaster management.
- discuss the role of educational institutions, Pre-service and In-service teacher education Institute in disaster management.

#### EDU 468R Women Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

Student teacher will be able to:

- critically analyze the status of women in Indian society.
- discuss the problems of women education at different levels.
- analyze and appraise the recommendations of committees, commissions and policies formed for women education.
- analyze the legal provisions for women in India.

**EDU 462R Environmental Education****Max. Marks : 100****L T P C****(ESA: 100)****0 0 0 2****Learning Outcomes:**

Student teacher will be able to:

- discuss on objective and Need of Environment Education.
- reflect Importance of environment education in School Curriculum.
- Appreciate the Role of Various media in environment education.
- analyze Environment crisis.
- Develop ISM for teaching environment education.
- Organize different Activities related to Environment Education
- Perform activities for awareness of Environment Education.

# BANASTHALI VIDYAPITH

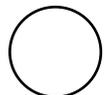
## Bachelor of Pharmacy



### Curriculum Structure

- First Semester Examination, December-2019
- Second Semester Examination, April/May-2020
- Third Semester Examination, December-2020
- Fourth Semester Examination, April/May-2021
- Fifth Semester Examination, December-2021
- Sixth Semester Examination, April/May-2022
- Seventh Semester Examination, December-2022
- Eighth Semester Examination, April/May-2023

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**



## **Programme Educational Objectives**

Pharmacy programme deals with various aspects of modern drug design, drug development, production and quality assurance that are the basis for expertise in all domains of medicine. Pharmacy professionals being a member of healthcare team are unique in their detailed and comprehensive understanding of physical, chemical and biological interactions on the outcomes of drug therapy. They require an understanding of drug entities chemistry, delivery characteristics of dosage formulations, physiological and pharmacological outcomes of drug interactions. Pharmacy curriculum incorporate components of problem solving, case study and project work in the areas of specialization. The main objectives of the Pharmacy programme are:

- To provide exemplary education in a stimulating environment where delivery of pharmaceutical knowledge is integrated with nationally and internationally recognized research to conduct and publish cutting-edge multidisciplinary research in the discovery, utilization and evaluation of therapeutic agents.
- To prepare competent pharmacists at various levels for India.
- To raise sensitivity to professional ethical codes of conduct and social values.
- To prepare globally recognized pharmacy professionals.
- To demonstrate standards of digital literacy that would support professional needs in manufacture, patient care, hospital administration etc.
- To create awareness in society for rationale usage of medicines.
- To create awareness about environmental hazards in relation to GMP & GLP.
- To develop gender-neutral attitudes and practices; respect for all races, nations, religions, cultures, languages and traditions.

- To nurture a temperament that would enable individuals to set and work towards self-driven performance-goals, entrepreneurial ventures and overall leadership.

## Programme Outcomes

- PO1: Pharmacy Knowledge:** Possess knowledge and comprehension of the core and basic knowledge associated with the profession of pharmacy, including biomedical sciences; pharmaceutical science and technology; behavioral, social, and administrative pharmaceutical sciences; and manufacturing practices.
- PO2: Planning abilities:** Demonstrate effective planning abilities including time management, resource management, delegation skills and organizational skills. Develop and implement plans and organize work to meet deadlines.
- PO3: Problem analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decision during daily practice. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- PO4: Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern pharmacy-related computing tools with an understanding of the limitations.
- PO5: Leadership skills:** Understand and consider the human reaction to change, motivation issues, leadership and team building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizen or leadership roles when appropriate to facilitate improvement in health and well-being.
- PO6: Professional Identity:** Understand, analyze and communicate the value of their professional roles in society (e.g. health care professionals, promoters of health, educators, managers, employers, employees).
- PO7: Pharmaceutical Ethics:** Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.

- PO8: Communication:** Communicate effectively with the pharmacy community and with society at large, such as, being able to comprehend and write effective, make effective presentations and documentation, and give and receive clear instructions.
- PO9: The Pharmacist and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional pharmacy practice.
- PO10: Environment and sustainability:** Understand the impact of the professional pharmacy solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO11: Life- long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self-access and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

## First Semester

### PHAR 102 Human Anatomy and Physiology-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- Gross morphology, structure and functions of cell, skeletal, muscular, lymphatic cardiovascular system of the human body
- Various homeostatic mechanisms and their imbalances
- Different types of bones and joints in human body
- Various tissues of different systems of human body
- Various experimental techniques related to physiology
- Various techniques like blood group determination, blood pressure measurement, blood cells counting.
- Structure and functions of special senses and PNS

### PHAR 104 Pharmaceutical Analysis-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- Different types of analysis
- Principles, instrumentation and applications of various types of titration
- Impurities in medicinal agents

## PHAR 105 Pharmaceutical Inorganic Chemistry

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning outcomes

Upon completion of the course, the student shall be able to know

- Principles of limit tests
- Preparation, assay, properties and medicinal uses different inorganic compounds
- Identification of different anions, cations and different inorganic pharmaceuticals.
- Sources of impurities and methods to determine the impurities in pharmaceuticals

## PHAR 107 Pharmaceutics - I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning outcomes

Upon completion of the course, the student shall be able to know

- Importance of IP, BP, USP and Extra Pharmacopoeia
- Definition, preparation, classification, advantages and disadvantages of different dosage forms
- Pharmaceutical incompatibilities and calculations
- Professional handling of prescription

## PHAR 108 Remedial Biology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

### Learning outcomes

Upon completion of the course, the student shall be able to know

- Evolutionary biology and behavior.
- Anatomy, physiology and regulation of various body system
- Plant physiology

### **MATH 110 Remedial Mathematics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Mathematical concepts and principles to perform various calculations in Pharmacy
- mathematical expressions and mathematical relationships
- Abstract mathematical reasoning

### **PHAR 102L Human Anatomy and Physiology - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 104L Pharmaceutical Analysis - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 105L Pharmaceutical Inorganic Chemistry Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## PHAR 107L Pharmaceutics - I Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

## Second Semester

### CS 102 Computer Applications in Pharmacy

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- Mathematics and computing fundamentals used in pharmaceutical applications
- Analyzing pharmaceutical problems using computers
- Integration and application of contemporary IT tools in Pharmaceutical related activities
- Ethics, social, cultural and regulations with regard to Pharmacy

### PHAR 101 Biochemistry

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- Fundamentals roles of biomolecules
- Various metabolic pathways and regulations of biological/ biochemical processes

- Introduction, properties, nomenclature, classification, therapeutic and diagnostic applications of enzymes

### **PHAR 103 Human Anatomy and Physiology-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Anatomy and physiology of various body systems
- Principles of body energetics
- Concept of genetic material

### **PHAR 106 Pharmaceutical Organic Chemistry – I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Types, classification, principles/mechanisms, applications of isomerism in organic compounds
- General methods of preparation and reactions types, principles/mechanisms, applications of alkanes, alkenes, conjugated dienes, alkyl halides, alcohols, carbonyl compounds (aldehydes and ketones), carboxylic acids & aliphatic amines

### **PHAR 212 Pathophysiology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Basic principles of cell injury and adaptation
- Etiology and pathogenesis of the various disease
- Signs, symptoms and complications of various diseases

### **CS 102L Computer Applications in Pharmacy Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 101L Biochemistry Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 103L Human Anatomy and Physiology - II Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 106L Pharmaceutical Organic Chemistry - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## Third Semester

### PHAR 204 Pharmaceutical Microbiology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- Methods of identification, cultivation and preservation of various microorganisms
- The importance and implementation of sterilization in pharmaceutical processing and industry
- Sterility testing of pharmaceutical products
- Microbial standardization of pharmaceuticals
- Cell culture technology and its applications in pharmaceutical industries

### PHAR 205 Pharmaceutical Organic Chemistry - II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- General methods of preparation and reactions of various organic compounds
- Classification, reaction principles/mechanisms, properties and applications of various organic compounds

## **PHAR 213 Pharmaceutical Engineering**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Various type of flow and flow meter
- Various objectives, applications and functions of various processes used in pharmaceutical industries.
- Various preventive methods used for corrosion control in pharmaceutical industries.
- Different types of conveyors
- Various material used in plant construction

## **PHAR 217 Physical Pharmaceutics - I**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Various physicochemical properties of drug molecules
- Various aspects in pre formulation studies
- Surface and interfacial phenomenon on formulation
- Various aspects of size reduction and size separation pertaining to dosage preparation

### **PHAR 219 Pharmaceutical Physical Chemistry**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Different states of matter and their properties
- Principle of thermodynamics and their pharmaceutical applications
- Various aspects of chemical kinetics and quantum mechanics.

### **PHAR 204L Pharmaceutical Microbiology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 205L Pharmaceutical Organic Chemistry - II Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 213L Pharmaceutical Engineering Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 217L Physical Pharmaceutics - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## Fourth Semester

### PHAR 211 Medicinal Chemistry - I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- Various aspects of medicinal chemistry
- Classification, synthesis, SAR, mechanism of action and uses of various drugs

### PHAR 214 Pharmaceutical Organic Chemistry - III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- Nomenclature and classification. Synthesis, reactions and medicinal uses of heterocyclic compounds
- Stereo chemical aspects of organic compounds and stereo chemical reactions

### PHAR 215 Pharmacognosy and Phytochemistry - I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of the course, the student shall be able to know

- History, scope and development of Pharmacognosy
- Quality control of natural products

- Role of the plant tissue culture in enhancing the production of secondary metabolites
- Standardization of crude drug on the basis of different standardization parameters

### **PHAR 216 Pharmacology - I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Various principles of pharmacology
- Classification and mode of actions of different categories of drugs
- Effect of drug action at organ system/sub cellular/ macromolecular level
- Transduction mechanism of various receptors
- Structure, organization and pharmacology of drugs acting on ANS, PNS and CNS
- Applications of basic pharmacological knowledge in the prevention and treatment of various diseases

### **PHAR 220 Physical Pharmaceutics - II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning outcomes**

Upon completion of the course, the student shall be able to know

- Principles of chemical kinetics & to use them in assigning expiry date for formulation
- Rheology principles and their applications on formulations

- Various aspects of drug stability

### **PHAR 211L Medicinal Chemistry - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 215L Pharmacognosy and Phytochemistry - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 216L Pharmacology - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **PHAR 218L Physical Pharmaceutics - II Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **Fifth Semester**

### **PHAR 313 Industrial Pharmacy-I**

<b>Max. Marks : 60</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 20 + ESA: 40)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Various pharmaceutical dosage forms and their manufacturing techniques.
- Various considerations in development of pharmaceutical dosage forms.

- Evaluation quality of solid, liquid and semisolid dosage forms.

### **PHAR 403 Medicinal Chemistry-II**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Chemistry of drugs with respect to their pharmacological activity
- The drug metabolic pathways, adverse effect and therapeutic value of drugs.
- Structural Activity Relationship of different class of drugs.
- Chemical synthesis of selected drugs

### **PHAR 317 Pharmacology-II**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Pharmacological actions of different categories of drugs
- Details about mechanism of drug action at organ system/sub cellular/ macromolecular levels
- Applications of basic pharmacological knowledge in the prevention and treatment of various diseases
- Correlation of pharmacology with other bio medical sciences.
- Signal transduction mechanism of various receptors.
- structure, organization and pharmacology of drugs acting on ANS, PNS and CNS

## **PHAR 316 Pharmacognosy and Phytochemistry-II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Glycosides as secondary metabolite, their classification, chemical structure and properties
- Use of different categories of glycosides in different diseases
- How ayurvedic formulations are prepared and stored?
- Use of the traditional medicine in curing different ailments

## **PHAR 315 Pharmaceutical Jurisprudence**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Pharmaceutical legislations and their implications in the development and marketing of pharmaceuticals.
- Various Indian pharmaceutical Acts and Laws
- Regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
- Code of ethics during the pharmaceutical practice

**PHAR 313L Industrial Pharmacy - I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**PHAR 317L Pharmacology-II Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**PHAR 316L Pharmacognosy and Phytochemistry-II Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Sixth Semester****PHAR 311 Biopharmaceutics and Pharmacokinetics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning outcomes**

Upon completion of this course student will have an understanding of:

- Biopharmaceutics and pharmacokinetics, their role in formulation, development and clinical testing.
- Compartment modelling and plasma concentration measurement.
- Dosage adjustment in clinical & pathological conditions and pharmacokinetic drug interaction.
- Bioavailability – bioequivalence (BA-BE) study.

## PHAR 312 Herbal Drug Technology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

### Learning outcomes

Upon completion of this course student will have an understanding of:

- alkaloidal drugs ,their classification, chemical tests and uses
- various enzymes and functions
- worldwide trade affecting the national economy
- role of the plant tissue culture in enhancing the accumulation of secondary metabolites
- chromatography helps in identification and quantification of mixture of chemical constituents present in the drugs

## PHAR 404 Medicinal Chemistry-III

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning outcomes

Upon completion of this course student will have an understanding of:

- Correlation between pharmacology of a disease and its mitigation or cure.
- Drug metabolic pathways, adverse effect and therapeutic value of drugs
- Structural activity relationship of different class of drugs.
- Synthesis of some important class of drugs.
- chemistry of drugs with respect to their pharmacological activity

### PHAR 318 Pharmacology-III

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Mechanism of drug action and its relevance in the treatment of different diseases
- Various receptor actions using isolated tissue preparation.
- Cell communication mechanism
- Newer targets of several disease conditions for treatment
- Structure, organization and pharmacology of drugs acting on cvs, git, hemopoietic system, respiratory system, endocrine system, diuretics and autacoids

### PHAR 314 Pharmaceutical Biotechnology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Importance of genetic engineering & enzyme immobilization in pharmaceutical industries
- Production and application of monoclonal antibodies in health care.
- Use of fermentation technology in pharmaceutical field.

### PHAR 319 Quality Assurance

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- The importance of quality in pharmaceutical products.
- Importance of Good practices such as GMP, GLP etc.
- Factors affecting the quality of pharmaceutical are explored.
- Regulatory aspects of pharmaceutical taught to the student.
- Process involved in manufacturing of pharmaceuticals different section/department and activity is learnt.

### PHAR 312L Herbal Drug Technology Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### PHAR 404L Medicinal Chemistry-III Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### PHAR 318L Pharmacology - III Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## Seventh Semester

### PHAR 416 Instrumental Methods of Analysis

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Instrumentation techniques available.
- Aspects of separation for multi components of drugs and excipients using various instrumentation techniques.
- Accurate analysis and report the results in defined formats of documentation and express the observations with clarity.
- professional and safety responsibilities for working in the analysis laboratory

### PHAR 415 Industrial Pharmacy-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Process of pilot plant and scale up of pharmaceutical dosage forms.
- Process of technology transfer from lab scale to commercial batch.
- Different Laws and Acts that regulate pharmaceutical industry  
Understand the approval process and regulatory requirements for drug products

### PHAR 417 Novel Drug Delivery System

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Various approaches for development of novel drug delivery systems.
- Criteria for selection of drugs and polymers for the development of Novel drug delivery systems, their formulation and evaluation

### PHAR 414 Dosage Form Design

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Concept of pre-formulation; prodrug and their influence on formulation and stability of products.
- BCS Classification and solubilization in context to dosage form development.
- *in vitro* dissolution study of solids and interpretation of dissolution data.
- Bioavailability studies and *in vivo* methods of evaluation and their statistical treatment.

### PHAR 421 Pharmacy Practice

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- The role of pharmacist in different areas of hospital and hospital pharmacy
- Production and handling of radiopharmaceuticals.
- Drug information services and data retrieval in healthcare

### **PHAR 416L Instrumental Methods of Analysis Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of this course student will know:

- Handling of Various instrumentation technique of analysis.

### **PHAR 414L Dosage Form Design Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning outcomes**

Upon completion of this course student will know:

- Preformulation study of API for dosage form development
- Evaluation as performance indicator

### **PHAR 422L Practice School**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Patient based assessment skills.
- Therapeutic decision making skills.
- Interpretation of the laboratory results to aid in clinical diagnosis.

- Rationale pharmacotherapeutic alternatives.
- Individualization of therapeutic regimen.

## **Eighth Semester**

### **PHAR 412 Biostatistics and Research Methodology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Operation of M.S. Excel, SPSS, R and MINITAB, DoE (Design of Experiment)
- Various statistical techniques to solve statistical problems

### **PHAR 425 Social and Preventive Pharmacy**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- High consciousness of current issues related to health and pharmaceutical problems within the country and worldwide.
- Critical way of thinking based on current healthcare development.
- Evaluate alternative ways of solving problems related to health and pharmaceutical issues.

### **PHAR 423P Project Work**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 16 8</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Experiments, the research tools like literature review, presentation of data etc.

## **Discipline Electives**

### **PHAR 411 Advanced Instrumentation Techniques**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Advanced instruments used and its applications in drug analysis.
- Chromatographic separation and analysis of drugs
- Calibration of various analytical instruments
- Analysis of drugs using various analytical instruments.

### **PHAR 419 Pharmaceutical Regulatory Science**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Process of drug discovery and development
- Regulatory authorities and agencies governing the manufacture and sale of pharmaceuticals
- Regulatory approval process and their registration in Indian and international markets

## **PHAR 424 Quality Control and Standardization of Herbals**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- Detection of different type of adulteration present in the crude drug
- Evaluation of the quality and purity of the drugs by morphological, microscopical, chemical, physical and biological evaluation
- Stereochemistry of natural products
- Biogenetic pathways ongoing in the plants for the production of secondary metabolites

## **PHAR 420 Pharmacovigilance**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcomes**

Upon completion of this course student will have an understanding of:

- history and development of pharmacovigilance
- national and international scenario of pharmacovigilance
- detection of new adverse drug reactions and their assessment
- international standards for classification of diseases and drugs
- adverse drug reaction reporting systems and communication in pharmacovigilance
- ICH guidelines for ICSR, PSUR, expedited reporting, pharmacovigilance planning
- CIOMS requirements for ADR reporting

### PHAR 413 Cosmetic Science

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Various key ingredients and basic science to develop cosmetics and cosmeceuticals
- Scientific knowledge to develop cosmetics and cosmeceuticals with desired safety, stability and efficacy with compliance to Indian Regulatory Authority.

### PHAR 418 Pharmaceutical Marketing

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning outcomes

Upon completion of this course student will have an understanding of:

- Marketing concepts and techniques used in marketing
- Application of the marketing in the pharmaceutical industry.

# BANASTHALI VIDYAPITH

## Bachelor of Science



### Curriculum Structure

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## **Programme Educational Objectives**

The B.Sc. programme aims at holistic development of the students through the innovative and comprehensive educational ideology of Banasthali Vidyapith. The programme include exposure to core disciplines of Botany, Chemistry, Zoology, Computer Science, Electronics, Geography, Geology, Mathematics, Physics, Statistics and foundation courses. The programme aims to provide an understanding of fundamental of all the disciplinary courses chemical. The necessary competencies in the respective areas will be developed for which all essential theoretical, practical and field based skills will be provided.

On completion of the Programme, students will be able to:

- gain in depth knowledge of all core disciplinary courses.
- develop independent learning abilities and analytical thinking through problem-based assignments, laboratory exercises and report writing.
- understand a scientific problem and conduct experiments that would make a substantial contribution to its solution
- apply knowledge and understanding in order to initiate and carry out an extended piece of work or project for societal benefit
- develop team work and awareness amongst students towards the importance of multidisciplinary approach for problem solving skills
- train the students for attainment of technical skills, intellectual capability with exposure to modern technologies to serve as an individual or as a team leader in industries
- To learn and handle various analytical techniques and appreciate its importance
- raise sensitivity to professional ethical codes of conduct, social values and respect for all
- create awareness among students about conservation and sustainability of conduct, social values and respect for all
- create awareness among students about conservation and sustainability of environment.

## Programme Outcomes

- PO1: Knowledge:** Obtain in depth knowledge of science and wide understanding of and on the major concepts, thoughts, and ideas of Botany, Chemistry, Zoology, Computer Science, Electronics, Geography, Geology, Mathematics, Physics and Statistics. It also enriches their analytical, critical, creative faculties.
- PO2: Planning ability:** Demonstrate effective planning abilities including time management, resource management and organizational skills. Develop and implement plans and organize work to meet deadlines.
- PO3: Problem analysis:** Develop the ability to think originally, conceptually, design experiments, conduct experiments, draw important conclusions from obtained data and to use integrated approaches for solving problem.
- PO4: Modern tool usage:** Apply appropriate methods, resources and computational tools with an understanding of their limitations.
- PO5: Leadership skills:** Develop potential among students in sciences who can excel as leaders in entrepreneurship, industry and management.
- PO6: Professional identity:** As biologist, fulfill the needs of society for solving technical, medical, agricultural and environmental problems using biological principles, tools and practices in an ethical and responsible manner.
- PO7: Hands-on training:** Gain hands-on experience in a number of the practical methods and techniques used in basic science research. Expertise in the operation of equipment, adherence to laboratory safety standards and good practices.
- PO8: Ethics:** Develop scientific ethics, including, confidentiality and accountability. Apply ethical principles and commit to professional ethics, responsibilities, and norms of science practices.
- PO9: Communication:** Ability to express effectively, write effective reports, design documentation, make effective presentations, give and receive clear instructions and effectively communicate with professional bodies.
- PO10: Environment and sustainability:** Think creatively (divergently and convergent) to propose novel ideas in explaining facts and figures or providing new solution to the problems. Realized how developments in any science subject helps in the development of other science subjects and vice-versa and how interdisciplinary approach helps in providing better solutions and new ideas for the sustainable developments.
- PO11: Life-long learning:** Ability to recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broad context of biological changes.



## Disciplinary Courses

### BOTANY

#### First Semester

#### **BOT 101 Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperms**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Acquaint with the general characters and classification of cryptogams and phanerogams.
- Understand the evolutionary relationship among lower to higher plant species with differentiating characteristics.
- Appreciate and understand economic importance and application of every group of plants.

#### **BOT 101L Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperms Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Identify bryophyte and pteridophyte.
- Interpret the characteristics & life cycles of various lower plants.
- Learn about practical technique in lab for detail study of plant structure, anatomy and reproduction.

## Second Semester

### **BOT 102 Angiosperm Anatomy, Embryology and Tissue Culture**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain knowledge of plant cells, tissues and their functions.
- Identify and compare structural differences among different taxa of vascular plants.
- Correlate anatomical structure with ecological adaptation of plants for survival under drought, salinity & aqueous environment.

### **BOT 102L Angiosperm Anatomy, Embryology and Tissue Culture Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Detailed knowledge of angiosperm families and plant adaptations in different environment.
- Understanding plant tissue culture and preparation of MS medium for in vitro culture of plants.

## Third Semester

### BOT 201 Angiosperms Taxonomy and Economic Botany

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Identify characteristic features of angiosperm families and their interdisciplinary approaches Understand plant morphology terminologies and distinguishing features with morphological peculiarities.
- Know the economic importance of angiosperms and its use in various industries.

### BOT 201L Angiosperms Taxonomy and Economic Botany Lab

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Develop skills for plant identification, with reference to systematic position, morphological characters, floral formula and floral diagram.
- Diagnose the structural features of plant organs and differentiate microscopically their tissue elements.
- Study fiber, gum, resin, timber, spices and medicinal plants and its applications.

## Fourth Semester

### BOT 203 Microbiology and Plant Pathology

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### Learning Outcomes:

On completion of the course, students will be able to:

- Understand the structure and life process of prokaryotes and virus.
- Know about sources of plant pathogens, identify symptoms & methods of studying plant diseases
- Identify the role of various microbes in food and beverage industries.

### BOT 203L Microbiology and Plant Pathology Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### Learning Outcomes:

On completion of the course, students will be able to:

- Learn techniques for microbial isolation, purification, handling and maintenance.
- Gain knowledge of different methods for the isolation of microbial organisms.
- Identify the plant diseases based upon symptoms & its causal organism.

## Fifth Semester & Sixth Semester Discipline Elective Courses-I & II

### BOT 302 Introduction to Genetics and Genetic Engineering

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Acquire knowledge of the structure and arrangement of the genome in living organisms.
- Understand the biochemical nature of nucleic acids, their role in living systems.
- Impart basic genetic manipulation techniques and their application for human welfare.
- Translate concepts in genetic engineering to their own research.

### BOT 302L Introduction to Genetics and Genetic Engineering Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Develop skills and understanding about different techniques used in genetics and genetic engineering
- Critically analyze and interpret data generated from each practical
- Develop knowledge about genetic problems such as genetic mapping, test cross etc.

### BOT 303 Plant Physiology and Ecology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Comprehend about life processes happening inside plants and how they cope with varied biotic and abiotic factors.
- Understand maintenance of ecological balance and role of man in the degradation of the environment and to suggest remedies.
- Highlight the potential of these studies to become an entrepreneur.

### **BOT 303L Plant Physiology and Ecology Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the physiological details of photosynthesis and respiration.
- Design experiments, collect and analyze data, critically evaluate and present the data produced in physiology or ecology.
- Demonstrate skills related to laboratory as well as field based studies.

### **BOT 304 Ethnobotany**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the science of ethnobotany, its concept, scope and objectives.
- Know the types, distribution and life style of ethnic groups in India.
- Know the importance of tribals in present era.
- Know the various uses of plants by the ethnic people in their daily life.
- Know the miscellaneous uses of plants.
- Understand the methodology of ethnobotanical work.

- Know the medicinal uses of plants in crude ways.
- Aware about the legal aspects associated with ethnobotany.

### **BOT 304L Ethnobotany Lab**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **0 0 4 2**

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the methodology of ethnobotanical work.
- Know the miscellaneous uses of plants.
- Learn the preparation of herbarium.
- Understand the details of ethnic groups through the photographs and other available scientific literatures.

### **BOT 305 Horticulture**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **6 0 0 6**

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the basic technique of plant propagation.
- Perform cutting, grafting, budding, layering etc.
- Grow plants in the absence of soil medium.
- Start bonsai creation.
- Know various aspects of Green House Technology.
- Start commercial cultivation of fruits and vegetables.

### **BOT 305L Horticulture Lab**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **0 0 4 2**

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the methodology of plant propagation.

- Demonstrate cutting, grafting, budding, layering etc.
- Grow plants in the absence of soil medium.
- Know various aspects of Green House Technology.
- Learn the cultivation of fruits and vegetables.
- Demonstrate the technique of compost production.

## **CHEMISTRY**

### **First Semester**

#### **CHEM 102 Inorganic Chemistry-I**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes**

On completion of course, the students will be able to:

- derive Schrodinger wave equation and quantum numbers, predict shapes of orbital from probability curves and apply Slater's rule for calculating  $Z_{\text{eff}}$ .
- explain periodic properties like atomic and ionic radii, ionization energy, electron affinity and electronegativity.
- demonstrate bonding theories including valence bond theory, valence shell electron pair repulsion and molecular orbital theory and its applications.
- determine ionic structure of solids with the help of radius ratio values for coordination numbers 3, 4 and 6 and have brief knowledge of metallic bond.
- acquire knowledge of characteristic properties of 3d series elements and its comparison with 4d and 5d series.
- apply the Werner's coordination theory and its experimental verification; to solve numerical problems based on effective atomic number concept.

## CHEM 102L Inorganic Chemistry-I Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes

On completion of course, the students will be able to:

- understand the principles of working with laboratory equipments and ability to properly use them during chemistry experiments.
- prepare standard solution of various secondary standard salts.
- process purification of impure compounds by crystallization.
- calibrate lab equipments like pipettes and burettes.
- analyze, separate and identify inorganic ions from various groups.

## Second Semester

### CHEM 103 Organic Chemistry-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### Learning Outcomes

On completion of course, the students will be able to:

- explain the organic reactions and their mechanisms.
- explain the stereochemistry of the organic compounds including their optical activity, conformations and configurations.
- explain physical and chemical properties of the hydrocarbons, alcohols, carbonyl compounds and carboxylic acids.
- understand the basics of chemistry of aromatic compounds.

### CHEM 103L Organic Chemistry-I Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

## Third Semester

### CHEM 202 Physical Chemistry-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- explain the basic principles of thermodynamics and thermochemistry.
- describe the states of matter.
- explain the concepts of chemical kinetics and catalysis.
- apply the concept of thermodynamics to determine the heat of neutralization of chemical reaction.
- explain the concept of colloids.

### CHEM 202L Physical Chemistry-I Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- determine the percentage composition of unknown mixture by viscosity and surface tension methods.
- measure kinetics parameters of chemical reaction.
- evaluate the enthalpy of neutralization.
- calculate the lattice energy of  $\text{CaCl}_2$  and solubility of benzoic acid at different temperatures.

## Fourth Semester

### CHEM 201 Inorganic Chemistry-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- apply crystal field theory on different geometries and correlate it with stability.
- elucidate the nomenclature, structures, magnetic properties and reactivity of transition metal complexes.
- apply the concept of L-S coupling for the determination of term symbols of different spectroscopic states and appreciate its utility.
- elaborate the thermodynamic and kinetic stability of metal complexes.
- demonstrate the structure, bonding and reactivity of organometallic compounds.
- discuss a concise treatment of the important inorganic non-aqueous solvents and its application in various known reactions.
- apply HSAB principle on stability of molecules.

### CHEM 201L Inorganic Chemistry - II Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- perform the proper procedures and have the knowledge of regulations for safe handling and use of chemicals.
- predict chemical bonding or molecular geometry of various complexes based on accepted models.
- synthesize various transition metal complexes.
- Handle instruments like calorimeter and potentiometer.

## Fifth Semester & Sixth Semester

### Discipline Electives (Theory)

#### CHEM 302 Organic Chemistry-II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of course, the students will be able to:

- explain the structures and properties of biomolecules: carbohydrates, amino acids, proteins and nucleic acids.
- explain the structures, synthesis and properties of different class of organic compounds: nitro compounds, amines, diazonium salts, enolates, pyrrole, thiophene, furan, pyridine, indole, quinoline and isoquinoline.
- discuss the basic principles of UV-visible, IR and NMR spectroscopy.
- elucidate the structure of organic compounds using UV-visible, IR and NMR spectral data.

#### CHEM 305 Molecular Modeling and Drug Design

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of course, the students will be able to:

- describe and comprehend the fundamental concepts of molecular modeling and computational-driven drug discovery.
- understand the physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
- understand the Molecular modeling and computer graphics
- develop the theoretical and practical aspects of molecular modeling

## CHEM 303 Physical Chemistry-II

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

### Learning Outcomes

On completion of course, the students will be able to:

- explain the basic principles of nuclear chemistry.
- discuss the surface phenomenon, surface properties of solid and calculate the surface area of the adsorbent.
- discuss conductance, Arrhenius theory, Debye-Huckel-Onseger's equation and Nernst equation.
- explain the concept of corrosion and factors affecting corrosion.
- explain the colligative properties of solution.
- Understand the congruent and non-congruent melting points, and azeotropic mixtures.

## CHEM 304 Analytical Methods in Chemistry

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

### Learning Outcomes

On completion of course, the students will be able to:

- apply knowledge of basic statistics to validate the results of analysis.
- understand various chromatographic techniques and its applications in separation of mixtures, purification of samples, and qualitative and quantitative analysis.
- understand the basic principles of optical, thermal and electro analytical methods and apply its concepts to interpretation of compounds.
- explain the principle and applications of thermal methods of analysis and atomic spectroscopy

## Discipline Electives (Lab)

### CHEM 302L Organic Chemistry-II Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- separate compounds by steam distillation.
- understand concept of chromatography (TLC) by separation of green leaf pigment, mixture of dyes and organic compounds.
- separate organic mixture containing two solid components and their qualitative analysis.
- synthesize organic compounds by synthetic methods: acetylation, benzylation, diazotization or coupling reaction and electrophilic substitution.

### CHEM 305L Molecular Modeling and Drug Design Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- describe and comprehend the fundamental concepts of molecular modeling and computational-driven drug discovery.
- understand the physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
- understand the Molecular modeling and computer graphics
- develop the theoretical and practical aspects of molecular modeling

## CHEM 303L Physical Chemistry-II Lab

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

### Learning Outcomes:

On completion of course, the students will be able to:

- handle instruments like calorimeter, conductometer and potentiometer.
- perform the proper procedures and have the knowledge of regulations for safe handling and use of chemicals.
- evaluate physical properties of analytes viz. the molecular weight, conductivity, optical rotation.

## CHEM 304L Analytical Methods in Chemistry Lab

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

### Learning Outcomes

On completion of course, the students will be able to:

- develop their skills for qualitative and quantitative research in different fields.
- perform various analytical operations to qualify and quantify different analytes.
- outline synthetic strategies for important chemicals.
- check the purity of synthesized compounds through TLC, UV, FT-IR spectral data
- analysis of soil through determination pH, estimation of ions and by total dissolve salts.
- able to determine the Chemical and biological oxygen demand by spectroscopic techniques.

# COMPUTER SCIENCE

## First Semester

### CS 107 Computer Fundamentals and Programming

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On successful completion of the course students will be able to

- make a conceptual understanding of input and output devices of computers and how it works and recognize the basic terminology used in computer programming
- develop the ability to write, compile and debug programs in C language and use different data types for writing the programs.
- formulate the programs based on structures, loops and functions.
- conceptualize the understating of differentiating between call by value and call by reference.
- develop the conceptual understanding of the dynamic behavior of memory by the use of pointers.

### CS 108L Computer Fundamentals and Programing Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## Second Semester

### CS 103 Computer Architecture and Object Oriented Programming

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### Learning Outcome

On successful completion of this course, Student will be able to

- Equip the students to meet the requirement of corporate world and Industry standard.
- Engage in professional development and to pursue graduate education in the fields of Information Technology and Computer Applications
- Apply C++ features to program design and implementation.
- Explain object-oriented concepts and describe how C++ including identifying the features and Peculiarities of the C++ programming language support them.
- Use C++ to demonstrate practical experience in developing object-oriented solutions

### CS 104L Computer Architecture and Object Oriented Programming Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

### III Semester

#### CS 210 Data Structures

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On successful completion of the course students will be able to

- Choose appropriate data structure as applied to specified problem definition.
- Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- Use linear and non-linear data structures like stacks, queues , linked list etc.
- Understand Internal representation of Linear and nonlinear data structures.

#### CS 210L Data Structures Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### IV SEMESTER

#### CS 208 Computer Oriented Numerical and Statistical Method

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On successful completion of the course students will be able to

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Using appropriate numerical methods, determine the solutions to given non-linear equations, systems of linear equations, interpolation,

numerical differentiation and integration and numerical solution of ordinary differential equations.

- Analyze the errors obtained in the numerical solution of problems.
- Apply appropriate algorithms to solve selected problems, both manually and by writing computer programs.
- Compare different algorithms with respect to accuracy and efficiency of solution.
- Implement numerical methods algorithm using programming language.

### **CS 208L Computer Oriented Numerical and Statistical Methods Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **V Semester and VI Semester**

### **CS 310L Project Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **CS 316 Business Data Processing and Database Management System**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes**

On successful completion of the course students will be able to

- Develop Business applications in Cobol.
- Identify all peripheral devices.
- Prepare of all documents developed during system development.
- Identifies key of various types, use SQL-the standard language of relational databases, normalize data base.
- Develop COBOL Programming language.

## **CS 316L Business Data Processing and Database Management System Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

## **CS 301 Communication and Networking**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes**

On successful completion of the course students will be able to:

- Demonstrate knowledge of the network and its application areas.
- Ability to use various networks protocols.
- Understanding of the proper contents of a data communication and networking

## **CS 215 Systems Programming**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On successful completion of the course students will be able to:

- Define the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger.
- Define how computer and operating system handles the memory.
- Describe the various concepts of assemblers and microprocessors.
- Analysis the various phases of compiler and compare its working with assembler.
- Examine how linker and loader create an executable program from an object module created by assembler and compiler.
- Identify various editors and debugging techniques

## **CS 320 Programming in Java**

### **CS 320L Programming in Java Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to:

- Apply Object oriented features to program design and implementation.
- Explain object-oriented concepts and describe how Java including identifying the features and peculiarities of the Java programming language supports them.
- Use Java to demonstrate practical experience in developing object-oriented solutions using graphical components.

## **CS 323 Web Development and .NET Framework**

### **CS 323L Web Development and .Net Framework Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to:

- Develop working knowledge of C# programming constructs and the .NET Framework architecture.
- Develop, implement and create Applications with C#.
- Build and debug well-formed Web Forms with ASP. NET Controls
- Use of XML in ADO.NET and SQL server.

# ELECTRONICS

## First Semester

### ELE 102 Circuits and Signals

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

After completion of the course, students will be able to:

- Predict the behaviour of any electrical and magnetic circuits.
- Formulate and solve complex AC, DC circuits.
- Explain response of RL, RC and RLC networks.
- Realize the requirement of transformers in transmission and distribution of electric power and other applications.

### ELE 102L Circuits and Signals Lab

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Test Various Active and Passive components using Multimeter and CRO.
- Understand frequency response of resonance.
- Verify different Network Theorems.

## Second Semester

### ELE 103 Principles of Electronics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of the course, the students will able to:

- Design various diodes circuits for various applications.
- Differentiate various biasing methods used in BJTs and FET's
- Analyse different kinds of oscillators and feedback circuits.

### ELE 103L Principles of Electronics Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Identify and Test various electronics components.
- Understand I-V characteristics of various Electronic devices.
- Draw frequency response of amplifiers.

## Third Semester

### ELE 204 Fundamentals of Digital Electronics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:**

After completion of the course, the students will able to:

- Develop a skill to build digital logic circuits, troubleshoot them and apply it to solve real life problems.
- Analyse, design and implementation of various combinational and sequential circuits.
- Differentiate various logic families.

- Understand the operation and application of multi-vibrators.

### **ELE 204L Fundamentals of Digital Electronics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand the functioning of bread board.
- Implement and verify logic gates and theorems.
- Design combinational and sequential circuits.

## **Fourth Semester**

### **ELE 203 Electronic Instrumentation and Measurements**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of the course, the students will able to:

- Understand and estimate various types of errors in measurements.
- Explain the operating principle of various measuring instruments used to detect physical quantities.
- Design op-amp circuits and understand SCR operation.

### **ELE 203L Electronic Instrumentation and Measurements Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand principle of different transducers.
- Design various circuits Using Op-Amp IC.
- Understand and draw V-I characteristics of SCR, DIAC and TRIAC.

## Fifth Semester/Sixth Semester

### Discipline Electives

#### ELE 305 Microprocessors

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

After completion of the course, the students will able to:

- Describe the general architecture of a microcomputer system and architecture & organization of 8085 & 8086 Microprocessor and understand the difference between 8085 and advanced microprocessor.
- Distinguish the use of different instructions and apply them in assembly language programming.
- Explain and realize the interfacing of memory & various I/O devices with 8085 microprocessor.

#### ELE 305L Microprocessors Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

After completion of this laboratory course, students will be able to:

- Understand the different instructions of 8085 microprocessor assembly language.
- Coding in assembly language.
- Solve different real time problems.

#### ELE 302 Communication Systems

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

After completion of the course, the students will able to:

- Explain the working of communication system, Analog Modulation Techniques and their comparative analysis and applications suitability.
- To analyze various methods of baseband/band pass Analogue transmission and detection.
- To evaluate the performance of analogue communications in the presence of noise.
- Explain the working of AM, FM transmitter and receiver.

### **ELE 302L Communication Systems Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand modulation, demodulation waveform and measure modulation index.
- Understand the operation of Pulse modulation and demodulation.
- Familiarized with radio and TV receiver.

### **ELE 312 Antenna Theory and Wave Propagation**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

#### **Learning Outcomes:**

After completion of the course, the students will able to:

- Analyze Maxwell's equation in different forms (differential and integral) and apply them to diverse engineering problems.
- Examine the phenomena of wave propagation in different media and its interfaces and in applications of microwave engineering.
- Recall electromagnetic plane waves. Apply principles of electromagnetic to explain antenna radiation. Explain various antenna parameters.
- Explain dipole antennas. Establish mathematical equations for various parameters of thin linear antenna.

### **ELE 312L Antenna Theory and Wave Propagation Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Use HFSS tool to design and analysis of antennas.
- Design various type of antennas
- Measure and analyse radiation pattern of antennas.

### **ELE 313 Introduction to Photonics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of the course, the students will able to:

- Explain the light propagation through optical fibers.
- Explain the various light sources and optical detectors.
- Design fiber optic transmitter and receiver system.

### **ELE 313L Introduction to Photonics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand the characteristics of an optical fiber and LED.
- Understand and measure the basic properties of propagation of light in dielectric Optical fibre including losses, attenuation and coupling.
- Explain the working of optical power meter and various sensors.

# GEOGRAPHY

## First Semester

### GEOG 103 Physical Geography

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Describe origin of earth, continents and ocean basin, Isostasy, diastrophism, drainage pattern and several landforms
- Describe the wind movements, pressure, composition and structure of the earth, jet streams
- Classify world in terms of climate, air masses and fronts and describe cyclones and their types
- Describe ocean bottom reliefs of Indian ocean, distribution of temperature and salinity, tides, currents and coral reefs
- 

### GEOG 101L Fundamentals of Cartography Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Describe cartography and theoretical background of scales and their types.
- Draw plain, diagonal, comparative, time and Vernier scale.
- Enlarge, reduce and combine maps.
- Describe the uses of thermometer, barometer, hair hygrometer, rain gauge and wind vane.
- Conduct a plane table survey through radiation, intersection and traversing.

## Second Semester

### GEOG 102 Human Geography

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Define human geography and relate it to the other social sciences; describe man environment relationships and schools of human geography.
- Describe evolution of man, classify human races and describe migration theories.
- Map and describe the distribution of several tribes- Pigmies, Badawins, Eskimos, Khirgiz, Gujjars, Bakarwals, Toda, Bhil and Santhal and their economic activities.
- Describe population distribution of the world with maps, concepts of population growth, population theories and human development.
- Classify cities functionally; describe urbanization, settlements and their types.

### GEOG 104L Statistical Techniques and Data Representation Lab

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Describe statistical sampling and represent frequency distribution in several forms.
- Represent statistical data through diagrams- multiple bar diagram, simple pyramid diagram, rectangular diagram, wheel or pie diagram, and spherical diagram.
- Measure mean, median mode & standard deviation.
- Represent Statistical data through graphs-poly linear graph, climograph and triangular graph.

## Third Semester

### GEOG 202 Introduction to Geography of India

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

After the completion of this course, students should be able to:

- Describe and map the location of India, its physiographic divisions.
- Describe the drainage, climate, soil and vegetation their types and distribution.
- Describe major crops, minerals, industrial regions, population of India and their distribution.
- Demarcate Rajasthan in terms of physiography, describe climate, drainage, vegetation, soils and their distribution.
- Describe agriculture, livestock, irrigation, human resources and tourism.

### GEOG 203L Mapping and Prismatic Compass Survey Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After the completion of this course, students should be able to:

- Create distribution maps through chorochromatic, simple shading, choro-schematic methods.
- Create maps of isobars, isotherms and dot method.
- Conduct prismatic compass survey through radiation and intersection method.
- Correct closing error through Bowditch rule.

## Fourth Semester

### GEOG 201 Economic Geography

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

After the completion of this course, students should be able to:

- Define economic geography, describe its scope and relate it with other social sciences
- Classify resources and describe soil mineral and energy resources
- Describe spatial distribution, production and trade of rice, wheat, cotton, tea and Classify world into agricultural regions
- Describe several industries, their location determinants, and distribution of iron- steel and cotton-textile industry.
- Describe trade, transport, their controlling factors, major law making bodies of the world and major transport routes.

### GEOG 204L Relief Representation and Topographical Maps Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After the completion of this course, students should be able to:

- Interpret topographical maps.
- Represent topographical features with the help of contours.
- Identify Human and natural phenomenon.
- Create Profiles using Contours in the topographical sheets.

## Fifth Semester

### GEOG 303L Map Projection Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Elucidate necessity & classification of map projections.
- Compare different kind of map projections.
- Construct map projections graphically.
- Suggest projection for any area of earth surface.

## Sixth Semester

### GEOG 301L Fundamentals of Geoinformatics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Explain development and types of aerial photographs.
- Identify and interpret aerial photographs.
- Elucidate different elements and development of remote sensing.
- Describe different kinds of remote sensing platforms and discuss important elements of GIS.

## Discipline Electives

### GEOG 305 Environment and Disaster Management

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Understand about the ecosystem and their functions.
- Describe disaster, its types and issues generated during different cycles of disasters.
- Describe the policies of disaster management in India.
- Assimilate role of different bodies established for the cause of disaster relief.

### GEOG 302 Geographical Thought

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Explain evolution of geographical thought and relationship of Geography with other branches of knowledge.
- Describe different tools and techniques of geographical study.
- Compare ancient, medieval and modern scholar's contributions in Geography.
- Elucidate important concepts of Geography as well as recent trends and current issues of subject.

## **GEOG 306 Settlement Geography**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Develop an approach to study settlements.
- Depict the evolution of settlements and relate it to the geographical factors.
- Describe rural and urban morphology, its meaning and types.
- Classify cities functionally into different zones.

## **GEOG 304 World Regional Geography**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Elucidate physical aspects of Asia, Europe, Africa, North & South America and Oceania.
- Describe cultural aspects of Asia, Europe, Africa, North & South America and Oceania.
- Compare different continents of world.
- Illustrate terrain, drainage, climate, natural vegetation and Industrial regions of studied continents.

**GEOLOGY**  
**Disciplinary Courses**  
**First Semester**

**GEOL 103 Physical Geology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Elucidate the overall perspective about Earth science.
- Explain the underlying physical and chemical concepts governing the earth's processes.
- Identify tectonic, volcanic, fluvial, glacial and aeolian landforms.
- Determine the physical, chemical and biological processes that control the evolution of identified landforms.

**GEOL 103L Physical Geology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Illustrate the relationship of earthquake and volcanic zones of the world with respect to plate boundaries.
- Delineate the seismic zones of India by studying major palaeo-earthquakes.
- Explain the evolution of life with respect to time as well as the major geological events of the past.
- Identify various drainage pattern and geomorphic features in the field.

## Second Semester

### GEOL 104 Structural Geology and Plate Tectonics

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Recognize and interpret the geological structures of deformed continental regimes, varying from simply deformed to superimposed structures.
- Interpret the relative timing of formation of structures, the kinematics of deformation, and the progressive deformation histories in these regimes.
- Interpret stress regimes and strain states during continental deformation.
- Apply the information of structural geology in the mining and resource exploration.

### GEOL 104L Structural Geology and Plate Tectonics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Interpret the toposheets for civil engineering purposes.
- Predict the geometry and location of structures at depth or in areas of less exposed outcrops.
- Interpret the geological history of the given area supplemented with structural data in geological maps.
- Identify the areas prone to geological hazards.

## Third Semester

### GEOL 203 Mineralogy, Crystallography and Geochemistry

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

After the completion of this course, students should be able to:

- Recognize and identify the common rock-forming minerals on the basis of their physical properties.
- Make systematic descriptions of minerals by observing them in thin sections under polarizing microscope.
- Describe the parameters, symmetry, general principles of crystal and molecular structures.
- Explain the geochemical distribution of elements and various aspects of radioisotopes including their applications in geology.

### GEOL 203L Mineralogy, Crystallography and Geochemistry Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

After the completion of this course, students will be able to:

- Recognize a variety of minerals and gemstones.
- Describe chemistry, crystal structure, and physical properties of minerals.
- Make systematic descriptions and identifications of minerals by observing their thin-sections under polarizing microscope.
- Explain the parameters, lattice structure and symmetry of crystals.

## Fourth Semester

### GEOL 204 Petrology and Economic Geology

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After the completion of this course, students will be able to

- Describe and identify igneous, metamorphic and sedimentary rocks.
- Classify magmatic, metamorphic and siliciclastic rocks, and understand the petrogenetic processes and their geologic significance.
- Identify the common ore types, their properties, geological settings to understand the processes and mechanisms of their genesis and devise strategies for exploration.
- Assess the applicability of different ore exploration methods and their utilization.

### GEOL 204L Petrology and Economic Geology Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Recognize common ore minerals (metallic and nonmetallic) in hand samples, describe their distribution and uses.
- Describe the rocks based on mineralogical and textural characteristics and interpret the environment of formation
- Map distribution of economic minerals in India.
- Identify various rocks in thin-section under petrological microscope.

## Discipline Electives

### GEOL 304 Applied Geology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Describe the concepts & principles of photogrammetry, remote sensing and their applications in geology.
- Explain the hydrologic cycle and theory of plate tectonics as related to natural hazards.
- Describe earth processes that create hazards to life and property.
- Explain the applications of geology in Civil Engineering.

### GEOL 304L Applied Geology Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Use the elements and keys of visual image interpretation for aerial photographs and satellite data.
- Prepare maps showing geological hazards like seismic activities, earthquakes, landslides and floods affecting the different parts of India.
- Determine the different hydrological parameters like porosity and permeability of rocks.
- Determine the pH, EC, TDS of water samples

## **GEOL 305 Field Geology: Tools and Techniques**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Elucidate the uses of tools in field and in lab
- Describe the structural elements in field
- Discriminate between the primary and secondary structures
- Explain the geophysical method of prospecting

## **GEOL 305L Field Geology: Tools and Techniques Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Handle and Use Clinometer, Brunton and Global Positioning System (GPS)
- Identify the structural elements in field and hand specimen
- Solve problems related to map scales and toposheet indexing
- Perform geological mapping

## **GEOL 306 Geology of Rajasthan**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to

- Describe the physiographic features and climate of Rajasthan.
- Explain the tectono-stratigraphy of the Rajasthan.
- Explore the economic viability of Rajasthan in terms of geological resources.
- Study saline lakes of Rajasthan in terms of their geological evolution.

## **GEOL 306L Geology of Rajasthan Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Describe the physiographic features and climate of Rajasthan.
- Explain the tectono-stratigraphy of the Rajasthan.
- Explore the economic viability of Rajasthan in terms of geological resources.
- Study saline lakes of Rajasthan in terms of their geological evolution.

## **GEOL 201 Palaeontology and Stratigraphy**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to

- Explain the principal elements of fossil preservation.
- Identify fossils based on morphology and evolutionary trends.
- Identify major lithotectonic units of India.
- Describe the geological evolution of the Earth and Indian continent.

## **GEOL 201L Palaeontology and Stratigraphy Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Transform a stratigraphic cross-section into a historical summary.
- Explain Stratigraphy and broad tectono-stratigraphic divisions of India through maps.
- Identify different lithotectonic units of India and establish their stratigraphic correlations.

- Explain the morphological characters of different genera of fossils.

## MATHEMATICS

### First Semester

#### MATH 106 Introduction to Calculus

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Apply the concept and principles of differential and integral calculus to solve geometric and physical problems.
- Evaluate various limit problems both algebraically and graphically
- Differentiate and integrate the functions which are applicable in real life situations.
- Interpret the geometric meaning of differential and integral calculus
- Apply differentiation to find linear approximation, extrema, monotonicity, and concavity of functions.

#### STAT 104 Introduction to Probability and Statistics

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Compute numerical quantities that measure the central tendency and dispersion of a set of data.
- Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
- Apply general properties of the expectation and variance operators.
- Understand the properties and fitting of the Normal, Binomial and Poisson distribution.

- Fit the straight line, second degree parabola and curves of type:  $ab^x$  and  $ax^b$
- Understand the concept of Correlation (Karl Pearson) and Linear Regression.

## Second Semester

### MATH 101 Analytical Solid Geometry

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of this course, student will be able to,

- Understand the basic applications of analytic and solid geometry.
- Understand geometrical terminology for planes, tetrahedron, spheres, parabolics, hyperboloids and ellipsoids.
- Visualize and represent geometric figures and classify different geometric solids.

### MATH 104 Differential Equations

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of this course, the student will be able to:

- Identify the type of a given differential equation and select and apply the appropriate analytical technique for finding the solution.
- Student will be able to solve first order differential equations utilizing the standard techniques for separable, exact, linear, homogeneous, or Bernoulli cases.
- Create and analyze mathematical models using first order differential equations to solve application problems.
- Determine solutions to the linear and nonlinear ordinary differential equations of first and second order.
- Determine the complete solution of a differential equation with constant coefficients by variation of parameters

- Evaluate the Laplace and Inverse Laplace transform of functions of one variable

## Third Semester

### MATH 201 Abstract Algebra

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

On completion of the course, the student will be able to:

- Demonstrate the mathematical maturity of understanding the proof.
- Understand the definition of a group and be able to test a set with binary operation to determine if it is a group.
- Find the order of elements of groups.
- Identify subgroups of a given group, cycle groups, normal groups.
- Understand permutation groups and be able to decompose permutations into 2-cycles.
- Grasp the significance of the concepts of homomorphism, isomorphism, and automorphism and be able to check a given function is one of these.
- Classify groups up to isomorphism.
- Identify a set with to binary operation forms a ring or not.
- Really understand the special types of rings and be able to construct new examples from the old ones.
- Check a subset of a ring is an ideal or not and be able to identify proper and maximal ideal.

### MATH 206 Real Analysis

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

On completion of the course, the student will be able to,

- Think about basic proof techniques and fundamental definitions related to the real number system.
- Understand the concept of real-valued functions, limit, continuity, and differentiability.
- Find expansions of real functions in series forms.

- Demonstrate some of the fundamental theorems of analysis.
- Develop the capacity to solve real integral while understanding of integrable functions.

## Fourth Semester

### MATH 202 Introduction to Linear Algebra

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

On Completion of this course, the students will be able to:

- Understand vector spaces over a field and subspaces and apply their properties.
- Understand linear independence and dependence.
- Find basis and dimension of a vector space, and understand change of basis.
- Compute linear transformations, kernel and range, and inverse linear transformations, and find matrices of general linear transformations.
- Find eigenvalues and eigenvectors of a matrix and of linear transformation.
- Understand inner product on a vector space.
- Understand the concept of orthogonality in inner product spaces.
- Create orthogonal and orthonormal bases: Gram-Schmidt process.

### MATH 301 Complex Analysis

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Demonstrate understanding of the basic concepts and fundamental definitions underlying complex analysis.
- Investigate complex functions, concept of limit, continuity and differentiability of complex functions.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.

- Prove and explain concepts of series and integration complex functions.
- Understand problem-solving using complex analysis techniques.
- Enjoy the roll of complex functions today's mathematics and applied contexts.

## **Fifth Semester**

### **Core Paper (Mathematics)**

#### **MATH 302 Introduction to Discrete Mathematics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcomes:**

On completion of the course, the student will be able to:

- Write an argument using logical notation and determine if the argument is or is not valid.
- Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
- Understand the basic principles of sets and operations in sets.
- Prove basic set equalities.
- Apply counting principles to determine probabilities.
- Demonstrate an understanding of relations and functions and be able to determine their properties.
- Determine when a function is 1-1 and "onto".
- Demonstrate different traversal methods for trees and graphs.
- Model problems in Computer Science using graphs and trees.

## Sixth Semester

### Core Paper (Mathematics)

#### MATH 303 Introduction to Numerical Analysis

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### Learning Outcomes:

On completion of the course, the student will be able to:

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Solve the nonlinear equations, system of linear equations and interpolation problems using numerical methods.
- Examine the appropriate numerical differentiation and integration methods to solve problems.
- Apply the numerical methods to solve differential equations.

### Discipline Electives (Mathematics)

#### MATH 203 Introduction to Mechanics

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Explain the geometry of the motion of particle in plane curve, i.e. position, velocity, and acceleration, and how those quantities are related through calculus.
- Learn Newton's laws of motion and examines their application to a wide variety of problems.
- Learn the basic concept of composition and resolution of forces and friction.
- Understand and visualize the real physical problem in terms of Mathematics.

- Learn one-dimensional (SHM), multi-dimensional (Projectile motion), and constrained motion, motion of particle with or without connecting with string.

### **MATH 304 Linear Programing and Its Applications**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

On completion of the course, the student will be able to:

- Formulate the LPP.
- Conceptualize the feasible region.
- Solve the LPP with two variables using graphical method.
- Solve the LPP using simplex method.
- Formulate the dual problem from primal.
- Solve Transportation and Assignment problems
- Solve the problems of competitive situations between two competitors.

### **MATH 312 Vector Calculus**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

On completion of this course, students will be able to:

- Manipulate vectors to perform geometrical calculations in three dimensions.
- Use Green's theorem and the Divergence theorem to compute integrals. Explain how Green's Theorem is a generalization of the Fundamental Theorem of Calculus.
- Communicate Calculus and other mathematical ideas effectively in speech and in writing.
- Recognize when it is appropriate to use a scalar and when to use a vector in problem solving.

## MATH 310 Number Theory

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

On completion of this course, students will be able to:

- Understand the concept of divisibility and able to find greatest common divisor of large integers using Euclidean algorithm.
- Appreciate the importance of prime numbers and their distribution.
- Solve linear congruences and system of linear congruences.
- Know Euler's theorem, Fermat's theorem and Wilson's theorem.
- Demonstrate the applications of number theory in cryptography.

## PHYSICS

### First semester

#### PHY 103 Electricity and Electronics

Max. Marks : 100	L T P C
(CA: 40 + ESA: 60)	6 0 0 6

### Learning Outcomes:

After completion of this course, the students will be able to:

- Learn fundamentals and concepts of electricity and electronics
- Learn about the basic concepts of electronic and electrical circuit analysis techniques
- Apply the above motioned concept to design a range of electronic devices and circuit configurations.

#### PHY 108L Electronics Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of law of electricity magnetism.

## **Second Semester**

### **PHY 107 Optics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Appreciate the efficacy of Fourier transforms and their application to physical systems.
- Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems
- Understand dispersion in waves and model dispersion using Fourier theory.
- Understand diffraction and imaging in terms of Fourier optics and gain physical and intuitive insight in a range of physics via the spatial Fourier Transform.

### **PHY 107L Optics Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of Optics and wave nature of light.

## Third Semester

### PHY 201 Mechanics

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.
- show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and think critically and work independently.

### PHY 201L Mechanics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of Newtonian mechanics, friction, and motion of bodies.

## Fourth Semester

### PHY 204L Physics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of thermodynamic laws experimentally

## **PHY 205 Thermodynamics, Statistical and Mathematical Physics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- understand the laws of thermodynamics in their various forms and explain their physical significance.
- state the thermodynamic potentials and recognize the most appropriate potential for application to a particular problem.
- derive and state the Boltzmann, Fermi-Dirac and Bose-Einstein distributions.
- know the key links between thermodynamics and statistical physics and apply these to problems

## **V Semester and VI Semester**

### **Discipline Electives**

#### **PHY 306 Quantum Mechanics and Spectroscopy**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- solve the Schrödinger equation for model systems of relevance within chemistry and physics
- describe many-electron atoms with the independent particle model

- describe the structure of the periodic system and the connections between the properties of the elements and their electron configurations
- describe the bases behind interaction between light and matter and account for the most common spectroscopic methods for studies of molecules in the IR and UV/Vis areas

### **PHY 306L Quantum Mechanics and Spectroscopy Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- demonstrate measurements skills in a physics laboratory
- Analyze the measurement results to draw valid conclusions.
- Have oral and written scientific communication, and think critically and work independently.

### **PHY 304 Advance Quantum Mechanics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- solve the Schrödinger equation for complex systems
- describe the structure of the periodic system and the connections between the properties of the elements and their electron configurations
- understand the effect of external parameters on the quantum systems

### **PHY 304L Advance Quantum Mechanics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Demonstrate measurements skills in a physics laboratory
- Analyze the measurement results to draw valid conclusions.
- Have oral and written scientific communication, and think critically and work independently.

### **PHY 302 Nuclear and Solid State Physics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- account for interatomic forces and bonds
- have a basic knowledge of crystal systems and spatial symmetries
- account for how crystalline materials are studied using diffraction, including concepts like form factor, structure factor, and scattering amplitude.
- understand the concepts of nuclear physics
- understand the elementary particles and their interactions

### **PHY 302L Nuclear and Solid State Physics Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- demonstrate measurements skills in a physics laboratory
- analyze the measurement results to draw valid conclusions.
- have oral and written scientific communication, and think critically and work independently.
- to understand the laws of nuclear and solid state physics

## **PHY 305 Advanced Semiconductor Devices**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- understand the mechanism of semiconductor devices
- understand the applications of semiconductor devices in routine life
- make advancement in these devices

## **PHY 305L Advanced Semiconductor Devices Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- assess the validity of physical theories through the design and execution of an experiment, the analysis of uncertainties associated with the measurement of data and the interpretation of the data to draw valid scientific conclusions (lab skills).
- connect a digital oscilloscope to a computer and record a signal with an appropriate sampling rate
- generate and interpret the power spectrum of the recorded data, use the tools, methodologies, language and conventions of physics to test and communicate ideas and explanations

## STATISTICS

### First Semester

#### STAT 106 Probability and Descriptive Statistics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On completion of the course, the student will be able to,

- Differentiate between the two definitions of Statistics
- Understand and differentiate between population and sample, variables and attributes in any survey
- Chose between the type of survey, census or sample, and the method of data collection, primary and secondary methods for a study,
- Represent the data using suitable tabular and/or graphical method
- Identify and calculate appropriate summary statistics for the data
- Understand the concept of various definitions of probability and calculate probability for any given problem.
- Define a random variable for a study variable and obtain its properties.

#### STAT 106L Probability and Descriptive Statistics Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Express raw data in terms of frequency table by using exclusive and inclusive method of classification for continuous/discrete variable.
- Apply and justify the use of, various graphical representations such as Histogram, Frequency polygon etc.
- Interpret and analyze the data using various averages such as arithmetic Mean, Median and Mode.

- Compare different data sets using methods such as standard deviation, mean deviation, quartile deviation and coefficient of variation.
- Employ and interpret the measures of Skewness and Kurtosis.

## Second Semester

### STAT 109 Measures of Association and Probability Distributions

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes:

After completion of this course, the students will be able to:

- Formulate the mathematical/statistical models for real data sets arising in various fields of the populations.
- Understand how to use probability distributions in real life problems.
- Understand how to check the independence of attributes.

### STAT 109L Measures of Association and Probability Distributions Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes:

After completion of this course, the students will be able to:

- Apply and use fitting of various curves such as Straight line, parabola, exponential curve etc.
- Effectively distinguish between and compute, correlation and rank correlation, Partial and Multiple correlations.
- Understand and perform the Fitting of Binomial, Poisson and Normal distribution

## Third Semester

### STAT 209 Sampling Distributions

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand the difference between probability distribution and sampling distribution.
- Understand the sampling distribution of the mean of a sample from a Normal Population.
- Understand the properties of the sampling distribution of the sample mean in general situations, using the Central Limit Theorem.
- Understand the concepts of the t, F and  $\chi^2$  distributions.
- Apply t, F and  $\chi^2$  tests on real life data.

### STAT 209L Sampling Distributions Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Effectively compute and understand testing of significance and confidence intervals in various contexts such as, for single proportion, difference of two proportions for large sample, for single mean, difference of two means for large sample.
- Proficiently test for goodness of fit, independence of attributes.
- Understand how and when to use testing for equality of two population variances

## Fourth Semester

### STAT 207 Statistical Inference and Quality Control

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Apply various basic parametric, non-parametric and sequential estimation techniques and testing procedures to deal with real life problems.
- Understand confidence interval in normal case, Neyman-Pearson fundamental lemma, UMP test.
- Understand SPRT, OC and ASN function.
- Understand some non-parametric techniques.

### STAT 207L Statistical Inference and Quality Control Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand when and how to use various control charts such as  $\bar{X}$ , R, and s charts.
- Effectively understand and determine the AOQ and AOQL plots.
- Understand when and how to use various non - parametric tests such as Sign test, Run test, Median test etc.

## Fifth Semester/Sixth Semester

### Discipline Electives (Statistics)

#### STAT 302 Sampling Techniques and Design of Experiments

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

After completion of this course, the students will be able to:

- Understand the Simple and Stratified random sampling techniques.
- Understand the ratio estimation procedure.
- Apply ANOVA for one-way and two-way classification, fixed effect models with equal number of observations per cell.

#### STAT 302L Sampling Techniques and Design of Experiments Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

On completion of this course, the students will be able to:

- Leave the basic principles underlying survey design and estimation.
- Draw a random sample by using with and with replacement sampling technique in excel.
- Calculate the sampling mean and sampling variance in case of SRSWR and SRSWOR.
- Draw a random sample from stratified and systematic sampling and also to compare the efficiencies of these sampling techniques with respect to each other.
- Analyze the results of a designed experiment in order to conduct the appropriate statistical analysis of the data.
- Compare several means by using the concept of one way and two way ANOVA.

- Compare the three designs named CRD, RBD and LSD in terms of their efficiencies.

### **STAT 301 Applied Statistics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand the concept of time series data and application in various fields.
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Understand the calculation and interpretation of the principal demographic measures, and standardize these measures for comparison and construct and interpret life tables.
- Understand the uses of index number with their construction methods.
- Understand the concept of demand and supply theory.
- Understand the concept of scaling of scores.

### **STAT 301L Applied Statistics Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Find the trend and seasonal components in the given dataset and separate these components on excel.
- Calculate and interpret the basic demographic measures and compare the measure for two different populations.
- Construct the life table with the help of some given life table columns.
- Calculate the index numbers for different commodities.

- Scaling the scores, test the reliability of these scores and compute the IQ of any individual.

### **STAT 303 Financial Statistics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, the students will be able to:

- Understand acquisition of financial data
- Describe financial data using distributions
- Find relation between two or more financial series
- Understand the concept of stochastic process
- Apply basic stochastic models in financial data.

### **STAT 303L Financial Statistics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of this course, the students will be able to:

- Understand the behavior of financial data through graphs
- Describe the nature of financial data
- Calculate risk through financial data
- Find relationship between financial series
- Model financial data using some simple stochastic models.

### **STAT 304 Health Statistics and Population Dynamics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand different measures related to health statistic.
- Able to calculate morbidity measures.

- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Discuss the demographic significance of age and sex structures and the implications of variations in age & sex structure.
- Construct and interpret life tables.
- Calculation and interpretation of the principal demographic measures, and standardize these measures for comparison.
- Understand the components of population change, including the effects of changing birth, death and migration rates, and demonstrate their influences on age structure.
- Estimate and project the population by different methods.

## **STAT 304L Health Statistics and Population Dynamics Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Calculate various measures of morbidity and their accuracy
- Construct population pyramid and identify its features
- Estimate population growth rates and project for future
- Calculate measures of mortality and fertility for a given population
- Calculate simple measures of life table and analyze it.

# ZOOLOGY

## First Semester

### ZOO 102 Taxonomy, Classification and Evolution

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

On completion of the course, students will be able to:

- Gain fundamental understanding of the taxonomy and systematics.
- Describe salient features and classification of major phyla of invertebrates and protochordates.
- Develop a better understanding about classical and modern theories of evolution along with factors affecting evolution and detail of evolution of man, camel and horse.

### ZOO 104L Taxonomy, Classification and Evolution Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

On completion of the course, students will be able to:

- Identify and characterize different organisms of major phyla of non chordates based on the morphology.
- Understand the internal structures of lower non chordates through microscopic study of prepared slides.
- Understand the anatomy of *Fasciola*, *Pheretima* and *Unio* with the help of charts.
- Learn the technique of preparation of permanent slide.
- Apply acquired knowledge for the preparation of phylogenetic tree of invertebrates.

## Second Semester

### ZOO 101 Non-Chordates and Proto-Chordates

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

On completion of the course, students will be able to:

- Describe the habit, habitat, morphology, structure and functions of important animals of different major phyla of invertebrates and lower chordates.
- Understand the economic importance of various invertebrate phyla and affinities of lower chordate animals.
- Gain a high degree of competence in its field of specialization in response to the changing demands of the times.

### ZOO 103L Non-Chordates and Proto-Chordates Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

On completion of the course, students will be able to:

- Identify and characterize different organisms of invertebrate based on the external features.
- Describe different organ systems of important invertebrate animals like *Palaemone*, *Pila* and *Asterias*.
- Gain practical understanding of preparation of permanent slide and study of internal structures of higher invertebrate animals through microscopic study of prepared slides.
- Understand the collection of certain arthropods from their natural habitat and develop the skills of vermiculture.

# ZOOLOGY

## Third Semester

### ZOO 203 Cell Biology, Molecular Biology, Histology and Genetics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Understand the fundamental knowledge of cell and its organization.
- Describe the classification, structure and functions of carbohydrates, proteins and lipids.
- Understand the theoretical aspects of structure and location of various tissues and histology of various body organs.
- Describe the molecular structure and types of nucleic acids along with DNA replication and translation.
- Describe fundamental and molecular principles of genetics and human genetic traits.

### ZOO 203L Cell Biology, Molecular Biology, Histology and Genetics Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Learn the preparation of buffers and different concentration solutions.
- Demonstrate the practical skills of various biochemical tests of carbohydrates, proteins and lipids.
- Carry out enzyme assay and salt precipitation of protein from moong seeds.
- Develop competency in the genetic problems.

# ZOOLOGY

## Fourth Semester

### ZOO 202 Comparative Anatomy and Embryology of Chordates

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Understand the comparative anatomy of various organ systems with special reference to *Scoliodon*, *Rana*, *Uromastix*, *Columba* and *Oryctolagus*.
- Gain the fundamental knowledge about the development of frog, Hen's egg and chick to understand the principles of developmental biology.
- Gain an elementary idea about reproductive biology.

### ZOO 202L Comparative Anatomy and Embryology of Chordates Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Identify higher chordate animals based on the external features.
- Identify and distinguish bones of *Rana*, *Varanus*, Fowl and *Oryctolagus*.
- Understand histology of organs and endocrine glands through microscopic study of slides.
- Understand the development of frog and chick through microscopic slides.

**V Semester and VI Semester**  
**Discipline Elective**  
**ZOOLOGY**

**ZOO 301 Animal Physiology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Gain basic understanding of structure and functions of each physiological system of human.
- Describe principles and pathway of metabolism of carbohydrate, protein and lipids.
- Develop an understanding about principles of human anatomy and physiology.

**ZOO 301L Animal Physiology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Gain hands on experience in hematological tests such as counting of RBCs, WBCs, preparation of haemin crystals, determination of blood haemoglobin, calcium, cholesterol, sugar, protein, clotting time.
- Demonstrate the skills of pathological analysis of urine through the detection glucose and albumin.

**ZOO 305 Environmental Biology and Biostatistics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the physical and biological characters of the environment and the interrelationship between biotic and abiotic components of nature as well as relationship among the individuals of the biotic components.
- Realize the importance of ecosystem and biodiversity for maintaining ecological balance.
- Understand the basic principles of population and community ecology.
- Understand the fundamental principles of biostatistics and its role in the data analysis generated by scientific research.

### **ZOO 305L Environmental Biology and Biostatistics Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Demonstrate skills in the quality assessment of water through testing of water for CO<sub>2</sub>, O<sub>2</sub>, chloride and hardness.
- Gain an understanding of parasitic, aquatic, desert and aerial adaptations of animals with the help of charts and specimens.
- Describe symbiosis, commensalism and socialization among organisms with the help of charts and specimens.
- Understand analysis of data by solving biostatistical problems.

### **ZOO 304 Developmental Biology**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain expertise in explaining how a variety of interacting processes generate an organism's heterogeneous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.

- Gain an understanding of systematic and organized learning about the knowledge and concepts of growth and development of organisms.
- Demonstrate a rich array of material and conceptual practices that could be analysed to better understand the scientific reasoning exhibited in experimental life sciences.

### **ZOO 304L Developmental Biology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the different stages of development of frog and chick through microscopic slides.
- Understand the development and life cycle of *Drosophila* through microscopic slides.

### **ZOO 303 Applied Zoology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Explore the important of earthworms in agro-ecosystems and utilize gained knowledge for production of vermicompost in small scale for garden/household plant.
- Demonstrate their knowledge for setting up poultry farm, sericulture, apiculture, laculture plant.
- Understand biology, life cycle and control measures of crop pests, stored grain pests and insects serve as vectors for human diseases.

### **ZOO 303L Applied Zoology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, the students will be able to:

- Understand the life cycle of protozoan and helminthes parasites through microscopic slides.
- Explore the knowledge of life cycle of honey bees, silk moths and lac insects for setting up apiculture, sericulture and lac culture farm.
- Gain an understanding of biology, life cycle and control of stored grain pests, crop pests and insect of medical importance.

# BANASTHALI VIDYAPITH

## Bachelor of Science (Aviation Science)



### Curriculum Structure

First Semester Examination, December-2019  
Second Semester Examination, April/May-2020  
Third Semester Examination, December-2020  
Fourth Semester Examination, April/May-2021  
Fifth Semester Examination, December-2021  
Sixth Semester Examination, April/May-2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

July, 2019

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## Programme Educational Objectives

Becoming an Aviator is about more than training and building flying skills. Beyond the technical abilities required to earn their wings, they must also develop a balance of leadership skills, discipline, critical thinking skills, and a proper attitude. When it comes to flying, small mistakes can make a big impact, and there's little room for error in the skies. Throughout all stages of flight, whether it's following a preflight checklist or calculating course corrections, pilots need to have a high level of attention to detail and precision to promote better flight safety. In general, there are few traits expected from a good pilot like *Situational awareness, Self-confidence, Humility, Clear communication skills, Ability to remain calm under pressure, Desire to learn.*

The curriculum has identified essential competencies in the these areas respectively. The curriculum also incorporates the components of Safety, Human Factor, Communication skills, case study of accident/incident investigations and project works in the specific domains of aviation.

The main objectives of the Aviation program are:

- [PEO1]:** Furnish the Airlines of the country with professional, well-trained, enlightened & educated pilots,
- [PEO2]:** Stress on ACADEMICS and studies to make a very strong foundation for the pilots and airline managers,
- [PEO3]:** Inculcate the essential virtues of professionalism, discipline and responsibility
- [PEO4]:** To introduce language proficiency requirements [as per ICAO] for pilots with the objective to improve the level of language proficiency globally and reduce the frequency of communication errors.
- [PEO5]:** Describe the professional attributes, requirements or certifications, and planning applicable to aviation careers.
- [PEO6]:** Describe the principles of aircraft design, performance and operating characteristics; and the regulations related to the maintenance of aircraft and associated systems.
- [PEO7]:** Evaluate *aviation safety* and the impact of *human factors* on safety.
- [PEO8]:** Discuss the impact of international aviation law, including applicable International Civil Aviation Organization (ICAO) or other International standards and practices, and applicable national aviation law, regulations and labor issues on aviation operations.
- [PEO9]:** Explain the integration of airports, airspace, and air traffic control in managing the National Airspace System.

**[PEO10]**:Discuss the impact of meteorology and environmental issues on aviation operations.

## Programme Outcomes

- PO1: Aviation Knowledge:** Basic knowledge associated with the profession of Aviator, including Basic sciences and technology, behavioral, social, and administrative skills, and Basic Aircraft design and maintenance practices.
- PO2: Problem Analysis:** Utilize the principles of scientific enquiry, thinking analytically, clearly and critically, while solving problems and making decision during daily practice of practical flying and Aircraft maintenance workshop. Find, analyze, evaluate and apply information systematically and shall make defensible decisions.
- PO3: Design/development of solutions:** An aviator should be exposed to various maintenance practices of Aircrafts so that he/she can detect the kind of snag.
- PO4: Conduct investigations of complex Problems :** To study and critically investigate accident/incident from the aircraft accidents in history.
- PO5: Modern tool usage:** Learn, select, and apply appropriate methods and procedures, resources, and modern computing tools with an understanding of the limitations.
- PO6: The Aviator and society:** An Aviator is a Global Citizen. So, Students will demonstrate an awareness and knowledge of international cultures and societies along with awareness and knowledge of social, cultural and personal values of others. Apply reasoning informed by the contextual knowledge to assess societal, health, safety and legal issues and the consequent responsibilities relevant to the professional Aviation practice.
- PO7: Sustainability:** Growing environmental pressures relating to greenhouse gas emissions, local air quality and noise around airports.
- PO8: Aviation Professional Ethics:** Honor personal values and apply ethical principles in professional and social contexts. Demonstrate behavior that recognizes cultural and personal variability in values, communication and lifestyles. Use ethical frameworks; apply ethical principles while making decisions and take responsibility for the outcomes associated with the decisions.
- PO9: Individual and team work:** Understand and consider the human reaction to change, motivation issues, leadership and team building when planning changes required for fulfillment of practice, professional and societal responsibilities. Assume participatory roles as responsible citizen or leadership roles when appropriate to facilitate improvement in health and well-being.

**PO10: Aviation Communication [RT]:** Communication, in aviation, is very important. An aviator has to be level-4 of ICAO level in English.

**PO11: Project management and finance:** To regulate and oversee aviation safety, security and environment, deliver air navigation services and facilitate air connectivity through international collaboration in order to serve the general public and the civil aviation industry in a responsive and cost effective manner

**PO12: Life - long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. Self access and use feedback effectively from others to identify learning needs and to satisfy these needs on an ongoing basis.

## ENGL 108 English Language-I

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### Learning Outcomes:

After the completion of the course, the students will be able to:

- show an understanding of RP sounds
- speak with proper stress, rhythm and intonation.
- apply the knowledge of weak forms, tonal functions and connected speech to general and work-related communication
- speak in an accent or dialect that can be understood
- demonstrate an understanding of native speakers' nuances of connected speech

## AVS 111 Basic Aviation Mechanics and Electrics

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

### Learning Outcomes:

Upon the successful completion of the course, student will be able to:

- Explain the various laws of mechanics and calculate the different forces and effects.
- Discuss and estimate the various parameters associated with objects in motions.
- Describe the fundamental laws and apply them to solve electrical problems.
- Describe the construction and working of various electrical machines.
- Describe the principles of devices and its applications.

## MATH 102 Basic Mathematics

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### Learning Outcomes:

On completion of the course, the student will be able to,

- Determine the particular progression work (AP, GP, HP)
- Demonstrate the determinant of a matrix up to third order.
- Identify function and relations, notations, operations and applications of sets.
- Locate the quadrant in Cartesian plain.
- Recognize real-world problems that are amenable to mathematical analysis, and formulate mathematical models of such problems

### **PHY 102 Basic Physics-I**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to-

- Have knowledge about semiconductors and semiconductor devices
- Under electromagnetic phenomena and to have knowledge of Maxwell equations
- Understand the thermodynamics laws and their applications

### **AVS 112 Flight Fundamentals (SPL/FRTOL)**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe the fundamental rules and regulations of flying an aircraft.
- Describe the various navigation techniques and flight instruments
- Explain the various weather phenomena and aviation hazard.
- Explain the principles of aircraft mechanics and define various factors involved.
- Explain the various aircraft systems and working of aircraft engines.

### **AVS 113L Hangar Workshop - I Lab**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning outcomed:**

Upon the successful completion of the course, student will be able to:

- Get familiarization with Aircraft Structure
- Understand the working of Engines
- Explain use and types of flight controls.
- Explain use of landing gears and their types.

**AVS 110 Basic Aircraft Radios**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain the concept of radio communication fundamentals and different forms of wave propagation.
- Describe the purpose and methods of HF communication and different types of modulation.
- Calculate resonant frequency bandwidth of any given RLC circuit.
- Explain the working of a radio transmitter and receiver and explain the heterodyne.
- Convert numbers between different number system solve digital logic and identify the component of digital computer.

**AVS 115 Meteorology – I**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain the composition of atmosphere and how the properties changes with altitude

- Interpret how various pressure patterns affect the movement of winds and describe the types of local winds
- Translate the various atmospheric properties identify the stability of the atmosphere and explain the formation and recognise that types of fog
- Explain the formation and aviation hazard of turbulent weather and explain the formation and identify different types of clouds.
- Decode METAR, SPECI, TREND and TAF messages.

### **AVS 116 Navigation I– (General Navigation and Radio Navigation)**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Identify the shortest route under constant heading route between any two points on earth.
- Locate the position and determine the track to travel between any two points on the surface of the earth with the help of different types of aeronautical.
- Navigate effectively between any places on earth and compute the safe distance the can travel.
- Describe and demonstrate the various radio navigation techniques followed in aircraft flight navigation.
- Explain and identify the various levels and applications of radar in aircraft navigation and monitoring.

### **AVS 109 Air Regulation - I**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe the various International conventions and agreements made for CA firm safe and efficient flight operation.

- Identify the fulfilment suitability of a flight crew for particular operation purpose and demonstrate fundamental rules followed in flight operations.
- Demonstrate safe and efficient approach and departure from an airport.
- Explain various levels of Air Traffic services and flight information available for the pilots.
- Decode and interpret the various aviation documents required for flight operations.

### **AVS 117 Technical – I (Principles of Flight)**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Apply the various concepts applied mechanics and calculate the aerodynamic effects on the various aircraft components.
- Analyse and operate the stability and control requirements and criticize the created associated problems.
- Calculate the various performance parameters at different phases of flight.
- Describe and explain the various problems and solutions associated with high speed flights.
- Describe the flight operational limitations and describe and explain various types of propellers used in aircrafts.

### **ENGL 109 English Language-II**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After the completion of the course, the students will be able to:

- have a basic understanding of the targeted grammatical structures
- show consistent and appropriate language use in extended conversation and discussion

- demonstrate understanding of tense and mood of a message containing specific modal auxiliaries
- recognize basic constructions as Subject-Verb agreement
- transfer the knowledge of grammatical structures and vocabulary to communicate effectively
- use the knowledge of idioms and phrases in their day-to-day conversation

### **AVS 114L Hangar Workshop – II**

**Max. Marks: 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Understand the safety precautions in Aviation
- Understand the human component in aviation incidents/accidents
- To understand the ground handling of Aircrafts and marshalling signals.
- To understand re-fuelling of Aircrafts
- To understand various fire fighting equipments

### **ENGL 207 English – III (R/T Communication)**

**Max. Marks: 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

- After the completion of the course, the students will be able to:
- Define the various regulations and the communication procedures involved in proper Aeronautical vocal information exchange.
- Describe and apply the various principles involved in operation of the aircraft radios and explain the favorable and the adverse effects due to different parameters.
- Describe the working of the aircraft radio apparatus and operating procedures to operate the aircraft radio systems.

- Demonstrate the method of conversation and list the various aviation vocabulary and the phrases used in aviation vocal communication.
- Describe the various communication and Air Traffic control protocols.

### **AVS 217 Meteorology - II**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe the Global circulation and the associated weather patterns
- Locate and identify the various Jet streams and choose the flight parameters for the efficient air travel
- Recognize and explain the various global weather patterns
- Recognize and explain the weather patterns of India
- Discuss the function of Indian Meteorology department and decode the various weather information representation

### **AVS 212 Air Regulation - II**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Illustrate different aviation related National Law of India and work in accordance
- Locate and identify different aerodromes signs, markings and facilities.
- Describe the actions to be taken and act in the event of accidents or incident.
- List different procedures in the process of registration of new aircraft.

- Describe different operational procedures followed in flight operation and in the event of unusual circumstances.

### **AVS 218 Navigation – II (Aircraft Instruments)**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe how changes in temperature influence the speed of an aircraft, and apply the concept of dynamic and static pressure various flight instruments.
- Describe the properties of gyroscopic and errors in gyroscope instruments.
- Evaluate to operation of compass with the earth magnet and the associated errors. Review the ideal properties which are required for a compass.
- Explain the principle of how ring laser gyro and explain the purpose and properties of INS and IRS. Describe working of Radio Altimeter, EFIS and HUD.
- Explain the construction and working of various engine instruments.

### **AVS 220 Technical – II (Aircraft Systems)**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning outcomes:**

Upon the successful completion of the course students will be able to:

- Explain the different loads acting on the aircraft. List and explain different parts and functions of an aircraft hydraulic system.
- Describe and explain the mechanism of the various flight controls and landing gears. Appraise the need of trim tab and artificial feel system.

- Identify and discuss the various systems powered by the engine bleed air and identify the problems and their solutions altitude aircraft operation.
- Explain the various components of the aircraft fuel system and describe the various emergency equipments.
- Describe the various adverse environmental effects on aircraft's performance and the solutions.

### **AVS 213 Aircraft Powerplants**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe the working principle, parts and functions of an aircraft piston engine and subsystems
- Define the various performance specifications and describe the construction and working of different power argumentation systems and propeller mechanism
- Describe the working principle parts functions of an aircraft gas turbine engine.
- Define the various performance specifications and describe the construction and working of different thrust argumentation systems for a gas turbine engine
- Explain the working and function of various gas turbine subsystems.

### **AVS 203L Hangar Workshop – III Lab**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- To understand Aircraft system components and instruments
- To understand brake system and pneumatic system

- To understand various documentation related to aircraft maintenance
- To understand Aircraft flight control system
- To understand Engine oil system

### **ENGL 208 English - IV (ICAO Level - 5)**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

- After the completion of the course, the students will be able to:
- ask grammatically structured questions related to basic needs and respond appropriately
- participate in all types of conversation situations
- use prediction strategies to understand expanded range of new vocabulary items in context and in their daily and work related communication situations
- apply the learned grammatical and idiomatic structures to communicative situations

### **AVS 221 Technical - III (Aircraft Electricals)**

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe and explain the various electrical components used in aircraft electrical circuits.
- Compare and illustrate the various types of batteries used in aircraft and explain the construction and working of DC motor and generator.
- Explain the working of various aircraft power generation system and ac machines.
- Explain the principle and working of transformers, rectifiers and inverters.

- Explain the various power control, transfer and distribution system in aircraft.

### **AVS 219 Navigation-III (Flight Planning And Performance)**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Calculate and confirm the position of CG after the load on the aircraft is altered. Estimate the payload carrying capacity for example flight profile.
- Estimate the fuel requirement are given aircraft load underplayed and the flight profile. Define the various types of flight plan and it sections.
- Estimate the aircraft performance during different phases of flight
- Calculate the takeoff distance required for the given aircraft load and the Runway condition
- Calculate flight parameters for optimal climb and Cruise, and estimate landing distance required for the given aircraft load and the runway condition

### **AVS 214 Aircraft Specifics**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe the various specifications and operating procedures of Cessna aircraft series.
- Explain the various systems and handling procedures of Cessna aircraft series.

- Describe the various specifications and operating procedures of Partenavia P68C aircraft series.
- Explain the various systems and handling procedures of Partenavia P68C aircraft series.
- Operate and describe the various functions of Garmin 1000 integrated electronic flight instrumentation system.

### **AVS 215 Aviation Maintenance Management**

**Max. Marks: 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain the objectives roles and types of aircraft maintenance program.
- Explain the various documentation requirements and procedures involved in aircraft maintenance and engineering operations.
- Explain the line maintenance and hanger maintenance procedure.
- Explain the various levels of quality and safety ensuring mechanism.

### **AVS 216L Hangar Workshop - IV Lab**

**Max. Marks: 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Identify various Aircraft Instruments.
- Explain the operation of Brakes.
- Explain Oil and lubrication system.
- Understand marshalling for aircrafts
- Understand propellers and ignition system

## **AVS 315 Advanced Flight Operational Procedures**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain the regulations related to Aircraft Operations.
- Explain the various documentation requirements and procedures involved in aircraft Navigation.
- Explain the navigation using Jeppesen chart.
- Explain the various Aerodrome operating minima.
- Explain aircraft monitoring system

## **AVS 320 Human Performances and Limitations**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain the Human Physiology and human physiological limitations in flying.
- Explain the vision problems and illusion involved in flying.
- Explain the various factors painting affecting human psychomotor performances.
- Explain the Dynamics of group behaviour and elements of interpersonal skill development.
- Explain the man and machine interaction on the advantages and disadvantages associated with that.

## **AVS 323 Navigation – IV (Auto Flights Warning and Recordings)**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain the functions of the different operating modes of a flight director system.
- Explain the operating requirements, working, modes and limitations of an autopilot system.
- Explain the operating requirements, working, modes and limitations of an auto landing and auto throttle system.
- Explain the requirement and working of aircraft stability argumentation and flight protection system.
- Explain the various aircraft warning systems and flight data recording system.

**AVS 307 Dangerous Goods**

**Max. Marks: 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain the importance and the various procedures involved in transporting dangerous goods by air.
- Describe the various packaging requirements and methods.
- Describe the securities and security plan associated with transporting dangerous goods by air.
- List the different documentation and handling procedures involved in transporting dangerous goods.
- Explain the various regulations in air cargo operations undergarments and requirements.

**AVS 305 Crew Resource Management**

**Max. Marks: 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Discuss the scope and concept of crew Resource Management.

- Explain the different elements affecting the human behaviour with the given environment.
- Demonstrate the various levels of interpersonal skills.
- Describe the different method of training and performance assessment.
- Explain the various practices adopted for effective crew Resource Management.

## **Discipline Electives**

### **AVS 317 Airline Management**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Describe and discuss the various functions in airline operation.
- Explain the logistical procedure and flight operational management.
- Describe the various departments and functions in an airline industry.
- Explain in detail about the various aircraft operations department and its functions.
- Discuss the various level of computerization and its impact in airline business

### **AVS 325 Remotely Piloted Aircraft System**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

Upon the successful completion of the course students will be able to:

- Describe the rules and weather constrains associated with RPS operation.
- Design and develop a RPS for a required configuration.
- Identify the faults in the RPS and describe the remedies.

- Identify types of payload required for a mission.
- Operate an RPS within its limits.

### **AVS 324 Pilot Theory**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Upon the successful completion of the course students will be able to:

- Describe the fundamental rules and regulations of flying an aircraft.
- Describe the various navigation techniques and flight instruments
- Explain the various weather phenomena and aviation hazard.
- Explain the principles of aircraft mechanics and define various factors involved.
- Explain the various aircraft systems and working of aircraft engines.

### **AVS 316 Advanced Human Factors**

**Max. Marks: 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Course Outcomes:**

- Explain the Human Physiology and human physiological limitations in flying.
- Explain the vision problems and illusion involved in flying.
- Explain the various factors painting affecting human psychomotor performances.
- Explain the Dynamics of group behaviour and elements of interpersonal skill development.
- Explain the man and machine interaction on the advantages and disadvantages associated with that.

## **AVS 318 Aviation Operation Management**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Course Outcomes:**

- Explain the different functions of operations management.
- Explain the different steps in product design and manufacturing.
- Explain the various techniques in production planning and control.
- Explain the departments in material management.
- Explain the various tools of total quality management.

## **AVS 319 Aviation Safety Management**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Upon the successful completion of the course, student will be able to:

- Explain how safety management systems are structured and their benefits for the aviation industry;
- Implement a Safety Management System adapted to the organisational and operational context of service providers;
- Explain the six step risk management process and its benefits;
- Compare the different safety cultures and explain how they contribute to a safety management system;
- Identify and apply key tools to assist on the implementation of a SMS (e.g. interviews/data collection, accident causation models, risk matrices, etc.)

## **ENGL 307 English - V (ICAO Level – 6)**

<b>Max. Marks: 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes**

- After the completion of the course, the students will be able to:

- identify punctuation marks and discourse markers in all kinds of oral and written communication situations.
- use previously learned grammatical strategies to draw meaning from familiar/unfamiliar communication situations .
- ask and answer questions in all tenses and moods related to the targeted issues.
- use appropriate strategies to scan oral and written discourse for general and specific information.
- read and write on a variety of topics related to day-to day communication.

# **BANASTHALI VIDYAPITH**

## **Bachelor of Science (Biotechnology)**



### **Curriculum Structure**

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

July, 2019

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## **Programme Educational Objectives**

The B.Sc. Biotechnology programme aims at holistic development of the students through the innovative and unique Five fold Educational ideology of Banasthali Vidyapith. This programme broadly includes core subjects of biotechnology, botany, zoology and chemistry. The courses in the programme aim to provide a basic and advanced understanding of the different disciplines of each core subject by means of a lecture series and laboratory work. The program has identified necessary competencies in the respective areas for which all essential theoretical, practical and field based skills will be provided.

The main objectives of the B. Sc. Biotechnology programme are to:

- provide an introduction to the basic concepts of biotechnology and its recent advances
- gain in-depth knowledge of different areas of biotechnology such as biochemistry, immunology, bioinformatics, molecular biology, cell biology, environmental biology, cell and tissue culture techniques, genetic engineering etc.
- develop logical thinking, analytical and independent learning skills
- create awareness amongst students towards the importance of multidisciplinary approach for problem solving skills in biotechnology
- provide broad exposure to various societal, ethical and commercial issues in the various aspects of biotechnology
- raise sensitivity to professional ethical codes of conduct, social values and respect for all
- train the students for an academic and professional fields of biotechnology
- develop an ability to work in collaboration with expertise of different subjects in industries and research
- imbibe and inculcate the basic foundation of biotechnology among students so that they can excel in esteemed academic institutes, various public and private sector organizations with professional competence, technical knowledge and analytical skills

## Programme Outcomes

- PO1: Biotechnology knowledge:** This course provides necessary theoretical and practical experience in all divisions of biotechnology to pursue a professional career in this field.
- PO2: Planning ability:** Demonstrate effective planning abilities including time management, resource management and organizational skills. Develop and implement plans and organize work to meet deadlines.
- PO3: Problem analysis:** Utilize subject and practical knowledge to think analytically, design experiments, handle scientific instruments, drawing logical inferences from the scientific experiments while solving problems for the betterment of society.
- PO4: Modern tool usage:** Utilize gained knowledge to apply appropriate methods, resources and related computational tools with an understanding of their limitations.
- PO5: Leadership skills:** Develop students with sound concepts in biotechnology who can excel as leaders both in academics and industries. Develop entrepreneurship skills to explore the market potential of products and processes, creating business plans and raising money from venture capitalists.
- PO6: Professional identity:** Understand, analyse and communicate the value of their professional roles in society (e.g. biotechnologist, researchers, educators, managers, employers, employees).
- PO7: Hands-on training:** Laboratory experiments will provide hands-on training on experimenting with biomolecules and thereby develop a research aptitude for various allied fields of biotechnology.
- PO8: Bioethics:** Imbibe ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.
- PO9: Communication:** Develop various communication skills such as reading, listening, speaking, writing and make effective presentations, which will help them in expressing their ideas and views clearly and effectively.

**PO10: Environment and sustainability:** Utilize the acquired knowledge to maintain the environmental friendly philosophy with sustainability of various environmental resources. Also to create awareness amongst others to keep the environment safe and clean.

**PO11: Life-long learning:** Develop trained human resources in biotechnology to promote quality education and to initiate lifelong learning process for productive career.

## First Semester

### BOTANY

#### **BOT 101 Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperms**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes::**

On completion of the course, students will be able to:

- Acquaint with the general characters and classification of cryptogams and phanerogams.
- Understand the evolutionary relationship among lower to higher plant species with differentiating characteristics.
- Appreciate and understand economic importance and application of every group of plants.

#### **BOT 101L Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperms Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes::**

On completion of the course, students will be able to:

- Identify bryophyte and pteridophyte material for specimens of lower group of plants.
- Interpret the characteristics & life cycles of various lower plants.
- Learn about practical techniques in lab for detail study of plant structure and anatomy, reproduction.

## BIOTECHNOLOGY

### BT 102 Cell and Molecular Biology - I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes::

On completion of the course, students will be able to:

- Gain expertise in the ultra structural information of cell besides the detailed views of the cell interior.
- Understand the complex molecular mechanisms occurring in the cell.
- Describe types, structural organization and packaging of chromosomes.

### BT 102L Cell and Molecular Biology – I Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes::

On completion of the course, students will be able to:

- Understand the basics of cell structure and transport mechanism.
- Gain knowledge about isolation and estimation of nucleic acid from cell.
- Perform analysis of chromosomes and types of cell division.

## CHEMISTRY

### CHEM 102 Inorganic Chemistry-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of course, the students will be able to:

- derive Schrodinger wave equation and quantum numbers, predict shapes of orbital from probability curves and apply Slater's rule for calculating  $Z_{\text{eff}}$ .
- explain periodic properties like atomic and ionic radii, ionization energy, electron affinity and electronegativity.
- demonstrate bonding theories including valence bond theory, valence shell electron pair repulsion and molecular orbital theory and its applications.

- determine ionic structure of solids with the help of radius ratio values for coordination numbers 3, 4 and 6 and have brief knowledge of metallic bond.
- acquire knowledge of characteristic properties of 3d series elements and its comparison with 4d and 5d series.
- apply the Werner's coordination theory and its experimental verification; to solve numerical problems based on effective atomic number concept.

### **CHEM 102L Inorganic Chemistry-I Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

On completion of course, the students will be able to:

- understand the principles of working with laboratory equipments and ability to properly use them during chemistry experiments.
- prepare standard solution of various secondary standard salts.
- process purification of impure compounds by crystallization.
- calibrate lab equipments like pipettes and burettes.
- analyze, separate and identify inorganic ions from various groups.

## **Second Semester**

### **BIOTECHNOLOGY**

#### **BT 103 Biostatistics, Bioinformatics and Instrumentation**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain fundamental knowledge of biostatistics including sampling, data collection, measures of central tendency and dispersion.

- Gain introductory knowledge of bioinformatics including biological databases, protein structure prediction and phylogenetic analysis.
- Understand the working principle and applications of various analytical instruments to explore biological activities.

### **BT 103L Biostatistics, Bioinformatics and Instrumentation Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Separate the obtained biological data and make valid inferences that can be used to solve problems in various disciplines of science and technology.
- Learn sequence analysis and molecular visualization using bioinformatics tools.
- Safety measures in laboratory, handling and care of instruments.

## **ZOOLOGY**

### **ZOO 101 Non-Chordates and Proto-Chordates**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Describe the habit, habitat, morphology, structure and functions of important animals of different major phyla of invertebrates and lower chordates.
- Understand the economic importance of various invertebrate phyla and affinities of lower chordate animals.

- Gain a high degree of competence in its field of specialization in response to the changing demands of the times.

### **ZOO 103L Non-Chordates and Proto-Chordates Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Identify and characterize different organisms of invertebrate based on the external features.
- Describe different organ systems of important invertebrate animals like *Palaemone*, *Pila* and *Asterias*.
- Gain practical understanding of preparation of permanent slide and study of internal structures of higher invertebrate animals through microscopic study of prepared slides.
- Understand the collection of certain arthropods from their natural habitat and develop the skills of vermiculture.

## **CHEMISTRY**

### **CHEM 103 Organic Chemistry-I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of course, the students will be able to:

- explain the organic reactions and their mechanisms.
- explain the stereochemistry of the organic compounds including their optical activity, conformations and configurations.
- explain physical and chemical properties of the hydrocarbons, alcohols, carbonyl compounds and carboxylic acids.
- understand the basics of chemistry of aromatic compounds.

## CHEM 103L Organic Chemistry Lab-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Laboratory Techniques:

- To calibrate the thermometer using naphthalene (80-82°C), acetanilide (113.5-114°C), urea (132.5-133°C), water (100°C) as reference materials.
- To Determine the boiling point of ethanol, cyclohexane, toluene, benzene.
- To determine the mixed melting point of Urea-cinnamic acid mixture of various compositions (1:4, 1:1, 4:1).

## Third Semester

### BOTANY

#### BOT 201 Angiosperms Taxonomy and Economic Botany

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### Learning Outcomes:

On completion of the course, students will be able to:

- Identify characteristic features of angiosperm families and their interdisciplinary approaches.
- Understand plant morphology terminologies and distinguishing features with morphological peculiarities.
- Know the economic importance of angiosperms and its use in various industries.

## **BOT 201L Angiosperms Taxonomy and Economic Botany Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Develop skills for plant identification, with reference to systematic position, morphological characters, floral formula and floral diagram.
- Diagnose the structural features of plant organs and differentiate microscopically their tissue elements.
- Study fiber, gum, resin, timber, spices and medicinal plants and its applications.

## **BIOTECHNOLOGY**

### **BT 202 Biochemistry, Biophysics and Enzymology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- To demonstrate an understanding of fundamental biochemical principles, such as the structure/function of biomolecules, metabolic pathways, and the regulation of biological/biochemical processes.
- Gain knowledge of basic energy metabolism of cells and identify some of common reaction mechanisms in biochemical processes.
- Describe structure, functions, kinetics, regulation and the mechanisms of action of enzymes.
- Explain chemical messenger molecules of the nervous system including neurotransmitters and synaptic neurotransmission.

## **BT 209L Biochemistry, Biophysics and Enzymology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Apply the scientific method to the biochemical processes of experimentation and hypothesis testing.
- Identify and distinguish the carbohydrates, proteins and lipids based on specific biochemical tests.
- Understand the molecular basis of various pathological conditions from the perspective of biochemical reactions.
- Gain an understanding of the preparation of crude protein lysate, enzymatic assay, effect of time and enzyme concentration on its activity.

## **Third Semester**

### **CHEMISTRY**

#### **CHEM 202 Physical Chemistry-I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

### **Learning Outcomes:**

On completion of course, the students will be able to:

- explain the basic principles of thermodynamics and thermochemistry.
- describe the states of matter.
- explain the concepts of chemical kinetics and catalysis.
- apply the concept of thermodynamics to determine the heat of neutralization of chemical reaction.
- explain the concept of colloids.

## CHEM 202L Physical Chemistry-I Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### Learning Outcomes:

On completion of course, the students will be able to:

- determine the percentage composition of unknown mixture by viscosity and surface tension methods.
- measure kinetics parameters of chemical reaction.
- evaluate the enthalpy of neutralization.
- calculate the lattice energy of  $\text{CaCl}_2$  and solubility of benzoic acid at different temperatures.

## Fourth Semester

## BIOTECHNOLOGY

### BT 207 Genetics, Microbiology and Immunology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

### Learning Outcomes:

On completion of the course, students will be able to:

- Learn fundamental molecular principles of genetics and relationship between phenotype and genotype in human genetic traits.
- Understand the characteristic features and ultrastructure of bacteria, fungi, yeast and viruses.
- Gain theoretical knowledge of techniques in microbiology.
- Understand about the immune system and various related mechanisms of cells and molecules involved in fighting pathogens.

## **BT 210L Genetics, Microbiology and Immunology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the clinical relevance of genetic concepts, inheritance and expression of human blood groups.
- Acquire and demonstrate competency in routine microbiological laboratory skills applicable to microbiological research and clinical methods.
- Explain basic immunological laboratory techniques and use immunoassays to analyze unknown samples successfully.

## **ZOOLOGY**

### **ZOO 202 Comparative Anatomy and Embryology of Chordates**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the comparative anatomy of various organ systems with special reference to *Scoliodon*, *Rana*, *Uromastix*, *Columba* and *Oryctolagus*.
- Gain the fundamental knowledge about the development of frog, Hen's egg and chick to understand the principles of developmental biology.
- Gain an elementary idea about reproductive biology.

## **ZOO 202L Comparative Anatomy and Embryology of Chordates Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Identify higher chordate animals based on the external features.
- Identify and distinguish bones of Rana, Varanus, Fowl and Oryctolagus.
- Understand histology of organs and endocrine glands through microscopic study of slides.
- Understand the development of frog and chick through microscopic slides.

## **CHEMISTRY**

### **CHEM 201 Inorganic Chemistry-II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On completion of course, the students will be able to:

- apply crystal field theory on different geometries and correlate it with stability.
- elucidate the nomenclature, structures, magnetic properties and reactivity of transition metal complexes.
- apply the concept of L-S coupling for the determination of term symbols of different spectroscopic states and appreciate its utility.
- elaborate the thermodynamic and kinetic stability of metal complexes.

- demonstrate the structure, bonding and reactivity of organometallic compounds.
- discuss a concise treatment of the important inorganic non-aqueous solvents and its application in various known reactions.
- apply HSAB principle on stability of molecules.

### **CHEM 201L Inorganic Chemistry-II Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of course, the students will be able to:

- perform the proper procedures and have the knowledge of regulations for safe handling and use of chemicals.
- predict chemical bonding or molecular geometry of various complexes based on accepted models.
- synthesize various transition metal complexes.
- Handle instruments like calorimeter and potentiometer.

**Fifth Semester**  
**Discipline Elective Courses-I**  
**BOTANY**

**BOT 302 Introduction to Genetics and Genetic  
Engineering**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Acquire knowledge of the structure and arrangement of the genome in living organisms.
- Understand the biochemical nature of nucleic acids, their role in living systems.
- Impart basic genetic manipulation techniques and their application for human welfare.
- Translate concepts in genetic engineering to their own research.

**BOT 302L Introduction to Genetics and Genetic  
Engineering Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Develop skills and understanding about different techniques used in genetics and genetic engineering
- Critically analyze and interpret data generated from each practical
- Develop knowledge about genetic problems such as genetic mapping, test cross etc.

### **BOT 303 Plant Physiology and Ecology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Comprehend about life processes happening inside plants and how they cope with varied biotic and abiotic factors.
- Understand maintenance of ecological balance and role of man in the degradation of the environment and to suggest remedies.
- Highlight the potential of these studies to become an entrepreneur.

### **BOT 303L Plant Physiology and Ecology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the physiological details of photosynthesis and respiration.
- Design experiments, collect and analyze data, critically evaluate and present the data produced in physiology or ecology.
- Demonstrate skills related to laboratory as well as field based studies.

### **BOT 304 Ethnobotany**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the science of ethnobotany, its concept, scope and objectives
- Know the types, distribution and life style of ethnic groups in India.
- Know the importance of tribals in present era.
- Know the various uses of plants by the ethnic people in their daily life.
- Know the miscellaneous uses of plants
- Understand the methodology of ethnobotanical work
- Know the medicinal uses of plants in crude ways.
- Aware about the legal aspects associated with ethnobotany.

### **BOT 304L Ethnobotany Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the methodology of ethnobotanical work.
- Know the miscellaneous uses of plants.
- Learn the preparation of herbarium.
- Understand the details of ethnic groups through the photographs and other available scientific literatures.

### **BOT 305 Horticulture**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the basic technique of plant propagation.

- Perform cutting, grafting, budding, layering etc.
- Grow plants in the absence of soil medium.
- Start bonsai creation.
- Know various aspects of Green House Technology.
- Start commercial cultivation of fruits and vegetables.

### **BOT 305L Horticulture Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the methodology of plant propagation.
- Demonstrate cutting, grafting, budding, layering etc.
- Grow plants in the absence of soil medium.
- Know various aspects of Green House Technology.
- Learn the cultivation of fruits and vegetables.
- Demonstrate the technique of compost production.

**Sixth Semester**  
**Discipline Elective Courses- II**  
**ZOOLOGY**

**ZOO 301 Animal Physiology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Gain basic understanding of structure and functions of each physiological system of human.
- Describe principles and pathway of metabolism of carbohydrate, protein and lipids.
- Develop an understanding about principles of human anatomy and physiology.

**ZOO 301L Animal Physiology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Gain hands on experience in hematological tests such as counting of RBCs, WBCs, preparation of haemin crystals, determination of blood haemoglobin, calcium, cholesterol, sugar, protein, clotting time.
- Demonstrate the skills of pathological analysis of urine through the detection glucose and albumin.

## **ZOO 305 Environmental Biology and Biostatistics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the physical and biological characters of the environment and the interrelationship between biotic and abiotic components of nature as well as relationship among the individuals of the biotic components.
- Realize the importance of ecosystem and biodiversity for maintaining ecological balance.
- Understand the basic principles of population and community ecology.
- Understand the fundamental principles of biostatistics and its role in the data analysis generated by scientific research.

## **ZOO 305L Environmental Biology and Biostatistics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Demonstrate skills in the quality assessment of water through testing of water for CO<sub>2</sub>, O<sub>2</sub>, chloride and hardness.
- Gain an understanding of parasitic, aquatic, desert and aerial adaptations of animals with the help of charts and specimens.
- Describe symbiosis, commensalism and socialization among organisms with the help of charts and specimens.
- Understand analysis of data by solving biostatistical problems.

## **ZOO 304 Developmental Biology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Gain expertise in explaining how a variety of interacting processes generate an organism's heterogeneous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.
- Gain an understanding of systematic and organized learning about the knowledge and concepts of growth and development of organisms.
- Demonstrate a rich array of material and conceptual practices that could be analysed to better understand the scientific reasoning exhibited in experimental life sciences.

**ZOO 304L Developmental Biology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the different stages of development of frog and chick through microscopic slides.
- Understand the development and life cycle of Drosophila through microscopic slides.

**ZOO 303 Applied Zoology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Explore the important of earthworms in agro-ecosystems and utilize gained knowledge for production of vermicompost in small scale for garden/household plant.

- Demonstrate their knowledge for setting up poultry farm, sericulture, apiculture, lac culture plant.
- Understand biology, life cycle and control measures of crop pests, stored grain pests and insects serve as vectors for human diseases.

### **ZOO 303L Applied Zoology Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the life cycle of protozoan and helminthes parasites through microscopic slides.
- Explore the knowledge of life cycle of honey bees, silk moths and lac insects for setting up apiculture, sericulture and lac culture farm.
- Gain an understanding of biology, life cycle and control of stored grain pests, crop pests and insect of medical importance.

## **Fifth Semester & Sixth Semester**

### **Discipline Elective Courses-I & II**

#### **BIOTECHNOLOGY**

### **BT 307 Genetic Engineering, rDNA Technology and Cell & Tissue Culture Technology**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the various tools of recombinant DNA technology and their applications in different fields.

- Describe the principles, process of gene cloning and generation of recombinant libraries.
- Learn theoretical aspects of different cell culture techniques and their uses in therapeutic applications.
- Gain basic knowledge of patents and biosafety guidelines.

### **BT 307L Genetic Engineering, rDNA Technology and Cell & Tissue Culture Technology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Learn all technicalities of setting up a plant tissue culture laboratory.
- Learn the techniques of isolation and estimation of nucleic acids.
- Gain practical knowledge about chromatographic purification of proteins.

### **BT 301 Advances in Biotechnology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course students will be able to:

- Understand the different techniques of DNA sequencing, gene synthesis, gene silencing, PCR and blotting.
- Describe the industrial production of biopesticides, biopolymer and biopolysaccharides using fermentation techniques.
- Gain theoretical knowledge of cryopreservation, artificial insemination, IVF-ET technique, transgenic plants and transgenic animals.

### **BT 301L Advances in Biotechnology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Demonstrate the skills required for basic laboratory procedures and principles of reagent preparation.
- Design, conduct experiments, analyze and interpret data for investigating problems in biotechnology and allied fields.
- Understand the importance of the practical aspects of different techniques like electrophoresis, fermentation, and spectroscopy etc, currently used in biomedical research.

### **BT 313 Animal and Plant Biotechnology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain knowledge of assisted reproductive technology, transgenic animal production and applications.
- Gain an understanding of current scenario of stem cells and their applications.
- Explain applications of tissue engineering in bioartificial organs development and transplantation.
- Explain various techniques used in plant biotechnology.

### **BT 313L Animal and Plant Biotechnology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain hands on training on plant & animal tissue culture and biotechnology.
- Learn the technique of genomic DNA isolation, its electrophoresis and SDS-PAGE.

### **BT 315 Environmental Biotechnology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the importance of microorganisms as pesticides.
- Understand the basic concept of bioleaching, biodesulphurization, bioplastics, biosurfactants and bioemulsifiers.
- Understand different waste management processes and generation of energy from waste.
- Describe various roles played by microbes in biodegradation, bioremediation and plant growth promotion.

### **BT 315L Environmental Biotechnology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain practical experience in quality determination of water with easy to run experiments such as dissolved oxygen, hardness and alkalinity.

- Gain practical understanding in the role of biofertilizers and biopesticides in the cleaning of environment.
- Gain practical experience in quality determination of water with easy to run experiments such as dissolved oxygen, hardness and alkalinity.

## **Discipline Elective Courses- I & II**

### **CHEMISTRY**

#### **CHEM 302 Organic Chemistry-II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On completion of course, the students will be able to:

- explain the structures and properties of biomolecules: carbohydrates, amino acids, proteins and nucleic acids.
- explain the structures, synthesis and properties of different class of organic compounds: nitro compounds, amines, diazonium salts, enolates, pyrrole, thiophene, furan, pyridine, indole, quinoline and isoquinoline.
- discuss the basic principles of UV-visible, IR and NMR spectroscopy.
- elucidate the structure of organic compounds using UV-visible, IR and NMR spectral data.

#### **CHEM 302L Organic Chemistry-II Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

On completion of course, the students will be able to:

- separate compounds by steam distillation.

- understand concept of chromatography (TLC) by separation of green leaf pigment, mixture of dyes and organic compounds.
- separate organic mixture containing two solid components and their qualitative analysis.
- synthesize organic compounds by synthetic methods: acetylation, benzylation, diazotization or coupling reaction and electrophilic substitution.

### **CHEM 305 Molecular Modeling and Drug Design**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of course, the students will be able to:

- describe and comprehend the fundamental concepts of molecular modeling and computational-driven drug discovery.
- understand the physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
- understand the Molecular modeling and computer graphics
- develop the theoretical and practical aspects of molecular modeling

### **CHEM 305L Molecular Modeling and Drug Design Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of course, the students will be able to:

- describe and comprehend the fundamental concepts of molecular modeling and computational-driven drug discovery.
- understand the physicochemical properties of drugs including solubility, distribution, adsorption, and stability.

- understand the Molecular modeling and computer graphics
- develop the theoretical and practical aspects of molecular modeling

### **CHEM 303 Physical Chemistry-II**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

**Learning Outcomes:**

On completion of course, the students will be able to:

- explain the basic principles of nuclear chemistry.
- discuss the surface phenomenon, surface properties of solid and calculate the surface area of the adsorbent.
- discuss conductance, Arrhenius theory, Debye-Huckel-Onseger's equation and Nernst equation.
- explain the concept of corrosion and factors affecting corrosion.
- explain the colligative properties of solution.
- Understand the congruent and non-congruent melting points, and azeotropic mixtures.

### **CHEM 303L Physical Chemistry-II Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

**Learning Outcomes:**

On completion of course, the students will be able to:

- handle instruments like calorimeter, conductometer and potentiometer.
- perform the proper procedures and have the knowledge of regulations for safe handling and use of chemicals.
- evaluate physical properties of analytes viz. the molecular weight, conductivity, optical rotation.

## CHEM 304 Analytical Methods in Chemistry

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### Learning Outcomes:

On completion of course, the students will be able to:

- apply knowledge of basic statistics to validate the results of analysis.
- understand various chromatographic techniques and its applications in separation of mixtures, purification of samples, and qualitative and quantitative analysis.
- understand the basic principles of optical, thermal and electro analytical methods and apply its concepts to interpretation of compounds.
- explain the principle and applications of thermal methods of analysis and atomic spectroscopy

## CHEM 304L Analytical Methods in Chemistry Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes:

On completion of course, the students will be able to:

- develop their skills for qualitative and quantitative research in different fields.
- perform various analytical operations to qualify and quantify different analytes.
- outline synthetic strategies for important chemicals.
- check the purity of synthesized compounds through TLC, UV, FT-IR spectral data
- analysis of soil through determination pH, estimation of ions and by total dissolve salts.
- able to determine the Chemical and biological oxygen demand by spectroscopic techniques.

# BANASTHALI VIDYAPITH

## Bachelor of Science (Biotechnology)



### Curriculum Structure

Third Semester Examination, December, 2019

Fourth Semester Examination, April/May, 2020

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

July, 2019

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## **Programme Educational Objectives**

The B.Sc. Biotechnology programme aims at holistic development of the students through the innovative and unique Five fold Educational ideology of Banasthali Vidyapith. This programme broadly includes core subjects of biotechnology, botany, zoology and chemistry. The courses in the programme aim to provide a basic and advanced understanding of the different disciplines of each core subject by means of a lecture series and laboratory work. The program has identified necessary competencies in the respective areas for which all essential theoretical, practical and field based skills will be provided.

The main objectives of the B. Sc. Biotechnology programme are to:

- provide an introduction to the basic concepts of biotechnology and its recent advances
- gain in-depth knowledge of different areas of biotechnology such as biochemistry, immunology, bioinformatics, molecular biology, cell biology, environmental biology, cell and tissue culture techniques, genetic engineering etc.
- develop logical thinking, analytical and independent learning skills
- create awareness amongst students towards the importance of multidisciplinary approach for problem solving skills in biotechnology
- provide broad exposure to various societal, ethical and commercial issues in the various aspects of biotechnology
- raise sensitivity to professional ethical codes of conduct, social values and respect for all
- train the students for an academic and professional fields of biotechnology
- develop an ability to work in collaboration with expertise of different subjects in industries and research
- imbibe and inculcate the basic foundation of biotechnology among students so that they can excel in esteemed academic institutes, various public and private sector organizations with professional competence, technical knowledge and analytical skills.

## Programme Outcomes

**PO1: Biotechnology knowledge:** This course provides necessary theoretical and practical experience in all divisions of biotechnology to pursue a professional career in this field.

**PO2: Planning ability:** Demonstrate effective planning abilities including time management, resource management and organizational skills. Develop and implement plans and organize work to meet deadlines.

**PO3: Problem analysis:** Utilize subject and practical knowledge to think analytically, design experiments, handle scientific instruments, drawing logical inferences from the scientific experiments while solving problems for the betterment of society.

**PO4: Modern tool usage:** Utilize gained knowledge to apply appropriate methods, resources and related computational tools with an understanding of their limitations.

**PO5: Leadership skills:** Develop students with sound concepts in biotechnology who can excel as leaders both in academics and industries. Develop entrepreneurship skills to explore the market potential of products and processes, creating business plans and raising money from venture capitalists.

**PO6: Professional identity:** Understand, analyse and communicate the value of their professional roles in society (e.g. biotechnologist, researchers, educators, managers, employers, employees).

**PO7: Hands-on training:** Laboratory experiments will provide hands-on training on experimenting with biomolecules and thereby develop a research aptitude for various allied fields of biotechnology.

**PO8: Bioethics:** Imbibe ethical, moral and social values in personal and social life leading to highly cultured and civilized personality.

**PO9: Communication:** Develop various communication skills such as reading, listening, speaking, writing and make effective presentations, which will help them in expressing their ideas and views clearly and effectively.

**PO10: Environment and sustainability:** Utilize the acquired knowledge to maintain the environmental friendly philosophy with sustainability of various environmental resources. Also to create awareness amongst others to keep the environment safe and clean.

**PO11: Life-long learning:** Develop trained human resources in biotechnology to promote quality education and to initiate lifelong learning process for productive career.

## Third Semester

### Foundation Courses

#### BVF 007R Selected Writings for Self Study-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2 0 0 2</b>

**Objectives:** The objectives of the course of study are:

1. To fulfill one of the objectives of Five Fold Education (Panch Mukhi Shiksha) of Banasthali University that is to educate girls in cultural traditions and presenting and including the essential values and ideas of Indian Culture.
2. To develop an acquaintance with Indian Epics.
3. To develop analytical faculty and habit of self study and reading good books among the students.

#### BVF 006 Parenthood and Family Relation

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

#### **Learning Outcomes :**

Upon completion of the course students will be able to :

- Observe children at different age levels in different situations and record them.
- Prepare age related teaching aids.
- Evaluate, modify and compose age related printed materials/songs/and stories.
- Plan and organize play activities/games, role plays, parties/get together for children of different age groups.

#### BVF 001 Elements of Management

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

**Objective :** This course seeks to introduce the students to the foundational concepts of Management.

## Disciplinary Courses

### Biotechnology

#### **BOT 201 Angiosperm Taxonomy and Economic Botany**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On completion of this course, students will be able to:

- Identify characteristic features of angiosperm families and their interdisciplinary approaches.
- Understand plant morphology terminologies and distinguishing features with morphological peculiarities.
- Know the economic importance of angiosperms and its uses in various industries.

#### **BOT 201L Angiosperm Taxonomy and Economic Botany Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

On completion of this course, students will be able to:

- Develop skills for plant identification, with reference to systematic position, morphological characters, floral formula and floral diagram.
- Diagnose the structural features of plant organs and differentiate microscopically their tissue elements.
- Study fiber, gum, resin, timber, spices and medicinal plants and its applications.

### **BT 202 Biochemistry, Biophysics and Enzymology**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of this course, students will be able to:

- Demonstrate an understanding of fundamental biochemical principles, such as the structure/function of biomolecules, metabolic pathways, and the regulation of biological/biochemical processes.
- Gain knowledge of basic energy metabolism of cells and identify some of common reaction mechanisms in biochemical processes.
- Describe structure, functions, kinetics, regulation and the mechanisms of action of enzymes.
- Explain chemical messenger molecules of the nervous system including neurotransmitters and synaptic neurotransmission.

### **BT 202L Biochemistry, Biophysics and Enzymology Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of this course, students will be able to:

- Apply the scientific method to the biochemical processes of experimentation and hypothesis testing.
- Identify and distinguish the carbohydrates, proteins and lipids based on specific biochemical tests.
- Understand the molecular basis of various pathological conditions from the perspective of biochemical reactions.
- Gain an understanding of the preparation of crude protein lysate, enzymatic assay, effect of time and enzyme concentration on its activity.

## Chemistry

### CHEM 202 Physical Chemistry - I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes:

On completion of course, the students will be able to:

- explain the basic principles of thermodynamics and thermochemistry.
- describe the states of matter.
- explain the concepts of chemical kinetics and catalysis.
- apply the concept of thermodynamics to determine the heat of neutralization of chemical reaction.
- explain the concept of colloids.

### CHEM 202L Physical Chemistry - I Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes :

On completion of course, the students will be able to:

- determine the percentage composition of unknown mixture by viscosity and surface tension methods.
- measure kinetics parameters of chemical reaction.
- evaluate the enthalpy of neutralization.
- calculate the lattice energy of  $\text{CaCl}_2$  and solubility of benzoic acid at different temperatures.

## Fourth Semester Foundation Courses

### BVF 008R Selected Writings for Self Study-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Objectives :** The objectives of the course of study are:

1. To fulfill one of the objectives of Five Fold Education (Panch Mukhi Shiksha) of Banasthali University that is to educate girls in cultural traditions and presenting and including the essential values and ideas of Indian Culture.
2. To develop an acquaintance with Indian Epics.
3. To develop analytical faculty and habit of self study and reading good books among the students.

### BVF 009 Women in Indian Society

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcomes:**

After the completion of the course, the students will be able to:

- Understand the basic concept of equality in mythological narratives.
- Develop an understanding of how identity formation of women in socio cultural and professional settings takes place and sustains in our social setting.
- Learn about life changing experience and accomplishments of women role models in different fields and be inspired.
- Critically evaluate the contributions of women's universities in making of women leaders.

## Disciplinary Courses

### Biotechnology

#### BT 207 Genetics, Microbiology and Immunology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Learn fundamental molecular principles of genetics and relationship between phenotype and genotype in human genetic traits.
- Understand the characteristic features and ultrastructure of bacteria, fungi, yeast and viruses.
- Gain theoretical knowledge of techniques in microbiology.
- Understand about the immune system and various related mechanisms of cells and molecules involved in fighting pathogens.

#### BT 207L Genetics, Microbiology and Immunology Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Understand the clinical relevance of genetic concepts, inheritance and expression of human blood groups.
- Acquire and demonstrate competency in routine microbiological laboratory skills applicable to microbiological research and clinical methods.
- Explain basic immunological laboratory techniques and use immunoassays to analyze unknown samples successfully.

## **ZOO 202 Comparative Anatomy and Embryology of Chordates**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the comparative anatomy of various organ systems with special reference to *Scoliodon*, *Rana*, *Uromastix*, *Columba* and *Oryctolagus*.
- Gain the fundamental knowledge about the development of frog, Hen's egg and chick to understand the principles of developmental biology.
- Gain an elementary idea about reproductive biology.

## **ZOO 202L Comparative Anatomy and Embryology of Chordates Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

On completion of the course, students will be able to:

- Identify higher chordate animals based on the external features.
- Identify and distinguish bones of *Rana*, *Varanus*, Fowl and *Oryctolagus*.
- Understand histology of organs and endocrine glands through microscopic study of slides.
- Understand the development of frog and chick through microscopic slides.

## Chemistry

### CHEM 201 Inorganic Chemistry - II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes :

On completion of course, the students will be able to:

- apply crystal field theory on different geometries and correlate it with stability.
- elucidate the nomenclature, structures, magnetic properties and reactivity of transition metal complexes.
- apply the concept of L-S coupling for the determination of term symbols of different spectroscopic states and appreciate its utility.
- elaborate the thermodynamic and kinetic stability of metal complexes.
- demonstrate the structure, bonding and reactivity of organometallic compounds.
- discuss a concise treatment of the important inorganic non-aqueous solvents and its application in various known reactions.
- apply HSAB principle on stability of molecules.

### CHEM 201L Inorganic Chemistry - II Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcome

On completion of course, the students will be able to:

- perform the proper procedures and have the knowledge of regulations for safe handling and use of chemicals.
- predict chemical bonding or molecular geometry of various complexes based on accepted models.
- synthesize various transition metal complexes.
- Handle instruments like calorimeter and potentiometer.

# BANASTHALI VIDYAPITH

## Bachelor of Science (Home Science)



### Curriculum Structure

- First Semester Examination, December, 2019
- Second Semester Examination, April/May, 2020
- Third Semester Examination, December, 2020
- Fourth Semester Examination, April/May, 2021
- Fifth Semester Examination, December, 2021
- Sixth Semester Examination, April/May, 2022

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**



July, 2019

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## **Programme Educational Objectives**

The quality of life of society and the family determines positive functioning. Home Science has a vital role to play in increasing the capacity of the family and the community. At Banasthali Vidyapith, the faculty of Home Science strives to work dedicatedly towards women's empowerment through socially-relevant, holistic, interdisciplinary education, in keeping with its unique philosophy of Panchmukhi Shiksha (Five fold education). Home Science curriculum is offered in a composite form as per the development trends incorporating multi-disciplinary skills, linking the general studies with professional courses integrating theory and practice, and flexibility to the credit based system to meet the challenges in Indian ethos and global context. The curriculum is continually innovated to make it globally valuable, locally relevant and responsive to the changing times and needs. The course sensitizes students to the needs of others, especially of those less advantaged, and fosters a service orientation. The faculty also aims to contribute to the national and international knowledge base in Home Science and allied fields. Due emphasis has always been given to the skill development and enhancement in the students. The degrees offered by the faculty include B.Sc. (Home Science) and M.Sc. (Home Science) in Food Science and Nutrition, Human Development and Clothing and Textile. PhD is awarded in all the five branches of Home Science. Home Science is also offered as a subject in B. A. programme.

Objectives of the Home Science programme are

- To acquaint students with interdisciplinary nature of Home Science as an integrated body of knowledge, all interwoven to enhance the quality of life, and multidisciplinary nature of subjects dealing with art and science of living
- To provide education through integrated approach of combining theory, practical, and field work emphasizing gender neutral, family focus, region specific and career perspective
- To prepare students to become actively involved in local and regional professional service activities which allow continuous initiative for empowering the individual, family and community
- To inculcate scientific thinking to undertake research projects of national and international recognition and publish multidisciplinary papers.



## Programme Outcomes

- **PO1: Knowledge** – Have knowledge and holistic understanding of the core courses related to Home Science including Human Development, Foods and Nutrition, Clothing and Textile, Human Management, Extension Education and Communication; and basic courses associated with discipline of Home Science, including Social Sciences, Biological sciences, Physical sciences, Technology and Management.
- **PO2: Planning Abilities-** Apply skills in designing, implementing, monitoring and evaluating programmes effectively for individuals, family, community, and for vulnerable groups of society.
- **PO3: Problem Analysis-** Solve problems concerning home ,family , and society for ensured physical and mental health in the changing socio-economic scenario viz. dietary problems, behavioral problems, clothing problems, social problems by applying scientific methods ; through critical thinking, assessing, analyzing, finding appropriate solutions and taking decisions
- **PO4: Modern Tool Usage-** ability to select and use appropriate methods and procedures; tools and equipments; raw materials and other resources for knowledge, skill enhancement, designing and creation of new products, assessment and evaluation
- **PO5: Leadership Skills-** apply leadership skills; inspiring, taking responsibility, delegating tasks while working in a team, communicating with other teams, providing guidance to lesser skilled in various settings be it family, industry or institutions or carrying out research projects
- **PO6: Professional Identity-** Take various professional roles in industries, govt./non-govt. organizations, institutes as educators, entrepreneurs, counselors, social workers, consultants, designers, researchers and exhibit competencies & skills
- **PO7: Ethics-** Apply ethical practices while data collection, and conducting experiments ; involving human beings as well as animals, delivering professional responsibilities
- **PO8: Communication-** Use soft skills for clear , accurate, unambiguous effective communication using verbal and non-verbal skills at inter / intra personal and professional level

- **PO9: Home Science and Society-** Apply knowledge and competencies developed as graduates to impart knowledge, identify, analyze and address family and societal issues to improve quality of life of individual, family and society as a whole, also covering marginalized and vulnerable groups of society.
- **PO10: Environment and Sustainability-** Critically evaluate impact of household and industrial practices on environment. Appreciate use of sustainable practices for improved physical, emotional, social, psychological environment at micro / macro level
- **PO11: Life Long learning** – ability to reason out, learn and improve oneself in the changing dynamic scenario by strengthening the strength and weakening of weaknesses for sustainable developmental needs , technological changes, career requirements and new avenues.
- **PO12: Project-** Provide opportunity to students to get acquainted with innovative projects and develop skills to plan and undertake intervention projects.

## First Semester

### Disciplinary Courses

#### HSC 103 Elementary Human Physiology

#### HSC 103L Elementary Human Physiology Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course students will be able to:

- Describe the functioning of various body organs and integrated functioning of all systems in human body
- Examine some basic parameters of human fitness
- Apply the knowledge of First Aid in different situations

#### HSC 106 Fundamentals of Bio-Chemistry and Microbiology

#### HSC 106L Fundamentals of Bio-Chemistry and Microbiology Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

Upon completion of the course students will be able to:

- Analyze principles of Biochemistry (as applicable to human nutrition)
- Explain chemistry and functions of major nutrients in human body
- Discuss nature and role of microbiology
- Apply and practice learned information in qualitative analysis of major nutrients, micro organisms in food

## **HSC 111 Introduction to Home Science**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Discuss concept, , historical background and relationship between Home Science with foundation and supportive courses
- Explain the scope of different areas of Home Science
- Utilize information in designing and developing skills needed for further specialization and entrepreneurship

## **HSC 112 Introduction to Human Development**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Discuss concept and various aspects of Human Development
- Explain growth and development of children
- Appraise concern and issues related to parenting and development aspects
- Relate theories to developmental aspects

## **HSC 114 Textiles and Their Care**

### **HSC 114L Textiles and Their Care Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

Upon completion of the course students will be able to

- Select and evaluate textile material critically for the specific end use.
- Differentiate among various types of fiber, yarns and fabrics that would meet the requirement of garment and textile industries.
- Use various types of materials, reagents, equipments and processes involved in care of textiles.
- Demonstrate good base knowledge for higher degree program

## **Second Semester**

### **Disciplinary Courses**

#### **HSC 104 Elements of Food Science**

#### **HSC 104L Elements of Food Science Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Explain the chemistry underlying the properties of various food components
- Explain functions of food and identify good sources of nutrients
- Know the basic concept of food science
- Apply the various methods of cooking in daily life
- To make informed judgments in use of different commodities in various food preparations

#### **HSC 105 Fabric Construction**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Upon completion the course, students will be able to:

- Know different yarn manufacturing process and their effect on properties
- Understand and relate various fabric construction methods with properties and end use
- Describe preparatory processes for weaving and develop concept of color and weave effects
- Explain different simple and compound weaves

## **HSC 109 Interior Designing and Decoration**

### **HSC 109L Interior Designing and Decoration Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Compare and relate objects in terms of their aesthetic potentials
- Analyze factors that create beauty and eloquence in different types of interiors
- Synthesize elements of art based on principles of design in order to achieve the objectives of design and decoration

## **HSC 110 Introduction to Extension Education**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Understand meaning, philosophy and principles of Extension Education and its role in national development

- Explain Extension models in practice and their scope in facilitating development
- Design plan of work for need based program
- Ready to be part of various developmental programs

### **HSC 113 Life Span Development - I (Prenatal to Early Childhood years)**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Understand various aspects of development from prenatal to early childhood years
- Assess the issues faced and adjustments required during these years

## **Third Semester**

### **Disciplinary Courses**

#### **HSC 206 Food Preservation and Protection**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Identify and describe causes, principles and methods of food preservation
- Describe personal hygiene requirements for food handlers for preparing food safely.
- Know the principles and objectives of various food laws, standards and authority required for safe food marketing.

## **HSC 207 Fundamentals of Clothing Construction**

### **HSC 207L Fundamentals of Clothing Construction Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Understand basic essentials of clothing construction and process of garment making
- Use acquired garment construction skills for different age groups and figure types

## **HSC 209 Human Nutrition and Meal Planning**

### **HSC 209L Human Nutrition and Meal Planning Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course students will be able to:

- To describe the functions and sources of nutrients
- Assess the dietary requirement of various nutrients and effects of deficiencies and excesses.
- Apply the knowledge in planning and preparation of meals of improved nutritional quality for different groups
- Evaluate acceptability and serving of food.

## **HSC 211 Introduction to Resource Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Describe the concepts of management
- Differentiate between various approaches to management
- Understand process and techniques of decision making

## **HSC 213 Life Span Development - II (Middle Childhood to Old age)**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Acquire knowledge related to various aspects of development in different stages of life span.
- Understand adjustment issues and requirements of different stages from middle childhood to old age.

## **Fourth Semester**

### **Disciplinary Courses**

#### **HSC 201 Communication Process**

#### **HSC 201L Communication Process Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Explain concept and different types of communication
- Distinguish different approaches of communication
- Create effective messages to relevant audiences
- Use appropriate media in different approaches of communication

## **HSC 202 Family Clothing**

### **HSC 202L Family Clothing Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Select fabrics and clothes for different age groups.
- Intelligently buy and care garments and house hold textile materials.
- Understand the consumer problems and their rights

## **HSC 203 Family Dynamics**

### **HSC 203L Family Dynamics Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcomes:**

Upon completion of the course students will be able to:

- Analyze different aspects of marriage and family in the context of changing socio-economic scenario in the country
- Intelligently deal with economic and social issues
- Solve family disharmony issues and have positive attitude towards marital and family counseling

## **HSC 208 Guiding Child Behaviour**

### **HSC 208L Guiding Child Behaviour Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Underline different rearing practices and their implications
- Analyze various behavioral problems and habit disorders under difficult circumstances and exceptionalities
- Analyze a problem, identify appropriate guidance strategies and effectively handle the problems

**HSC 214 Nutrition for Vulnerable Groups**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Have sufficient content – related knowledge base of nutritional requirements of vulnerable groups of society
- Apply the knowledge to design , implement and evaluate solutions to meet requirements of given set of vulnerable groups with available range of food sources

**Fifth Semester****Disciplinary Courses****HSC 301 Assessment of Nutritional Status****HSC 301L Assessment of Nutritional Status Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Use skills in anthropometric measurements and assessment of nutritional status

- Conduct dietary surveys in the community
- Get Employment in different NGO's and government agencies working in the field of nutrition
- work independently in the field of community nutrition

### **HSC 303 Dyeing, Printing and Finishing**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcomes:**

Upon completion of the course, students will be able to:

- Analyze basic elements and principles of various dyes, prints and finishes.
- Extend and expand their ideas and creativity in designing
- Reason about eco-friendly aspects in relation to textile industries and provide solutions at multiple level of production

### **HSC 310 Methods and Material for Child Study**

#### **HSC 310L Methods and Material for Child Study Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course, students will be able to:

- Explain characteristics and requirements of different groups of children
- Explain major methods and approaches of child study
- Design and create play materials and plan learning experiences for promoting various concepts and commutative skills in children

## **HSC 315L Surface Ornamentation Techniques for Textiles**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcomes:**

Upon completion the course, students will be able to:

- Plan and develop various textile designs using basic elements and principles of design
- Apply knowledge of different dyes, finishes, and style of printing to design various fabrics

## **HSC 313 Textile Designing**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

### **Learning Outcomes:**

Upon completion the course, students will be able to:

- Explore inspiration sources of design for basic sketching and painting
- Differentiate and develop various types of motifs
- Use creative and technical skills for designing textiles with special emphasis on applied design
- Use concept, theories and specification of color in selection of apparels for men, women and children

## **Sixth Semester**

### **Disciplinary Courses**

#### **HSC 302 Diet Therapy**

#### **HSC 302L Diet Therapy Lab**

<b>Max. Marks : 100</b>	_____	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
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(CA: 40 + ESA: 60) 

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 4 0 0 4

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Identify the nutritional needs in various diseases
- Formulate therapeutic diet according to disease using principles of diet therapy
- Apply the knowledge of therapeutic diet for counseling of patients
- Demonstrate the nutritional care in community

### **HSC 304 Early Childhood Education**

#### **HSC 304L Early Childhood Education Lab**

**Max. Marks : 100**

(CA: 40 + ESA: 60)

**L T P C**

**4 0 0 4**

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Explain significance of early childhood years, historical development and philosophical ideas related to early childhood education
- Get proficiency in planning programmes and curriculum including various components to promote all round development of young children
- Analyze problems, identify various contemporary issues in ECE and plan innovations

### **HSC 306 Fashion Dynamics and Illustration**

#### **HSC 306L Fashion Dynamics and Illustration Lab**

**Max. Marks : 100**

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 **L T P C**

(CA: 40 + ESA: 60) 3 0 0 3

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Recognize basic concepts of fashion dynamics, fashion movement and its development.
- Interpret and learn to operate practices involved in fashion business.
- Find out designers of international and national fame and explore their contribution to the fashion of today
- Design and sketch fashion illustrations for different purposes

### **HSC 314 Welfare Programmes**

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **3 0 0 3**

**Learning Outcomes:**

Upon completion of the course students will be able to:

- Discuss welfare services for family and children in India
- Interpret various types of services to meet the needs of family and children
- Analyze the institutional services for women and children; old age and children with special need
- Summarize the role of international agencies in child welfare

### **Discipline Elective – I**

#### **HSC 309 Introduction to Work Study**

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **4 0 0 4**

**Learning Outcomes:**

Upon completion of the course, students will be able to:

- Analyze changes in human body at work
- Analyze and reason out concept of Ergonomics and its applications to develop user-centered approach
- Develop human centered approach to work and workplace designing
- Analyze the indoor climate components for ergonomic designing

### **HSC 316 Behaviour Change Communication**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Upon completion of the course students will be able to

- State the meaning, theories and principles of behaviour change communication
- Explain Steps necessary in designing a behaviour change communication strategy
- Design effective communication strategies

### **HSC 317 Community Health Management**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

Upon completion of the course students will be able to

- Understand the concept of health from the individual and community perspective
- Know the factors affecting health and nutritional status of individual and community and promoting aspects to improving community health.

## Discipline Elective –II

### HSC 311 Nutritional Biochemistry

#### HSC 311L Nutritional Biochemistry Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

Upon completion of the course students will be able to:

- Get thorough knowledge about the metabolism of nutrients and their functions in the body
- Gain insight into functions and interrelationship between nutrients and their importance in the maintenance of health
- Estimate some nutrients, detect adulteration in foods,
- Assess the chemical characteristics of foods

### HSC 319 Ergonomics and Space Management

#### HSC 319L Ergonomics and Space Management Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### Learning Outcomes:

Upon the completion of this course, the students will be able to

- Understand the concepts of Ergonomics and Proxemics in context to each other
- Apply ergonomic approaches to designing of spaces and products
- Evaluate different workspaces and furniture on functional grounds

## **HSC 324 Programme Planning and Management**

### **HSC 324L Programme Planning and Management Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon completion of the course students will be able to

- State the meaning, nature and importance of programme planning
- Explain programme planning process and extension management
- Design plan of work for need based program
- Apply techniques of participatory planning- RRA, PRA and PLA

# BANASTHALI VIDYAPITH

Bachelor of Science and Bachelor of Education



## Curriculum Structure

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022  
Seventh Semester Examination, December, 2022  
Eighth Semester Examination, April/May, 2023

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**



July, 2019

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## **Programme Educational Objectives**

Department of Education aims to develop human resource in terms of effective School Teachers, Educational Researchers, Teacher Educators and Educational Leaders so as to achieve the excellence in teaching, research and innovation with Indian ethos.

Teacher Education program at Banasthali Vidyapith intends to develop knowledge of Teaching Learning Process, competencies to transfer the knowledge, development of skills, organization and management of school system as well as to develop subject content and curriculum and maintain professional ethics and attitude towards Teaching as a 'noble profession'.

Department of Education purports to provide comprehensive inputs which are aimed;

- \* To study the education as a discipline.
- \* To prepare competent and enlightened teachers for different levels of education in India.
- \* To develop responsive, reflective and responsible teachers, educational administrators, researchers and academicians who will be able to work in collaboration with parents and community.
- \* To develop an understanding of focal concerns of education such as language diversity, inclusive education, gender-neutral attitude and education for sustainable development and global citizenship.
- \* To prepare teachers having an understanding of interact and instruct in class in the context of school organization and school education system at local and global level.
- \* Develop a sensitivity and appreciation amongst professionals about the larger societal context in which school education operates, the linkages, mutual pressure and influences of other sub systems.
- \* To provide a deep understanding of educational research and be competent to carry out independent need based quality field researches.
- \* To create digital competency amongst professionals in order to enhance their teaching, research, innovation and administration.

- \* To prepare effective teachers by integrating the academic studies with professional understanding, competencies and reflective visions.
- \* To nurture a temperament in the professionals to work toward self-driven performance goals, entrepreneurship and academic leadership for a noble mission 'Teaching'.
- \* To increase the sensitivity of professional ethics, code of conduct, social cultural values, human dignity and humanness.

## Programme Outcomes

Program Specific Outcomes of Four Year Integrated Program.

Students will be able to-

- PSO 1:** able to integrate theoretical and practical knowledge of their respective subject in classroom practice.
- PSO-2:** apply their knowledge of core content and pedagogy to set goals and objectives for learning based on Curriculum, and design instruction that engages students in meaningful learning activities.
- PSO-3:** appreciate the diversity of learners and create appropriate learning environment to assure a focus on learning of all students.
- PSO-4:** deliver meaningful learning experiences for all students by integrating their knowledge and applying a variety of communication, instructional, and assessment strategies in their teaching.
- PSO-5:** demonstrate their commitment for continuous self-improvement by engaging in professional development activities and collaborative and reflective practices to improve teaching and learning that contribute to the revitalization of the teaching profession.
- PSO-6:** demonstrate leadership qualities by participating in the curriculum initiatives, student support and school management systems.
- PSO-7:** demonstrate their associations with school, family and community to foster student and community progression.
- PSO-8:** integrate ICT in teaching-learning and assessment process to enrich professional practice.
- PSO-9:** engage in value based and culturally responsive teaching practices.
- PSO-10:** use effective and appropriate verbal, nonverbal, written, and media communication techniques in their teaching, professional collaboration, and interactions with students, colleagues, parents, and the community.
- PSO-11:** demonstrate professional ethics and responsibilities as an educational practitioner.
- PSO-12:** recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of knowledge explosion and technological change.

## Disciplinary Courses

### BOTANY

#### First Semester

#### **BOT 101 Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperms**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Acquaint with the general characters and classification of cryptogams and phanerogams.
- Understand the evolutionary relationship among lower to higher plant species with differentiating characteristics.
- Appreciate and understand economic importance and application of every group of plants.

#### **BOT 101L Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperms Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Identify bryophyte and pteridophyte.
- Interpret the characteristics & life cycles of various lower plants.
- Learn about practical technique in lab for detail study of plant structure, anatomy and reproduction.

## Second Semester

### **BOT 102 Angiosperm Anatomy, Embryology and Tissue Culture**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain knowledge of plant cells, tissues and their functions.
- Identify and compare structural differences among different taxa of vascular plants.
- Correlate anatomical structure with ecological adaptation of plants for survival under drought, salinity & aqueous environment.

### **BOT 102L Angiosperm Anatomy, Embryology and Tissue Culture Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Detailed knowledge of angiosperm families and plant adaptations in different environment.
- Understanding plant tissue culture and preparation of MS medium for in vitro culture of plants.

## Third Semester

### BOT 201 Angiosperms Taxonomy and Economic Botany

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Identify characteristic features of angiosperm families and their interdisciplinary approaches Understand plant morphology terminologies and distinguishing features with morphological peculiarities.
- Know the economic importance of angiosperms and its use in various industries.

### BOT 201L Angiosperms Taxonomy and Economic Botany Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Develop skills for plant identification, with reference to systematic position, morphological characters, floral formula and floral diagram.
- Diagnose the structural features of plant organs and differentiate microscopically their tissue elements.
- Study fiber, gum, resin, timber, spices and medicinal plants and its applications.

## Fourth Semester

### BOT 203 Microbiology and Plant Pathology

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the structure and life process of prokaryotes and virus.
- Know about sources of plant pathogens, identify symptoms & methods of studying plant diseases
- Identify the role of various microbes in food and beverage industries.

### BOT 203L Microbiology and Plant Pathology Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Learn techniques for microbial isolation, purification, handling and maintenance.
- Gain knowledge of different methods for the isolation of microbial organisms.
- Identify the plant diseases based upon symptoms & its causal organism.

## Fifth Semester & Sixth Semester Discipline Elective Courses-I & II

### BOT 302 Introduction to Genetics and Genetic Engineering

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Acquire knowledge of the structure and arrangement of the genome in living organisms.
- Understand the biochemical nature of nucleic acids, their role in living systems.
- Impart basic genetic manipulation techniques and their application for human welfare.
- Translate concepts in genetic engineering to their own research.

### BOT 302L Introduction to Genetics and Genetic Engineering Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Develop skills and understanding about different techniques used in genetics and genetic engineering
- Critically analyze and interpret data generated from each practical
- Develop knowledge about genetic problems such as genetic mapping, test cross etc.

### BOT 303 Plant Physiology and Ecology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Comprehend about life processes happening inside plants and how they cope with varied biotic and abiotic factors.
- Understand maintenance of ecological balance and role of man in the degradation of the environment and to suggest remedies.
- Highlight the potential of these studies to become an entrepreneur.

### **BOT 303L Plant Physiology and Ecology Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the physiological details of photosynthesis and respiration.
- Design experiments, collect and analyze data, critically evaluate and present the data produced in physiology or ecology.
- Demonstrate skills related to laboratory as well as field based studies.

### **BOT 304 Ethnobotany**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the science of ethnobotany, its concept, scope and objectives.
- Know the types, distribution and life style of ethnic groups in India.
- Know the importance of tribals in present era.
- Know the various uses of plants by the ethnic people in their daily life.
- Know the miscellaneous uses of plants.
- Understand the methodology of ethnobotanical work.

- Know the medicinal uses of plants in crude ways.
- Aware about the legal aspects associated with ethnobotany.

### **BOT 304L Ethnobotany Lab**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **0 0 4 2**

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the methodology of ethnobotanical work.
- Know the miscellaneous uses of plants.
- Learn the preparation of herbarium.
- Understand the details of ethnic groups through the photographs and other available scientific literatures.

### **BOT 305 Horticulture**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **6 0 0 6**

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the basic technique of plant propagation.
- Perform cutting, grafting, budding, layering etc.
- Grow plants in the absence of soil medium.
- Start bonsai creation.
- Know various aspects of Green House Technology.
- Start commercial cultivation of fruits and vegetables.

### **BOT 305L Horticulture Lab**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **0 0 4 2**

#### **Learning outcomes:**

On completion of the course, students will be able to:

- Understand the methodology of plant propagation.

- Demonstrate cutting, grafting, budding, layering etc.
- Grow plants in the absence of soil medium.
- Know various aspects of Green House Technology.
- Learn the cultivation of fruits and vegetables.
- Demonstrate the technique of compost production.

## **CHEMISTRY**

### **First Semester**

#### **CHEM 102 Inorganic Chemistry-I**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes**

On completion of course, the students will be able to:

- derive Schrodinger wave equation and quantum numbers, predict shapes of orbital from probability curves and apply Slater's rule for calculating  $Z_{\text{eff}}$ .
- explain periodic properties like atomic and ionic radii, ionization energy, electron affinity and electronegativity.
- demonstrate bonding theories including valence bond theory, valence shell electron pair repulsion and molecular orbital theory and its applications.
- determine ionic structure of solids with the help of radius ratio values for coordination numbers 3, 4 and 6 and have brief knowledge of metallic bond.
- acquire knowledge of characteristic properties of 3d series elements and its comparison with 4d and 5d series.
- apply the Werner's coordination theory and its experimental verification; to solve numerical problems based on effective atomic number concept.

## CHEM 102L Inorganic Chemistry-I Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes

On completion of course, the students will be able to:

- understand the principles of working with laboratory equipments and ability to properly use them during chemistry experiments.
- prepare standard solution of various secondary standard salts.
- process purification of impure compounds by crystallization.
- calibrate lab equipments like pipettes and burettes.
- analyze, separate and identify inorganic ions from various groups.

## Second Semester

### CHEM 103 Organic Chemistry-I

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### Learning Outcomes

On completion of course, the students will be able to:

- explain the organic reactions and their mechanisms.
- explain the stereochemistry of the organic compounds including their optical activity, conformations and configurations.
- explain physical and chemical properties of the hydrocarbons, alcohols, carbonyl compounds and carboxylic acids.
- understand the basics of chemistry of aromatic compounds.

### CHEM 103L Organic Chemistry-I Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

## Third Semester

### CHEM 202 Physical Chemistry-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- explain the basic principles of thermodynamics and thermochemistry.
- describe the states of matter.
- explain the concepts of chemical kinetics and catalysis.
- apply the concept of thermodynamics to determine the heat of neutralization of chemical reaction.
- explain the concept of colloids.

### CHEM 202L Physical Chemistry-I Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- determine the percentage composition of unknown mixture by viscosity and surface tension methods.
- measure kinetics parameters of chemical reaction.
- evaluate the enthalpy of neutralization.
- calculate the lattice energy of  $\text{CaCl}_2$  and solubility of benzoic acid at different temperatures.

## Fourth Semester

### CHEM 201 Inorganic Chemistry-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- apply crystal field theory on different geometries and correlate it with stability.
- elucidate the nomenclature, structures, magnetic properties and reactivity of transition metal complexes.
- apply the concept of L-S coupling for the determination of term symbols of different spectroscopic states and appreciate its utility.
- elaborate the thermodynamic and kinetic stability of metal complexes.
- demonstrate the structure, bonding and reactivity of organometallic compounds.
- discuss a concise treatment of the important inorganic non-aqueous solvents and its application in various known reactions.
- apply HSAB principle on stability of molecules.

### CHEM 201L Inorganic Chemistry - II Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes

On completion of course, the students will be able to:

- perform the proper procedures and have the knowledge of regulations for safe handling and use of chemicals.
- predict chemical bonding or molecular geometry of various complexes based on accepted models.
- synthesize various transition metal complexes.
- Handle instruments like calorimeter and potentiometer.

## Fifth Semester & Sixth Semester

### Discipline Electives (Theory)

#### CHEM 302 Organic Chemistry-II

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of course, the students will be able to:

- explain the structures and properties of biomolecules: carbohydrates, amino acids, proteins and nucleic acids.
- explain the structures, synthesis and properties of different class of organic compounds: nitro compounds, amines, diazonium salts, enolates, pyrrole, thiophene, furan, pyridine, indole, quinoline and isoquinoline.
- discuss the basic principles of UV-visible, IR and NMR spectroscopy.
- elucidate the structure of organic compounds using UV-visible, IR and NMR spectral data.

#### CHEM 305 Molecular Modeling and Drug Design

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of course, the students will be able to:

- describe and comprehend the fundamental concepts of molecular modeling and computational-driven drug discovery.
- understand the physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
- understand the Molecular modeling and computer graphics
- develop the theoretical and practical aspects of molecular modeling

## CHEM 303 Physical Chemistry-II

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

### Learning Outcomes

On completion of course, the students will be able to:

- explain the basic principles of nuclear chemistry.
- discuss the surface phenomenon, surface properties of solid and calculate the surface area of the adsorbent.
- discuss conductance, Arrhenius theory, Debye-Huckel-Onseger's equation and Nernst equation.
- explain the concept of corrosion and factors affecting corrosion.
- explain the colligative properties of solution.
- Understand the congruent and non-congruent melting points, and azeotropic mixtures.

## CHEM 304 Analytical Methods in Chemistry

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

### Learning Outcomes

On completion of course, the students will be able to:

- apply knowledge of basic statistics to validate the results of analysis.
- understand various chromatographic techniques and its applications in separation of mixtures, purification of samples, and qualitative and quantitative analysis.
- understand the basic principles of optical, thermal and electro analytical methods and apply its concepts to interpretation of compounds.
- explain the principle and applications of thermal methods of analysis and atomic spectroscopy

## Discipline Electives (Lab)

### CHEM 302L Organic Chemistry-II Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### Learning Outcomes

On completion of course, the students will be able to:

- separate compounds by steam distillation.
- understand concept of chromatography (TLC) by separation of green leaf pigment, mixture of dyes and organic compounds.
- separate organic mixture containing two solid components and their qualitative analysis.
- synthesize organic compounds by synthetic methods: acetylation, benzylation, diazotization or coupling reaction and electrophilic substitution.

### CHEM 305L Molecular Modeling and Drug Design Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### Learning Outcomes

On completion of course, the students will be able to:

- describe and comprehend the fundamental concepts of molecular modeling and computational-driven drug discovery.
- understand the physicochemical properties of drugs including solubility, distribution, adsorption, and stability.
- understand the Molecular modeling and computer graphics
- develop the theoretical and practical aspects of molecular modeling

## CHEM 303L Physical Chemistry-II Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes:

On completion of course, the students will be able to:

- handle instruments like calorimeter, conductometer and potentiometer.
- perform the proper procedures and have the knowledge of regulations for safe handling and use of chemicals.
- evaluate physical properties of analytes viz. the molecular weight, conductivity, optical rotation.

## CHEM 304L Analytical Methods in Chemistry Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes

On completion of course, the students will be able to:

- develop their skills for qualitative and quantitative research in different fields.
- perform various analytical operations to qualify and quantify different analytes.
- outline synthetic strategies for important chemicals.
- check the purity of synthesized compounds through TLC, UV, FT-IR spectral data
- analysis of soil through determination pH, estimation of ions and by total dissolve salts.
- able to determine the Chemical and biological oxygen demand by spectroscopic techniques.

# COMPUTER SCIENCE

## First Semester

### CS 107 Computer Fundamentals and Programming

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### Learning Outcomes

On successful completion of the course students will be able to

- make a conceptual understanding of input and output devices of computers and how it works and recognize the basic terminology used in computer programming
- develop the ability to write, compile and debug programs in C language and use different data types for writing the programs.
- formulate the programs based on structures, loops and functions.
- conceptualize the understating of differentiating between call by value and call by reference.
- develop the conceptual understanding of the dynamic behavior of memory by the use of pointers.

### CS 108L Computer Fundamentals and Programing Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## Second Semester

### CS 103 Computer Architecture and Object Oriented Programming

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### Learning Outcome

On successful completion of this course, Student will be able to

- Equip the students to meet the requirement of corporate world and Industry standard.
- Engage in professional development and to pursue graduate education in the fields of Information Technology and Computer Applications
- Apply C++ features to program design and implementation.
- Explain object-oriented concepts and describe how C++ including identifying the features and Peculiarities of the C++ programming language support them.
- Use C++ to demonstrate practical experience in developing object-oriented solutions

### CS 104L Computer Architecture and Object Oriented Programming Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

## III Semester

### CS 210 Data Structures

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes

On successful completion of the course students will be able to

- Choose appropriate data structure as applied to specified problem definition.
- Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
- Use linear and non-linear data structures like stacks, queues , linked list etc.
- Understand Internal representation of Linear and nonlinear data structures.

### CS 210L Data Structures Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

## IV SEMESTER

### CS 208 Computer Oriented Numerical and Statistical Method

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes

On successful completion of the course students will be able to

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Using appropriate numerical methods, determine the solutions to given non-linear equations, systems of linear equations, interpolation,

numerical differentiation and integration and numerical solution of ordinary differential equations.

- Analyze the errors obtained in the numerical solution of problems.
- Apply appropriate algorithms to solve selected problems, both manually and by writing computer programs.
- Compare different algorithms with respect to accuracy and efficiency of solution.
- Implement numerical methods algorithm using programming language.

### **CS 208L Computer Oriented Numerical and Statistical Methods Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

## **V Semester and VI Semester**

### **CS 310L Project Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **CS 316 Business Data Processing and Database Management System**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes**

On successful completion of the course students will be able to

- Develop Business applications in Cobol.
- Identify all peripheral devices.
- Prepare of all documents developed during system development.
- Identifies key of various types, use SQL-the standard language of relational databases, normalize data base.
- Develop COBOL Programming language.

## **CS 316L Business Data Processing and Database Management System Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

## **CS 301 Communication and Networking**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes**

On successful completion of the course students will be able to:

- Demonstrate knowledge of the network and its application areas.
- Ability to use various networks protocols.
- Understanding of the proper contents of a data communication and networking

## **CS 215 Systems Programming**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

On successful completion of the course students will be able to:

- Define the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger.
- Define how computer and operating system handles the memory.
- Describe the various concepts of assemblers and microprocessors.
- Analysis the various phases of compiler and compare its working with assembler.
- Examine how linker and loader create an executable program from an object module created by assembler and compiler.
- Identify various editors and debugging techniques

## **CS 320 Programming in Java**

### **CS 320L Programming in Java Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to:

- Apply Object oriented features to program design and implementation.
- Explain object-oriented concepts and describe how Java including identifying the features and peculiarities of the Java programming language supports them.
- Use Java to demonstrate practical experience in developing object-oriented solutions using graphical components.

## **CS 323 Web Development and .NET Framework**

### **CS 323L Web Development and .Net Framework Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

On successful completion of the course students will be able to:

- Develop working knowledge of C# programming constructs and the .NET Framework architecture.
- Develop, implement and create Applications with C#.
- Build and debug well-formed Web Forms with ASP. NET Controls
- Use of XML in ADO.NET and SQL server.

# ELECTRONICS

## First Semester

### ELE 102 Circuits and Signals

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

After completion of the course, students will be able to:

- Predict the behaviour of any electrical and magnetic circuits.
- Formulate and solve complex AC, DC circuits.
- Explain response of RL, RC and RLC networks.
- Realize the requirement of transformers in transmission and distribution of electric power and other applications.

### ELE 102L Circuits and Signals Lab

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Test Various Active and Passive components using Multimeter and CRO.
- Understand frequency response of resonance.
- Verify different Network Theorems.

## Second Semester

### ELE 103 Principles of Electronics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:** After completion of the course, the students will able to:

- Design various diodes circuits for various applications.
- Differentiate various biasing methods used in BJTs and FET's
- Analyse different kinds of oscillators and feedback circuits.

### ELE 103L Principles of Electronics Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Identify and Test various electronics components.
- Understand I-V characteristics of various Electronic devices.
- Draw frequency response of amplifiers.

## Third Semester

### ELE 204 Fundamentals of Digital Electronics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:**

After completion of the course, the students will able to:

- Develop a skill to build digital logic circuits, troubleshoot them and apply it to solve real life problems.
- Analyse, design and implementation of various combinational and sequential circuits.
- Differentiate various logic families.

- Understand the operation and application of multi-vibrators.

### **ELE 204L Fundamentals of Digital Electronics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand the functioning of bread board.
- Implement and verify logic gates and theorems.
- Design combinational and sequential circuits.

## **Fourth Semester**

### **ELE 203 Electronic Instrumentation and Measurements**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of the course, the students will able to:

- Understand and estimate various types of errors in measurements.
- Explain the operating principle of various measuring instruments used to detect physical quantities.
- Design op-amp circuits and understand SCR operation.

### **ELE 203L Electronic Instrumentation and Measurements Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand principle of different transducers.
- Design various circuits Using Op-Amp IC.
- Understand and draw V-I characteristics of SCR, DIAC and TRIAC.

## Fifth Semester/Sixth Semester

### Discipline Electives

#### ELE 305 Microprocessors

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

After completion of the course, the students will able to:

- Describe the general architecture of a microcomputer system and architecture & organization of 8085 & 8086 Microprocessor and understand the difference between 8085 and advanced microprocessor.
- Distinguish the use of different instructions and apply them in assembly language programming.
- Explain and realize the interfacing of memory & various I/O devices with 8085 microprocessor.

#### ELE 305L Microprocessors Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

After completion of this laboratory course, students will be able to:

- Understand the different instructions of 8085 microprocessor assembly language.
- Coding in assembly language.
- Solve different real time problems.

#### ELE 302 Communication Systems

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

After completion of the course, the students will able to:

- Explain the working of communication system, Analog Modulation Techniques and their comparative analysis and applications suitability.
- To analyze various methods of baseband/band pass Analogue transmission and detection.
- To evaluate the performance of analogue communications in the presence of noise.
- Explain the working of AM, FM transmitter and receiver.

### **ELE 302L Communication Systems Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand modulation, demodulation waveform and measure modulation index.
- Understand the operation of Pulse modulation and demodulation.
- Familiarized with radio and TV receiver.

### **ELE 312 Antenna Theory and Wave Propagation**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of the course, the students will able to:

- Analyze Maxwell's equation in different forms (differential and integral) and apply them to diverse engineering problems.
- Examine the phenomena of wave propagation in different media and its interfaces and in applications of microwave engineering.
- Recall electromagnetic plane waves. Apply principles of electromagnetic to explain antenna radiation. Explain various antenna parameters.
- Explain dipole antennas. Establish mathematical equations for various parameters of thin linear antenna.

### **ELE 312L Antenna Theory and Wave Propagation Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Use HFSS tool to design and analysis of antennas.
- Design various type of antennas
- Measure and analyse radiation pattern of antennas.

### **ELE 313 Introduction to Photonics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of the course, the students will able to:

- Explain the light propagation through optical fibers.
- Explain the various light sources and optical detectors.
- Design fiber optic transmitter and receiver system.

### **ELE 313L Introduction to Photonics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this laboratory course, students will be able to:

- Understand the characteristics of an optical fiber and LED.
- Understand and measure the basic properties of propagation of light in dielectric Optical fibre including losses, attenuation and coupling.
- Explain the working of optical power meter and various sensors.

# GEOGRAPHY

## First Semester

### GEOG 103 Physical Geography

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Describe origin of earth, continents and ocean basin, Isostasy, diastrophism, drainage pattern and several landforms
- Describe the wind movements, pressure, composition and structure of the earth, jet streams
- Classify world in terms of climate, air masses and fronts and describe cyclones and their types
- Describe ocean bottom reliefs of Indian ocean, distribution of temperature and salinity, tides, currents and coral reefs
- 

### GEOG 101L Fundamentals of Cartography Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Describe cartography and theoretical background of scales and their types.
- Draw plain, diagonal, comparative, time and Vernier scale.
- Enlarge, reduce and combine maps.
- Describe the uses of thermometer, barometer, hair hygrometer, rain gauge and wind vane.
- Conduct a plane table survey through radiation, intersection and traversing.

## Second Semester

### GEOG 102 Human Geography

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Define human geography and relate it to the other social sciences; describe man environment relationships and schools of human geography.
- Describe evolution of man, classify human races and describe migration theories.
- Map and describe the distribution of several tribes- Pigmies, Badawins, Eskimos, Khirgiz, Gujjars, Bakarwals, Toda, Bhil and Santhal and their economic activities.
- Describe population distribution of the world with maps, concepts of population growth, population theories and human development.
- Classify cities functionally; describe urbanization, settlements and their types.

### GEOG 104L Statistical Techniques and Data Representation Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Describe statistical sampling and represent frequency distribution in several forms.
- Represent statistical data through diagrams- multiple bar diagram, simple pyramid diagram, rectangular diagram, wheel or pie diagram, and spherical diagram.
- Measure mean, median mode & standard deviation.
- Represent Statistical data through graphs-poly linear graph, climograph and triangular graph.

## Third Semester

### GEOG 202 Introduction to Geography of India

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Describe and map the location of India, its physiographic divisions.
- Describe the drainage, climate, soil and vegetation their types and distribution.
- Describe major crops, minerals, industrial regions, population of India and their distribution.
- Demarcate Rajasthan in terms of physiography, describe climate, drainage, vegetation, soils and their distribution.
- Describe agriculture, livestock, irrigation, human resources and tourism.

### **GEOG 203L Mapping and Prismatic Compass Survey Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Create distribution maps through chorochromatic, simple shading, choro-schematic methods.
- Create maps of isobars, isotherms and dot method.
- Conduct prismatic compass survey through radiation and intersection method.
- Correct closing error through Bowditch rule.

## Fourth Semester

### GEOG 201 Economic Geography

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

After the completion of this course, students should be able to:

- Define economic geography, describe its scope and relate it with other social sciences
- Classify resources and describe soil mineral and energy resources
- Describe spatial distribution, production and trade of rice, wheat, cotton, tea and Classify world into agricultural regions
- Describe several industries, their location determinants, and distribution of iron- steel and cotton-textile industry.
- Describe trade, transport, their controlling factors, major law making bodies of the world and major transport routes.

### GEOG 204L Relief Representation and Topographical Maps Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After the completion of this course, students should be able to:

- Interpret topographical maps.
- Represent topographical features with the help of contours.
- Identify Human and natural phenomenon.
- Create Profiles using Contours in the topographical sheets.

## Fifth Semester

### GEOG 303L Map Projection Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Elucidate necessity & classification of map projections.
- Compare different kind of map projections.
- Construct map projections graphically.
- Suggest projection for any area of earth surface.

## Sixth Semester

### GEOG 301L Fundamentals of Geoinformatics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Explain development and types of aerial photographs.
- Identify and interpret aerial photographs.
- Elucidate different elements and development of remote sensing.
- Describe different kinds of remote sensing platforms and discuss important elements of GIS.

## Discipline Electives

### GEOG 305 Environment and Disaster Management

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Understand about the ecosystem and their functions.
- Describe disaster, its types and issues generated during different cycles of disasters.
- Describe the policies of disaster management in India.
- Assimilate role of different bodies established for the cause of disaster relief.

### GEOG 302 Geographical Thought

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Explain evolution of geographical thought and relationship of Geography with other branches of knowledge.
- Describe different tools and techniques of geographical study.
- Compare ancient, medieval and modern scholar's contributions in Geography.
- Elucidate important concepts of Geography as well as recent trends and current issues of subject.

## **GEOG 306 Settlement Geography**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Develop an approach to study settlements.
- Depict the evolution of settlements and relate it to the geographical factors.
- Describe rural and urban morphology, its meaning and types.
- Classify cities functionally into different zones.

## **GEOG 304 World Regional Geography**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**6 0 0 6**

### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Elucidate physical aspects of Asia, Europe, Africa, North & South America and Oceania.
- Describe cultural aspects of Asia, Europe, Africa, North & South America and Oceania.
- Compare different continents of world.
- Illustrate terrain, drainage, climate, natural vegetation and Industrial regions of studied continents.

**GEOLOGY**  
**Disciplinary Courses**  
**First Semester**

**GEOL 103 Physical Geology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Elucidate the overall perspective about Earth science.
- Explain the underlying physical and chemical concepts governing the earth's processes.
- Identify tectonic, volcanic, fluvial, glacial and aeolian landforms.
- Determine the physical, chemical and biological processes that control the evolution of identified landforms.

**GEOL 103L Physical Geology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Illustrate the relationship of earthquake and volcanic zones of the world with respect to plate boundaries.
- Delineate the seismic zones of India by studying major palaeo-earthquakes.
- Explain the evolution of life with respect to time as well as the major geological events of the past.
- Identify various drainage pattern and geomorphic features in the field.

## Second Semester

### GEOL 104 Structural Geology and Plate Tectonics

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Recognize and interpret the geological structures of deformed continental regimes, varying from simply deformed to superimposed structures.
- Interpret the relative timing of formation of structures, the kinematics of deformation, and the progressive deformation histories in these regimes.
- Interpret stress regimes and strain states during continental deformation.
- Apply the information of structural geology in the mining and resource exploration.

### GEOL 104L Structural Geology and Plate Tectonics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After the completion of this course, students should be able to:

- Interpret the toposheets for civil engineering purposes.
- Predict the geometry and location of structures at depth or in areas of less exposed outcrops.
- Interpret the geological history of the given area supplemented with structural data in geological maps.
- Identify the areas prone to geological hazards.

## Third Semester

### GEOL 203 Mineralogy, Crystallography and Geochemistry

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Recognize and identify the common rock-forming minerals on the basis of their physical properties.
- Make systematic descriptions of minerals by observing them in thin sections under polarizing microscope.
- Describe the parameters, symmetry, general principles of crystal and molecular structures.
- Explain the geochemical distribution of elements and various aspects of radioisotopes including their applications in geology.

### GEOL 203L Mineralogy, Crystallography and Geochemistry Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Recognize a variety of minerals and gemstones.
- Describe chemistry, crystal structure, and physical properties of minerals.
- Make systematic descriptions and identifications of minerals by observing their thin-sections under polarizing microscope.
- Explain the parameters, lattice structure and symmetry of crystals.

## Fourth Semester

### GEOL 204 Petrology and Economic Geology

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After the completion of this course, students will be able to

- Describe and identify igneous, metamorphic and sedimentary rocks.
- Classify magmatic, metamorphic and siliciclastic rocks, and understand the petrogenetic processes and their geologic significance.
- Identify the common ore types, their properties, geological settings to understand the processes and mechanisms of their genesis and devise strategies for exploration.
- Assess the applicability of different ore exploration methods and their utilization.

### GEOL 204L Petrology and Economic Geology Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

After the completion of this course, students should be able to:

- Recognize common ore minerals (metallic and nonmetallic) in hand samples, describe their distribution and uses.
- Describe the rocks based on mineralogical and textural characteristics and interpret the environment of formation
- Map distribution of economic minerals in India.
- Identify various rocks in thin-section under petrological microscope.

## Discipline Electives

### GEOL 304 Applied Geology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Describe the concepts & principles of photogrammetry, remote sensing and their applications in geology.
- Explain the hydrologic cycle and theory of plate tectonics as related to natural hazards.
- Describe earth processes that create hazards to life and property.
- Explain the applications of geology in Civil Engineering.

### GEOL 304L Applied Geology Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Use the elements and keys of visual image interpretation for aerial photographs and satellite data.
- Prepare maps showing geological hazards like seismic activities, earthquakes, landslides and floods affecting the different parts of India.
- Determine the different hydrological parameters like porosity and permeability of rocks.
- Determine the pH, EC, TDS of water samples

## **GEOL 305 Field Geology: Tools and Techniques**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Elucidate the uses of tools in field and in lab
- Describe the structural elements in field
- Discriminate between the primary and secondary structures
- Explain the geophysical method of prospecting

## **GEOL 305L Field Geology: Tools and Techniques Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Handle and Use Clinometer, Brunton and Global Positioning System (GPS)
- Identify the structural elements in field and hand specimen
- Solve problems related to map scales and toposheet indexing
- Perform geological mapping

## **GEOL 306 Geology of Rajasthan**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to

- Describe the physiographic features and climate of Rajasthan.
- Explain the tectono-stratigraphy of the Rajasthan.
- Explore the economic viability of Rajasthan in terms of geological resources.
- Study saline lakes of Rajasthan in terms of their geological evolution.

## **GEOL 306L Geology of Rajasthan Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Describe the physiographic features and climate of Rajasthan.
- Explain the tectono-stratigraphy of the Rajasthan.
- Explore the economic viability of Rajasthan in terms of geological resources.
- Study saline lakes of Rajasthan in terms of their geological evolution.

## **GEOL 201 Palaeontology and Stratigraphy**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to

- Explain the principal elements of fossil preservation.
- Identify fossils based on morphology and evolutionary trends.
- Identify major lithotectonic units of India.
- Describe the geological evolution of the Earth and Indian continent.

## **GEOL 201L Palaeontology and Stratigraphy Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After the completion of this course, students will be able to:

- Transform a stratigraphic cross-section into a historical summary.
- Explain Stratigraphy and broad tectono-stratigraphic divisions of India through maps.
- Identify different lithotectonic units of India and establish their stratigraphic correlations.

- Explain the morphological characters of different genera of fossils.

## MATHEMATICS

### First Semester

#### MATH 106 Introduction to Calculus

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Apply the concept and principles of differential and integral calculus to solve geometric and physical problems.
- Evaluate various limit problems both algebraically and graphically
- Differentiate and integrate the functions which are applicable in real life situations.
- Interpret the geometric meaning of differential and integral calculus
- Apply differentiation to find linear approximation, extrema, monotonicity, and concavity of functions.

#### STAT 104 Introduction to Probability and Statistics

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Compute numerical quantities that measure the central tendency and dispersion of a set of data.
- Understand basic probability axioms and rules and the moments of discrete and continuous random variables as well as be familiar with common named discrete and continuous random variables.
- Apply general properties of the expectation and variance operators.
- Understand the properties and fitting of the Normal, Binomial and Poisson distribution.

- Fit the straight line, second degree parabola and curves of type:  $ab^x$  and  $ax^b$
- Understand the concept of Correlation (Karl Pearson) and Linear Regression.

## Second Semester

### MATH 101 Analytical Solid Geometry

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of this course, student will be able to,

- Understand the basic applications of analytic and solid geometry.
- Understand geometrical terminology for planes, tetrahedron, spheres, parabolics, hyperboloids and ellipsoids.
- Visualize and represent geometric figures and classify different geometric solids.

### MATH 104 Differential Equations

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### Learning Outcomes:

On completion of this course, the student will be able to:

- Identify the type of a given differential equation and select and apply the appropriate analytical technique for finding the solution.
- Student will be able to solve first order differential equations utilizing the standard techniques for separable, exact, linear, homogeneous, or Bernoulli cases.
- Create and analyze mathematical models using first order differential equations to solve application problems.
- Determine solutions to the linear and nonlinear ordinary differential equations of first and second order.
- Determine the complete solution of a differential equation with constant coefficients by variation of parameters

- Evaluate the Laplace and Inverse Laplace transform of functions of one variable

## Third Semester

### MATH 201 Abstract Algebra

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

On completion of the course, the student will be able to:

- Demonstrate the mathematical maturity of understanding the proof.
- Understand the definition of a group and be able to test a set with binary operation to determine if it is a group.
- Find the order of elements of groups.
- Identify subgroups of a given group, cycle groups, normal groups.
- Understand permutation groups and be able to decompose permutations into 2-cycles.
- Grasp the significance of the concepts of homomorphism, isomorphism, and automorphism and be able to check a given function is one of these.
- Classify groups up to isomorphism.
- Identify a set with to binary operation forms a ring or not.
- Really understand the special types of rings and be able to construct new examples from the old ones.
- Check a subset of a ring is an ideal or not and be able to identify proper and maximal ideal.

### MATH 206 Real Analysis

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

On completion of the course, the student will be able to,

- Think about basic proof techniques and fundamental definitions related to the real number system.
- Understand the concept of real-valued functions, limit, continuity, and differentiability.
- Find expansions of real functions in series forms.

- Demonstrate some of the fundamental theorems of analysis.
- Develop the capacity to solve real integral while understanding of integrable functions.

## Fourth Semester

### MATH 202 Introduction to Linear Algebra

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

On Completion of this course, the students will be able to:

- Understand vector spaces over a field and subspaces and apply their properties.
- Understand linear independence and dependence.
- Find basis and dimension of a vector space, and understand change of basis.
- Compute linear transformations, kernel and range, and inverse linear transformations, and find matrices of general linear transformations.
- Find eigenvalues and eigenvectors of a matrix and of linear transformation.
- Understand inner product on a vector space.
- Understand the concept of orthogonality in inner product spaces.
- Create orthogonal and orthonormal bases: Gram-Schmidt process.

### MATH 301 Complex Analysis

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Demonstrate understanding of the basic concepts and fundamental definitions underlying complex analysis.
- Investigate complex functions, concept of limit, continuity and differentiability of complex functions.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.

- Prove and explain concepts of series and integration complex functions.
- Understand problem-solving using complex analysis techniques.
- Enjoy the roll of complex functions today's mathematics and applied contexts.

## **Fifth Semester**

### **Core Paper (Mathematics)**

#### **MATH 302 Introduction to Discrete Mathematics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcomes:**

On completion of the course, the student will be able to:

- Write an argument using logical notation and determine if the argument is or is not valid.
- Demonstrate the ability to write and evaluate a proof or outline the basic structure of and give examples of each proof technique described.
- Understand the basic principles of sets and operations in sets.
- Prove basic set equalities.
- Apply counting principles to determine probabilities.
- Demonstrate an understanding of relations and functions and be able to determine their properties.
- Determine when a function is 1-1 and "onto".
- Demonstrate different traversal methods for trees and graphs.
- Model problems in Computer Science using graphs and trees.

## Sixth Semester

### Core Paper (Mathematics)

#### MATH 303 Introduction to Numerical Analysis

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### Learning Outcomes:

On completion of the course, the student will be able to:

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Solve the nonlinear equations, system of linear equations and interpolation problems using numerical methods.
- Examine the appropriate numerical differentiation and integration methods to solve problems.
- Apply the numerical methods to solve differential equations.

### Discipline Electives (Mathematics)

#### MATH 203 Introduction to Mechanics

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### Learning Outcomes:

On completion of the course, the student will be able to,

- Explain the geometry of the motion of particle in plane curve, i.e. position, velocity, and acceleration, and how those quantities are related through calculus.
- Learn Newton's laws of motion and examines their application to a wide variety of problems.
- Learn the basic concept of composition and resolution of forces and friction.
- Understand and visualize the real physical problem in terms of Mathematics.

- Learn one-dimensional (SHM), multi-dimensional (Projectile motion), and constrained motion, motion of particle with or without connecting with string.

## **MATH 304 Linear Programing and Its Applications**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

On completion of the course, the student will be able to:

- Formulate the LPP.
- Conceptualize the feasible region.
- Solve the LPP with two variables using graphical method.
- Solve the LPP using simplex method.
- Formulate the dual problem from primal.
- Solve Transportation and Assignment problems
- Solve the problems of competitive situations between two competitors.

## **MATH 312 Vector Calculus**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

On completion of this course, students will be able to:

- Manipulate vectors to perform geometrical calculations in three dimensions.
- Use Green's theorem and the Divergence theorem to compute integrals. Explain how Green's Theorem is a generalization of the Fundamental Theorem of Calculus.
- Communicate Calculus and other mathematical ideas effectively in speech and in writing.
- Recognize when it is appropriate to use a scalar and when to use a vector in problem solving.

## MATH 310 Number Theory

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

On completion of this course, students will be able to:

- Understand the concept of divisibility and able to find greatest common divisor of large integers using Euclidean algorithm.
- Appreciate the importance of prime numbers and their distribution.
- Solve linear congruences and system of linear congruences.
- Know Euler's theorem, Fermat's theorem and Wilson's theorem.
- Demonstrate the applications of number theory in cryptography.

## PHYSICS

### First semester

#### PHY 103 Electricity and Electronics

Max. Marks : 100	L T P C
(CA: 40 + ESA: 60)	6 0 0 6

### Learning Outcomes:

After completion of this course, the students will be able to:

- Learn fundamentals and concepts of electricity and electronics
- Learn about the basic concepts of electronic and electrical circuit analysis techniques
- Apply the above motioned concept to design a range of electronic devices and circuit configurations.

#### PHY 108L Electronics Lab

Max. Marks : 100	L T P C
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of law of electricity magnetism.

## Second Semester

### PHY 107 Optics

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

After completion of this course, the students will be able to:

- Appreciate the efficacy of Fourier transforms and their application to physical systems.
- Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems
- Understand dispersion in waves and model dispersion using Fourier theory.
- Understand diffraction and imaging in terms of Fourier optics and gain physical and intuitive insight in a range of physics via the spatial Fourier Transform.

### PHY 107L Optics Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of Optics and wave nature of light.

## Third Semester

### PHY 201 Mechanics

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

#### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.
- show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and think critically and work independently.

### PHY 201L Mechanics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of Newtonian mechanics, friction, and motion of bodies.

## Fourth Semester

### PHY 204L Physics Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

#### Learning Outcomes:

After completion of this course, the students will be able to:

- demonstrate laboratory skills in physics laboratory and analyze the measurements to draw valid conclusions.
- have oral and written scientific communication, and to think critically and work independently.
- to understand principles of thermodynamic laws experimentally

## **PHY 205 Thermodynamics, Statistical and Mathematical Physics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- understand the laws of thermodynamics in their various forms and explain their physical significance.
- state the thermodynamic potentials and recognize the most appropriate potential for application to a particular problem.
- derive and state the Boltzmann, Fermi-Dirac and Bose-Einstein distributions.
- know the key links between thermodynamics and statistical physics and apply these to problems

## **V Semester and VI Semester**

### **Discipline Electives**

#### **PHY 306 Quantum Mechanics and Spectroscopy**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- solve the Schrödinger equation for model systems of relevance within chemistry and physics
- describe many-electron atoms with the independent particle model

- describe the structure of the periodic system and the connections between the properties of the elements and their electron configurations
- describe the bases behind interaction between light and matter and account for the most common spectroscopic methods for studies of molecules in the IR and UV/Vis areas

### **PHY 306L Quantum Mechanics and Spectroscopy Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- demonstrate measurements skills in a physics laboratory
- Analyze the measurement results to draw valid conclusions.
- Have oral and written scientific communication, and think critically and work independently.

### **PHY 304 Advance Quantum Mechanics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- solve the Schrödinger equation for complex systems
- describe the structure of the periodic system and the connections between the properties of the elements and their electron configurations
- understand the effect of external parameters on the quantum systems

### **PHY 304L Advance Quantum Mechanics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Demonstrate measurements skills in a physics laboratory
- Analyze the measurement results to draw valid conclusions.
- Have oral and written scientific communication, and think critically and work independently.

### **PHY 302 Nuclear and Solid State Physics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**6 0 0 6**

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- account for interatomic forces and bonds
- have a basic knowledge of crystal systems and spatial symmetries
- account for how crystalline materials are studied using diffraction, including concepts like form factor, structure factor, and scattering amplitude.
- understand the concepts of nuclear physics
- understand the elementary particles and their interactions

### **PHY 302L Nuclear and Solid State Physics Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- demonstrate measurements skills in a physics laboratory
- analyze the measurement results to draw valid conclusions.
- have oral and written scientific communication, and think critically and work independently.
- to understand the laws of nuclear and solid state physics

## **PHY 305 Advanced Semiconductor Devices**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- understand the mechanism of semiconductor devices
- understand the applications of semiconductor devices in routine life
- make advancement in these devices

## **PHY 305L Advanced Semiconductor Devices Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- assess the validity of physical theories through the design and execution of an experiment, the analysis of uncertainties associated with the measurement of data and the interpretation of the data to draw valid scientific conclusions (lab skills).
- connect a digital oscilloscope to a computer and record a signal with an appropriate sampling rate
- generate and interpret the power spectrum of the recorded data, use the tools, methodologies, language and conventions of physics to test and communicate ideas and explanations

## STATISTICS

### First Semester

#### STAT 106 Probability and Descriptive Statistics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### **Learning Outcomes:s:**

On completion of the course, the student will be able to,

- Differentiate between the two definitions of Statistics
- Understand and differentiate between population and sample, variables and attributes in any survey
- Chose between the type of survey, census or sample, and the method of data collection, primary and secondary methods for a study,
- Represent the data using suitable tabular and/or graphical method
- Identify and calculate appropriate summary statistics for the data
- Understand the concept of various definitions of probability and calculate probability for any given problem.
- Define a random variable for a study variable and obtain its properties.

#### STAT 106L Probability and Descriptive Statistics Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Express raw data in terms of frequency table by using exclusive and inclusive method of classification for continuous/discrete variable.
- Apply and justify the use of, various graphical representations such as Histogram, Frequency polygon etc.
- Interpret and analyze the data using various averages such as arithmetic Mean, Median and Mode.

- Compare different data sets using methods such as standard deviation, mean deviation, quartile deviation and coefficient of variation.
- Employ and interpret the measures of Skewness and Kurtosis.

## **Second Semester**

### **STAT 109 Measures of Association and Probability Distributions**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Formulate the mathematical/statistical models for real data sets arising in various fields of the populations.
- Understand how to use probability distributions in real life problems.
- Understand how to check the independence of attributes.

### **STAT 109L Measures of Association and Probability Distributions Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Apply and use fitting of various curves such as Straight line, parabola, exponential curve etc.
- Effectively distinguish between and compute, correlation and rank correlation, Partial and Multiple correlations.
- Understand and perform the Fitting of Binomial, Poisson and Normal distribution

## Third Semester

### STAT 209 Sampling Distributions

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand the difference between probability distribution and sampling distribution.
- Understand the sampling distribution of the mean of a sample from a Normal Population.
- Understand the properties of the sampling distribution of the sample mean in general situations, using the Central Limit Theorem.
- Understand the concepts of the t, F and  $\chi^2$  distributions.
- Apply t, F and  $\chi^2$  tests on real life data.

### STAT 209L Sampling Distributions Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Effectively compute and understand testing of significance and confidence intervals in various contexts such as, for single proportion, difference of two proportions for large sample, for single mean, difference of two means for large sample.
- Proficiently test for goodness of fit, independence of attributes.
- Understand how and when to use testing for equality of two population variances

## Fourth Semester

### STAT 207 Statistical Inference and Quality Control

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Apply various basic parametric, non-parametric and sequential estimation techniques and testing procedures to deal with real life problems.
- Understand confidence interval in normal case, Neyman-Pearson fundamental lemma, UMP test.
- Understand SPRT, OC and ASN function.
- Understand some non-parametric techniques.

### STAT 207L Statistical Inference and Quality Control Lab

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand when and how to use various control charts such as  $\bar{X}$ , R, and s charts.
- Effectively understand and determine the AOQ and AOQL plots.
- Understand when and how to use various non - parametric tests such as Sign test, Run test, Median test etc.

**Fifth Semester/Sixth Semester**  
**Discipline Electives (Statistics)**

**STAT 302 Sampling Techniques and Design of Experiments**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
6	0	0	6

**Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand the Simple and Stratified random sampling techniques.
- Understand the ratio estimation procedure.
- Apply ANOVA for one-way and two-way classification, fixed effect models with equal number of observations per cell.

**STAT 302L Sampling Techniques and Design of Experiments Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	4	2

**Learning Outcomes:**

On completion of this course, the students will be able to:

- Leave the basic principles underlying survey design and estimation.
- Draw a random sample by using with and with replacement sampling technique in excel.
- Calculate the sampling mean and sampling variance in case of SRSWR and SRSWOR.
- Draw a random sample from stratified and systematic sampling and also to compare the efficiencies of these sampling techniques with respect to each other.
- Analyze the results of a designed experiment in order to conduct the appropriate statistical analysis of the data.
- Compare several means by using the concept of one way and two way ANOVA.

- Compare the three designs named CRD, RBD and LSD in terms of their efficiencies.

### **STAT 301 Applied Statistics**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand the concept of time series data and application in various fields.
- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Understand the calculation and interpretation of the principal demographic measures, and standardize these measures for comparison and construct and interpret life tables.
- Understand the uses of index number with their construction methods.
- Understand the concept of demand and supply theory.
- Understand the concept of scaling of scores.

### **STAT 301L Applied Statistics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Find the trend and seasonal components in the given dataset and separate these components on excel.
- Calculate and interpret the basic demographic measures and compare the measure for two different populations.
- Construct the life table with the help of some given life table columns.
- Calculate the index numbers for different commodities.

- Scaling the scores, test the reliability of these scores and compute the IQ of any individual.

### **STAT 303 Financial Statistics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, the students will be able to:

- Understand acquisition of financial data
- Describe financial data using distributions
- Find relation between two or more financial series
- Understand the concept of stochastic process
- Apply basic stochastic models in financial data.

### **STAT 303L Financial Statistics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of this course, the students will be able to:

- Understand the behavior of financial data through graphs
- Describe the nature of financial data
- Calculate risk through financial data
- Find relationship between financial series
- Model financial data using some simple stochastic models.

### **STAT 304 Health Statistics and Population Dynamics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Understand different measures related to health statistic.
- Able to calculate morbidity measures.

- Identify principle sources of demographic data and assess their strengths and weaknesses.
- Discuss the demographic significance of age and sex structures and the implications of variations in age & sex structure.
- Construct and interpret life tables.
- Calculation and interpretation of the principal demographic measures, and standardize these measures for comparison.
- Understand the components of population change, including the effects of changing birth, death and migration rates, and demonstrate their influences on age structure.
- Estimate and project the population by different methods.

## **STAT 304L Health Statistics and Population Dynamics Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

### **Learning Outcomes:**

After completion of this course, the students will be able to:

- Calculate various measures of morbidity and their accuracy
- Construct population pyramid and identify its features
- Estimate population growth rates and project for future
- Calculate measures of mortality and fertility for a given population
- Calculate simple measures of life table and analyze it.

# ZOOLOGY

## First Semester

### ZOO 102 Taxonomy, Classification and Evolution

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Gain fundamental understanding of the taxonomy and systematics.
- Describe salient features and classification of major phyla of invertebrates and protochordates.
- Develop a better understanding about classical and modern theories of evolution along with factors affecting evolution and detail of evolution of man, camel and horse.

### ZOO 104L Taxonomy, Classification and Evolution Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Identify and characterize different organisms of major phyla of non chordates based on the morphology.
- Understand the internal structures of lower non chordates through microscopic study of prepared slides.
- Understand the anatomy of *Fasciola*, *Pheretima* and *Unio* with the help of charts.
- Learn the technique of preparation of permanent slide.
- Apply acquired knowledge for the preparation of phylogenetic tree of invertebrates.

## Second Semester

### ZOO 101 Non-Chordates and Proto-Chordates

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
6	0	0	6

#### Learning Outcomes:

On completion of the course, students will be able to:

- Describe the habit, habitat, morphology, structure and functions of important animals of different major phyla of invertebrates and lower chordates.
- Understand the economic importance of various invertebrate phyla and affinities of lower chordate animals.
- Gain a high degree of competence in its field of specialization in response to the changing demands of the times.

### ZOO 103L Non-Chordates and Proto-Chordates Lab

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	4	2

#### Learning Outcomes:

On completion of the course, students will be able to:

- Identify and characterize different organisms of invertebrate based on the external features.
- Describe different organ systems of important invertebrate animals like *Palaemone*, *Pila* and *Asterias*.
- Gain practical understanding of preparation of permanent slide and study of internal structures of higher invertebrate animals through microscopic study of prepared slides.
- Understand the collection of certain arthropods from their natural habitat and develop the skills of vermiculture.

# ZOOLOGY

## Third Semester

### ZOO 203 Cell Biology, Molecular Biology, Histology and Genetics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Understand the fundamental knowledge of cell and its organization.
- Describe the classification, structure and functions of carbohydrates, proteins and lipids.
- Understand the theoretical aspects of structure and location of various tissues and histology of various body organs.
- Describe the molecular structure and types of nucleic acids along with DNA replication and translation.
- Describe fundamental and molecular principles of genetics and human genetic traits.

### ZOO 203L Cell Biology, Molecular Biology, Histology and Genetics Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Learn the preparation of buffers and different concentration solutions.
- Demonstrate the practical skills of various biochemical tests of carbohydrates, proteins and lipids.
- Carry out enzyme assay and salt precipitation of protein from moong seeds.
- Develop competency in the genetic problems.

# ZOOLOGY

## Fourth Semester

### ZOO 202 Comparative Anatomy and Embryology of Chordates

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Understand the comparative anatomy of various organ systems with special reference to *Scoliodon*, *Rana*, *Uromastix*, *Columba* and *Oryctolagus*.
- Gain the fundamental knowledge about the development of frog, Hen's egg and chick to understand the principles of developmental biology.
- Gain an elementary idea about reproductive biology.

### ZOO 202L Comparative Anatomy and Embryology of Chordates Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### Learning Outcomes:

On completion of the course, students will be able to:

- Identify higher chordate animals based on the external features.
- Identify and distinguish bones of *Rana*, *Varanus*, Fowl and *Oryctolagus*.
- Understand histology of organs and endocrine glands through microscopic study of slides.
- Understand the development of frog and chick through microscopic slides.

**V Semester and VI Semester**  
**Discipline Elective**  
**ZOOLOGY**

**ZOO 301 Animal Physiology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Gain basic understanding of structure and functions of each physiological system of human.
- Describe principles and pathway of metabolism of carbohydrate, protein and lipids.
- Develop an understanding about principles of human anatomy and physiology.

**ZOO 301L Animal Physiology Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Gain hands on experience in hematological tests such as counting of RBCs, WBCs, preparation of haemin crystals, determination of blood haemoglobin, calcium, cholesterol, sugar, protein, clotting time.
- Demonstrate the skills of pathological analysis of urine through the detection glucose and albumin.

**ZOO 305 Environmental Biology and Biostatistics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6 0 0 6</b>

**Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the physical and biological characters of the environment and the interrelationship between biotic and abiotic components of nature as well as relationship among the individuals of the biotic components.
- Realize the importance of ecosystem and biodiversity for maintaining ecological balance.
- Understand the basic principles of population and community ecology.
- Understand the fundamental principles of biostatistics and its role in the data analysis generated by scientific research.

### **ZOO 305L Environmental Biology and Biostatistics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Demonstrate skills in the quality assessment of water through testing of water for CO<sub>2</sub>, O<sub>2</sub>, chloride and hardness.
- Gain an understanding of parasitic, aquatic, desert and aerial adaptations of animals with the help of charts and specimens.
- Describe symbiosis, commensalism and socialization among organisms with the help of charts and specimens.
- Understand analysis of data by solving biostatistical problems.

### **ZOO 304 Developmental Biology**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Gain expertise in explaining how a variety of interacting processes generate an organism's heterogeneous shapes, size and structural features that arise on the trajectory from embryo to adult or more generally throughout a life cycle.

- Gain an understanding of systematic and organized learning about the knowledge and concepts of growth and development of organisms.
- Demonstrate a rich array of material and conceptual practices that could be analysed to better understand the scientific reasoning exhibited in experimental life sciences.

### **ZOO 304L Developmental Biology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Understand the different stages of development of frog and chick through microscopic slides.
- Understand the development and life cycle of *Drosophila* through microscopic slides.

### **ZOO 303 Applied Zoology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>6</b>	<b>0</b>	<b>0</b>	<b>6</b>

#### **Learning Outcomes:**

On completion of the course, students will be able to:

- Explore the important of earthworms in agro-ecosystems and utilize gained knowledge for production of vermicompost in small scale for garden/household plant.
- Demonstrate their knowledge for setting up poultry farm, sericulture, apiculture, laculture plant.
- Understand biology, life cycle and control measures of crop pests, stored grain pests and insects serve as vectors for human diseases.

### **ZOO 303L Applied Zoology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

On completion of the course, the students will be able to:

- Understand the life cycle of protozoan and helminthes parasites through microscopic slides.
- Explore the knowledge of life cycle of honey bees, silk moths and lac insects for setting up apiculture, sericulture and lac culture farm.
- Gain an understanding of biology, life cycle and control of stored grain pests, crop pests and insect of medical importance.

## **Education**

### **First Semester**

#### **EDU 401 Childhood and Growing Up**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
5	0	0	5

**Learning Outcomes:**

On successful completion of the course, students will be able to:

- clarify development as a continuous process.
- explain childhood development in various aspects.
- describe the adolescent stage in reference to characteristics & problems.
- describe the causes of the problems in adolescent learner and imply the suitable solutions.
- recognize and appreciate adolescent learner's uniqueness and enshape them.
- illustrate the impact of social context upon growing child

### **Second Semester**

#### **EDU 415 Learning and Teaching**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
5	0	0	5

**Learning Outcome:**

- differentiate between types of learner while teaching.
- analyze the different factors influencing teaching learning process during class interaction.
- apply different type of methods and media.
- plan according to Phases, level and maxims of teaching.
- manage the classroom as a professional.

## Third Semester

### EDU 503 Contemporary Indian Education

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
5	0	0	5

**Learning Outcome:**

- reflect diversity in Indian Society.
- express the constitutional values (Secularism, Socialism, Democracy) as reflected in Education.
- analyze the roles of commissions and policies in Secondary Education.
- deal with inequality and marginalization related issues in India.
- analyze and appraise the policy framework for Public Education in India.

## Fourth Semester

### EDU 413 Knowledge and Curriculum

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
5	0	0	5

**Learning Outcome:**

- explain the conceptual basis of knowledge and as a process.
- analyze various approaches of knowledge structuring.
- describe the form of knowledge.
- discuss the epistemological bases of education and implementing the different learner driven pedagogies.
- explain the concept and various kinds of curriculum.
- analyze and synthesize the different phases of curriculum.
- critically analyze the curriculum frame work as a policy decisions.

## Fifth Semester & Sixth Semester Discipline Elective Courses-I & II

### Discipline Electives (Focal Area)

#### EDU 414 Language across the Curriculum

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcome:

- employ language according to its nature and function to acquaint with language diversity in classroom.
- carry out classroom interaction in reference to first, second and third language,
- appreciate multilingualism and culture in their class
- resolve Communication Problem of school Students.
- appreciate challenges of language across the curriculum(LAC).
- analyze barriers of Listening, Speaking, Reading and Writing ( LSRW) skills

#### EDU 508 Understanding Discipline and Subjects

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcome:

- utilize the nature and importance of Disciplinary Knowledge in class
- differentiate present content of teaching subject in school with its history
- appreciate the paradigm shift in disciplines
- critically appraise the Disciplinary and Interdisciplinary Subjects
- appraise the phenomenon of Interdisciplinary approach to Subjects

## **EDU 504 Gender, School and Society**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcome:**

- approve and appreciate gender equality .
- elucidate the constitutional and legal provisions related to women.
- disapprove the gender bias in family, workplace and educational institution.
- appreciate the role of education in eradicating gender bias.
- reflect roles and responsibilities of various agencies in promoting gender equalities.

## **EDU 402 Creating an Inclusive School**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Student teacher will be able to :

- Analyze and explain the diversity in Indian classroom, School and Society.
- Differentiate the concept of Special Education, Integrated Education and Inclusive education.
- Analyze and discuss about National initiatives and provisions for Inclusive Education.
- Use various aids and equipments in Inclusive Classroom.
- Create learning environment of an Inclusive Classroom.
- Discuss the role of supportive services in Inclusive Schools.

## **EDU 405 Educational Guidance and Counselling**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

Student teacher will be able to :

- develop conceptual understanding of guidance and counselling.
- familiarize with the process and procedures being used in guidance & counselling.
- develop competence of providing guidance and counselling to school Students.
- develop conceptual understanding and skills of organizing guidance services at school level.
- develop conceptual understanding of barriers of guidance and counselling.

### **EDU 406 Educational Technology**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcome:**

- explain basic concepts related to Educational Technology.
- match appropriate strategies to Teaching Levels.
- clarify the concept of Communication & its relation to Instruction.
- demonstrate improvement in teaching behavior.
- develop and use Instructional Support Materials.

### **Seventh Semester**

#### **EDU 502 Assessment for Learning**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
5	0	0	5

#### **Learning Outcome:**

- interpret concept of assessment in education, evaluation and its related term.
- differentiate between kinds of evaluation.
- apply appropriate tools of evaluation in field.
- elucidate different forms and characteristics of achievement test.
- organize an effective evaluation program.
- apply ICT skills during evaluation program.
- conduct an action research related to problems at school level.



## Discipline Elective (Main Pedagogy)-I

### EDU 438 Pedagogy of General Science -I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcome:

- explain the nature and importance of general science.
- discuss and correlate the general science with other school subject.
- analyze the NCF 2005 with reference to science education.
- frame instructional objectives in behavioural terms.
- prepare unit plan and lesson plan based on different method.

### EDU 442 Pedagogy of Mathematics-I

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcome:

- discuss the nature of Mathematics.
- critically analyze the Mathematics Text Book.
- reflect on different methods of teaching Mathematics.
- prepare the lesson plan in teaching mathematics.
- reflect on framing and marking test items of achievement test in mathematics.

## Discipline Elective (Main Pedagogy)-II

### EDU 439 Pedagogy of General Science-II

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcome:

- select and use of various methods of teaching general science.
- select and use of ISM in teaching general science.
- construct improvised apparatus in teaching general science.
- explain and organize different strength activities in general science.
- analyze related subject content for framing different types of test items.

- discuss on different ways of professional development of Science teacher.

### **EDU 443 Pedagogy of Mathematics-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcome:**

- apply various methods and techniques of teaching mathematics.
- reflect on framing and marking test items of achievement test in mathematics.
- demonstrate the models on audio visual aids.
- prepare the ICT based materials in teaching mathematics.

### **Discipline Elective (Subsidiary Pedagogy)**

#### **EDU 416 Pedagogy of Biology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcome:**

- explain the rationale of study of Biology.
- develop skill in framing instructional objective in behavioral terms.
- discuss the major principles of curriculum construction.
- identify and use various method of teaching Biology.
- develop skill in preparing unit and lesson plan.
- selection and use of ISM and related science activities.
- construct various test items for making question paper.

#### **EDU 417 Pedagogy of Chemistry**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcome:**

- analyze concepts and generalization used in framing chemistry curriculum.
- analyze nature of chemistry and the relationship between nature of chemistry and objectives of teaching chemistry.

- Discuss role of laboratory, text book and other resources in teaching of chemistry formulate IOs for cognitive, affective & psychomotor domain.
- frame test items for different types of test.
- reflect on different teaching methods used in Chemistry.

### **EDU 419 Pedagogy of Computer Science**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcome:**

- Acquaint with the aims and objectives of pedagogy of computer science
- Familiarize with the various methods that can be employed for the pedagogy of computer science.
- Acquaint in preparation of instructional materials for Computer Science teaching.
- Acquire knowledge of latest trends in Information Technology and assessment practices.

### **EDU 423 Pedagogy of Geography**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

On successful completion of the course, students teacher will be able to:

- describe the nature of content in Geography subject.
- formulate Instructional objectives and plan for Geography teaching at Senior Secondary Level.
- apply different methods of teaching Geography in classroom.
- select and use appropriate resources and media for Geography teaching.
- use various resources for enrichment of Geography teaching.
- reflect on framing and marking test items of achievement test in Geography.

### EDU 428 Pedagogy of Mathematics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcome:

- discuss the nature of Mathematics.
- critically analyze the Mathematics Text Book.
- reflect on different methods of teaching Mathematics.
- prepare the lesson plan in teaching mathematics.
- reflect on framing and marking test items of achievement test in mathematics.

### EDU 431 Pedagogy of Physics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcome:

- discuss the nature and relevance of Physics as a School Subject.
- identify Aim and objectives of teaching Physics.
- discuss various methods of Physics teaching.
- organize and develop Physics lab.

### Discipline Electives (Enhancing Professional Capacity Courses)

#### EDU 301L Reading and Reflecting on Texts

<b>Max. Marks: 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40+ESA:60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### Learning Outcome:

- read and respond to a variety of texts in different ways by learning to think together, depending on the text and the purposes of reading.
- enhance their capacities as readers and writers by becoming participants in the process of reading.
- develop the skill of critical thinking by offering opportunities to read a wide variety of texts,

- write with a sense of purpose and audience, through tasks such as, responding to a text with one's own opinions or writing within the context of other's ideas.

### **EDU 459L Aesthetic Appreciation through Art and Drama**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### **Learning Outcome:**

- discuss the concepts of Art and Type of Arts
- apply Fundamentals of Visual Art
- explain Drama, Its Elements and Types of Drama
- apply different type of Arts in teaching.
- create Various Products by Using Art
- perform Various Type of Drama by Organizing the Stage

### **EDU 467L Understanding the Self and Yoga**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### **Learning Outcome:**

- facilitate student to understand the self.
- develop capacity to identify the values for a good teacher.
- facilitate student to perform self reflected activities.
- discuss students with the meaning and importance of yoga.
- develop essential skills to perform various asanas.

## Eighth Semester

### Reading Electives

#### EDU 461R Disaster Management Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcome:**

- interpret causes, effects and prevention of natural and man-made disaster.
- clarify the meaning and need of disaster management.
- appreciate the governmental efforts for disaster management.
- discuss the role of educational institutions, Pre-service and In-service teacher education Institute in disaster management.

#### EDU 468R Women's Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcome:**

- critically analyze the status of women in Indian society.
- discuss the problems of women education at different levels.
- analyze and appraise the recommendations of committees, commissions and policies formed for women education.
- analyze the legal provisions for women in India.

#### EDU 466R Peace Education

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(ESA: 100)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcome:**

- Clarify the concept of Peace education
- Assess need for peace education
- Appraise the peace initiatives and movements for peace

- Organize curricular and co-curricular activities for promotion of peace in school

# BANASTHALI VIDYAPITH

## Bachelor of Technology (Computer Science and Engineering/Information Technology)



### Curriculum Structure

- First Semester Examination, December, 2019
- Second Semester Examination, April/May, 2020
- Third Semester Examination, December, 2020
- Fourth Semester Examination, April/May, 2021
- Fifth Semester Examination, December, 2021
- Sixth Semester Examination, April/May, 2022
- Seventh Semester Examination, December, 2022
- Eighth Semester Examination, April/May, 2023

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**



## **B. Tech. Computer Science and Engineering**

### **Programme Educational Objectives**

Banasthali Vidyapith aims at the synthesis of spiritual values and scientific achievements. Its educational programme is based on the concept of *Panchmukhi Shiksha* (Physical, Practical, Aesthetic, Moral and Intellectual) and aims at all round harmonious development of personality. Banasthali Vidyapith aims to encourage research and innovation in Computer Science, Information Technology and allied areas.

The objective of the B.Tech. programmes in Computer Science Engineering is to prepare students to undertake careers involving innovation and problem solving using computational techniques and technologies, or to undertake advanced studies for research careers or to take up Entrepreneurship. In order to give due importance to applied as well as theoretical aspects of computing, the curriculum for the B.Tech. (CSE) programme covers most of the foundational aspects of computing sciences, and also develops in students the engineering skills for problem solving.

B.Tech. (CSE) programme at Banasthali Vidyapith starts with courses in Sciences, and then migrate to specialized courses for the disciplines. B.Tech. (CSE) programme first focuses on building the foundations in a highly structured manner, and then for developing the skills and knowledge of the students in various computing and application domains. A limited number of specializations are also provided and different students may follow different paths and take different set of courses.

The main objectives of the programme are:

- To bring the physical, analytical and computational approaches of Computer Science Engineering in order to bear on the challenges the students take on, abstracting essential structure, recognizing sources of uncertainty, and applying appropriate models, technical tools, and evaluations to develop their solutions.
- To bring to students careers the self-assurance, integrity, and technical strengths that drive innovation, and the communication and

collaboration skills to inspire and guide the groups they work with in bringing their ideas to fruition.

- To develop abilities and talents in students leading to creativity and productivity in fields and professions beyond the regular curriculum.
- To promote life-long self learning abilities in students to remain professionally effective to the society at large.
- To promote among student graduates the ability to gain multidisciplinary knowledge through projects and industrial training, leading to a sustainable competitive edge in R&D and meeting societal needs.
- To inculcate group work and team management skills with cross-cultural etiquettes in students, promoting knowledge transfer leading to conceptualization and delivery of projects with varied complexity.
- To sensitize students towards issues of social relevance, openness to other international cultures and to introduce them to professional ethics and practice.

## Programme Outcomes

A Computer Science Engineering graduate will achieve the following:

- PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, and computer science to the solution of computer science engineering problems.
- PO2. Problem analysis:** Identify, formulate and develop solutions to computational challenges.
- PO3. Design/development of solutions:** Design, implement and evaluate computational systems and system components/processes that meet the desired needs within realistic constraints.
- PO4. Conduct investigations of complex problems:** Use research-based knowledge and methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5. Modern tool usage:** Select and apply appropriate techniques, resources and engineering tools to engineering activities with an understanding of their limitations.
- PO6. The engineer and society:** Understanding of professional, ethical, legal, security and social issues and responsibilities relevant to the professional engineering practice.
- PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge for sustainable development.
- PO8. Ethics:** Commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9. Individual and team work:** Function effectively as an individual as well as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10. Communication:** Communicate effectively on engineering activities with the engineering community and with the society at large, work collaboratively and exhibit high levels of professionalism.
- PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.

**PO12. Life-long learning:** Able to engage in independent and life-long learning to adapt to the rapidly changing engineering scenario.

## **B. Tech. Information Technology Programme Educational Objectives**

Banasthali Vidyapith aims at the synthesis of spiritual values and scientific achievements. Its educational programme is based on the concept of *PanchmukhiShiksha* (Physical, Practical, Aesthetic, Moral and Intellectual) and aims at all round harmonious development of personality. Banasthali Vidyapith aims to encourage research and innovation in Computer Science, Information Technology and allied areas.

The objective of the B.Tech. programmes in Information Technology is to prepare students to undertake careers involving innovation and problem solving using computational techniques and technologies, or to undertake advanced studies for research careers or to take up Entrepreneurship. In order to give due importance to applied as well as theoretical aspects of computing, the curriculum for the B.Tech. (IT) programme covers most of the foundational aspects of information technology, and also develops in students the engineering skills for problem solving.

The B.Tech. (IT) programme at Banasthali Vidyapith starts with courses in Sciences, and then migrate to specialized courses for the disciplines. The B.Tech. (IT) programme first focuses on building the foundations in a highly structured manner, and then for developing the skills and knowledge of the students in various computing and application domains. A limited number of specializations are also provided and different students may follow different paths and take different set of courses.

The main objectives of the programme are:

- To provide student graduates with a solid foundation in mathematical, scientific and engineering fundamentals required to develop problem solving ability.
- To prepare student graduates for a successful career with effective communication skills, teamwork skills and work with values that meet the diversified needs of industry, academia and research.
- To train students in comprehending, analyzing, designing and creating novel products and technologies that provide solution frameworks to real world problems.
- To promote awareness among student graduates towards issues of social relevance and introduce them to professional ethics and practice.
- To inculcate in student graduates the ability to gain multidisciplinary knowledge through projects and industrial training, providing a sustainable competitive edge in R&D and meeting industry needs.
- To develop self-learning ability in graduates by inculcating the philosophy to continuously learn, innovate and contribute to creation of new knowledge for the benefit of the society at large.

- To inculcate in graduates the qualities of leadership for technology innovation and entrepreneurship.

## Programme Outcomes

An Information Technology graduate will achieve the following:

- PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, and computer science to the solution of computer science engineering problems.
- PO2. Problem analysis:** Identify, formulate and develop solutions to computational challenges.
- PO3. Design/development of solutions:** Design, implement and evaluate computational systems and system components/processes that meet the desired needs within realistic constraints.
- PO4. Conduct investigations of complex problems:** Use research-based knowledge and methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5. Modern tool usage:** Select and apply appropriate techniques, resources and engineering tools to engineering activities with an understanding of their limitations.
- PO6. The engineer and society:** Understanding of professional, ethical, legal, security and social issues and responsibilities relevant to the professional engineering practice.
- PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge for sustainable development.
- PO8. Ethics:** Commit to professional ethics and responsibilities and norms of the engineering practice.
- PO9. Individual and team work:** Function effectively as an individual as well as a member or leader in diverse teams, and in multidisciplinary settings.
- PO10. Communication:** Communicate effectively on engineering activities with the engineering community and with the society at large, work collaboratively and exhibit high levels of professionalism.
- PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.

**PO12. Life-long learning:** Able to engage in independent and life-long learning to adapt to the rapidly changing engineering scenario.

### **MATH 103 Calculus**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Define limit, infinite series and sequence of partial sums of an infinite series, Convergence and Divergence of an infinite series.
- Relate the limit of a function at a point to the limit of a sequence at that point and tell when a function will fail to have a limit at a point.
- Define monotonic functions and find a connection between monotonicity of a function and derivative of a function.
- Demonstrate the concept of Divergence, Curl, Green's theorem, Stokes's theorem.

### **MATH 107 Linear Algebra**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Define basic terms and concepts of matrices, vectors and complex numbers
- Use basic vector space concepts such as linear space, linear dependence, basis, dimension, linear transformation;
- Be familiar with the concepts of eigenvalue, eigenspace and eigenvector and know how to compute these objects;
- Use the characteristic polynomial to compute the eigenvalues and eigenvectors of a square matrix and use them to diagonalise matrices when this is possible; discriminate between diagonalizable and non-diagonalisable matrices.
- Use gauss-jordan elimination to solve systems of linear equations and to compute the inverse of an invertible matrix

## **PHY 101 Applied Optics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

### **Learning Outcomes:**

Upon successful completion, students will have the knowledge and skills to:

- Appreciate the efficacy of Fourier transforms and their application to physical systems.
- Understand linear, time-invariant systems.
- Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems
- Understand dispersion in waves and model dispersion using Fourier theory.
- Understand diffraction and imaging in terms of Fourier optics and gain physical and intuitive insight in a range of physics.

## **PHY 106 Modern Physics**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

### **Learning Outcomes:**

Upon successful completion, students will have the knowledge and skills to:

- Development of an understanding of the interrelationships of science, engineering and technology.
- Will have skill for problem solving and engineering skills, which then has broad applications.
- Will have a career paths for Engineering physics are usually (broadly) "engineering, applied science or applied physics through research, teaching or entrepreneurial engineering". This interdisciplinary knowledge is designed for the continuous innovation occurring with technology.
- Will have strong ground to provide a more thorough grounding in applied physics of any area chosen by the student (such as

nanotechnology, mechanical engineering, electrical engineering, control theory, aerodynamics, or solid-state physics).

### **CHEM 101 Chemistry**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcome:**

On completion of course, the students will be able to:

- explain the basics of atomic structure and chemical bonding.
- explain the behavior of the system through phase, degree of freedom and component.
- explain the basics of electrochemistry, different type of corrosion and their prevention.
- differentiate nanoscience, nanotechnology, nanochemistry, conventional and non-conventional energy sources and their applications.

### **BIO 101 Biology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the basic organization and classification of living organisms.
- Describe fundamental cellular functions.
- Learn the basic concept of molecular biology and recombinant DNA technology.

### **CHE 102 Thermodynamics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After successful completion of the course, students will able to:

- Carryout thermodynamic analysis of real systems.
- Carryout thermodynamic analysis multiphase systems with chemical changes.
- Understand thermodynamic functions and their relationships

**PHY 109 Engineering Mechanics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

**Learning Outcomes:**

Upon successful completion, students will have the knowledge and skills to:

- Students will demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.
- Students will show that they have learned concept of Newtonian mechanics and kinematics.
- Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently.

**CS 109 Computer Fundamentals and Programming**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:**

After successful completion of the course, students will be able to:

- Describe the concepts of computer basics and programming.
- Explain the organization and operations of a computer system.
- Design the combinational and sequential circuits.
- Employ the logical thinking for analyzing problems, designing and implementing algorithmic solutions.
- Employ the skills for the use of the C programming language to implement the real world applications.

## **CS 109L Computer Fundamentals and Programming Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Perform internal and external DOS commands.
- Implement problems based on expressions containing constants, variables and operators.
- Implement problems based on conditional statements, switch and loops.
- Implement problems based on array, pointers, functions, files and command line arguments.

## **EEE 101 Electrical Engineering**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes**

After successful completion of the course, students will be able to:

- Understand the importance of electrical engineering
- Solve complex DC circuits
- Solve& predict the behavior of AC circuit
- Understand different machines along with measurement techniques
- Select appropriate element, device or machines with respect to application

## **EEE 101L Electrical Engineering Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Handle measuring instruments and apparatus
- Identify the various electrical and electronic components as per the ratings
- Verify circuit laws and solve electrical networks
- Analyze the characteristics of semiconductor devices
- Design basic AC & DC circuits

### **ENGG 101L Engineering Drawing and Graphics Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 6 3**

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Apply the concepts of engineering drawing in their respective field of interest.
- Implement various BIS and ISO concepts of drawing.
- Draw the sectional views of various engineering objects.
- Use engineering curves in tracing the paths of simple machine components.
- Draw various views related to real objects.
- Draw and read plan of industrial standards.
- Visualize the design ideas using software.

### **ENGG 103L Measurement Techniques Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 6 3**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Demonstrate an understanding of different adulteration and qualitative analysis of biomolecules.
- Develop understanding working with microscope.

- Learn a basic concept of plant identification and vegetational analysis.
- Gain hand on training to check purity of biomolecules.

### **MATH 209 Complex Variables**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Demonstrate understanding of the basic concepts underlying complex variables.
- Explain the essential concepts of complex functions and their role in today's mathematics and applied contexts.
- Demonstrate precise and proficient use of complex functions continuity, differentiability.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.
- Apply problem-solving using complex analysis techniques applied to diverse situations in physics, engineering and other mathematical contexts.

### **MATH 210 Differential Equations**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Identify, analyse and subsequently solve physical situation's whose behaviour can be described by ordinary differential equations.
- Solve systems of linear differential equations.
- Solve and interpret first order differential equations arising in problems related to newtonian mechanics, heat conduction, and fluid mixing.
- Apply partial differential techniques to solve the engineering problems.

## **ENGG 201 Structure and Properties of Materials**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes::**

The students will be able to:

- Relate fundamentals of material properties with its utilization
- Design and develop better products and equipment
- Identify needs and applications of materials economically.

## **ENGG 202 Basic Electronics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

After successful completion of the course, student will be able to:

- Understand the fundamental of semiconductors and design semiconductor circuits.
- Understand the different type of diode/ transistors with their responses.
- Analyze various types of oscillators available with their utilization.

## **MATH 211 Introduction to Discrete Mathematics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Solve counting problems involving the multiplication rule, permutations, and combinations (with and without replacement).

- Demonstrate an understanding of relations and functions and be able to determine their properties.
- Describe concepts of Partial Order Set (POSET), Lattice and able to draw Hasse diagram for a POSET.
- Use Prim's or Kruskal's algorithm to construct a minimum spanning tree for a weighted graph.
- Describe concept of generating functions and be able to derive a generating function for a given sequence and derive a sequence from a given generating function.

## CS 207 Computer Organization and Architecture

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Use the concepts and design of all type of sequential and combinational circuits.
- Have knowledge to design and conduct experiments, as well as to analyze of the hardware of a computer system and its components such as control unit, arithmetic and logical (ALU) unit, input/output, and memory unit.
- Design techniques such as pipelining and microprogramming in the design of the central processing unit of a computer system.

## CS 209 Data Structures

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Develop knowledge of basic data structures for storage and retrieval of ordered or unordered data. Data structures include: arrays, linked lists, stacks, queues, binary trees, heaps.

- Develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.
- Analyze and compare algorithms for efficiency using Big-O notation.
- Describe the concept of dynamic memory management, data types, algorithms, Big O notation.
- Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

### **CS 209L Data Structures Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Implement problems based on basic data structures like stack and queues.
- Implement problems on linked lists.
- Implement problems for performing different operations like insertion, deletion and searching on binary tree and binary search tree.

### **CS 212 Database Management System**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- List and explain the fundamental concepts of a relational database system.
- Analyze database requirements and develop the logical design of the database using data modeling concepts such as entity-relationship diagrams and normalization.

- Create relational databases in Oracle and implement simple and moderately advanced database queries using Structured Query Language (SQL)
- Describe the concept of a database transaction and its desirable properties, concurrency control, locking protocols and deadlock handling.
- Explain the significance of data independence, integrity, security, recovery and performance with reference to a database system.

### **CS 212L Database Management System Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Create and manipulate structure of tables in Oracle.
- Perform basic operations like insertion, update, and deletion on tables of a database.
- Write complex queries for retrieval of data from more than one table.
- Implement problems in PL/SQL.

### **CS 313 Software Engineering**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Have foundation in mathematics, science, statistics and management skills.
- Illustrate development cycle including feasibility study for planning, analysis, design, implementation and testing phases. Implementations are taught to make them realize the importance of this aspect as well.

- Deal with existing software product and the new product developments. They understand the need for team work environment.
- Apply basic software quality assurance practices to ensure that software designs, development, and maintenance meet or exceed applicable standards. Also, students will have good oral and written communications so that their professionalism will show a mark to the society.

### **CS 213 Design and Analysis of Algorithms**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Analyze the performance of various algorithms in terms of time and space.
- Solve recurrence relation using various methods
- Describe the concept and design algorithm using data structures including threaded binary tree, B-Tree and hashing techniques.
- Design numerous algorithm techniques including divide & conquer, greedy, dynamic programming, backtracking and branch & bound.

### **CS 213L Design and Analysis of Algorithms Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Implement problems based on sorting techniques and max heap.
- Perform various operations on threaded binary tree and B-Tree practically.
- Implement graph based problems.
- Implement problems based on deterministic algorithms.

## CS 214 Object Oriented Programming

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

After successful completion of the course students will be able to

- Describe the features of C++ supporting object oriented programming.
- Explain the relative merits of C++ as an object oriented programming language.
- Describe how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.
- Apply advanced features of C++ specifically stream I/O, templates and operator overloading
- Apply other features of the C++ language including templates, forms of casting, conversions, and file handling.

## CS 214L Object Oriented Programming Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes:

After successful completion of the course students will be able to

- Implement problems based on expressions, arrays and strings.
- Carry out problems using functions, class, constructor and destructor.
- Implement problems using pointers, operator overloading, inheritance, file handling and exception handling.

## CS 216 Systems Programming

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

After successful completion of the course students will be able to

- Learn concepts of System Software, IBM 360/370 hardware programming.
- Design, write, and test moderately complicated low-level programs using a systems programming language such as Assembler, Macro processor and loaders.
- Enumerate and explain the function of the common operating system functions and types.
- Learn Working of a compiler and text editor.
- Illustrate MS dos, ROM BIOS and Interrupt system.

### **ECO 307 Fundamentals of Economics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcomes:**

After completion of the course, student will be able to:

- Understand various aspects of economics that affects the day today functioning of business.
- Understand the concept of demand, supply and production and how the same is related to market.
- Understand the basic financial concepts that affects the functioning of the business.

### **MGMT 310 Principles of Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcome:**

Upon completion of the course the student will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership.
- Understand application of theories and management principles.

## MATH 311 Numerical Methods

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

### Learning Outcomes:

After successful completion of the course students will be able to

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Analyze and evaluate the accuracy of common numerical methods.
- Solve the nonlinear equations, system of linear equations and interpolation problems using numerical methods with error analysis.
- Examine the appropriate numerical differentiation and integration methods to solve engineering problems.
- Analyze the appropriate numerical method to find the eigen values and corresponding eigenvectors of a system.
- Apply the numerical methods to solve differential equations.

## STAT 204 Probability and Statistical Methods

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

### Learning Outcomes:

After successful completion of the course students will be able to

- Understand the concepts of random variables, probability distributions and independence of random variables.
- Understand the meaning of probability and probabilistic experiment
- Familiarize with the all approaches to probability theory and particularly, the axiomatic approach.
- Understanding the meaning of conditional probability.
- Distinguish between independent and uncorrelated random variables.

- Distinguish between discrete and continuous random variables and be able to represent them using probability mass, probability density, and cumulative distribution function.
- Identify important types of distributions such as exponential, Binomial, Poisson, Normal, and use them as suitable models in basic science and engineering problems.
- Understand the concept of statistical hypothesis and able to solve such type of real life problems.

### **CS 304 Java Programming**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Explain Object Oriented Programming & Java Programming Constructs.
- Explain basic concepts of Java such as Operators, Classes, Objects, Interface, Inheritance, Packages, Enumeration and various keywords.
- Apply the concepts of Exception Handling, Collections, Input/output operations, Socket Programming, Database Connectivity in their programs.
- Design the applications of Java, Swing, Applet and JSP.
- Analyze & Design the concept of Event Handling and Abstract Window Toolkit (AWT).

### **CS 304L Java Programming Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 6 3**

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Implement problems based on control statements, classes, inheritance and arrays.
- Implement problems based on packages, interfaces, wrapper classes and exception handling.

- Implement problems on threads, applets, graphics, event handling, swings, networking and Servlets.

## **CS 302 Data Communication and Networks**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Independently understand basic computer network technology and the Data Communications System and its components.
- Describe the layers of the OSI model and TCP/IP and the function(s) of each layer.
- Describe the importance of data communications and the Internet in supporting business communications and daily activity.
- Analyze the features and working of IPV4, IPV6 and their transition with Connection less and Connection oriented Transport layer protocols (TCP/UDP).
- Analyze the features and operations of various protocols such as Http, DNS, SMTP and many more application layer protocols.

## **CS 308 Operating Systems**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Learn the fundamentals of Operating Systems.
- Learn the mechanisms of OS to handle processes and threads and their communication.
- Learn the mechanisms involved in memory management in contemporary OS.

- Gain knowledge on Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols.
- Know the components and management aspects of concurrency management with case study of UNIX.

### CS 324L Operating Systems Lab

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **0 0 2 1**

#### Learning Outcomes:

After successful completion of the course students will be able to

- Perform various Linux commands.
- Write shell scripts for the various problems using conditional statements and loops.
- Write shell script for the problems based on positional parameters, expressions and basic commands.

### CS 315 Theory of Computation

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **4 0 0 4**

#### Learning Outcomes:

After successful completion of the course students will be able to

- Model, compare and analyze different computational models using combinatorial methods.
- Apply rigorously formal mathematical methods to prove properties of languages, grammars and automata.
- Identify limitations of some computational models and possible methods of proving them.
- Have an overview of how the theoretical study in this course is applicable to and engineering application like designing the compilers.

### CS 317 Artificial Intelligence and Machine Learning

**Max. Marks : 100** **L T P C**

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(CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:**

After successful completion of the course students will be able to

- Describe the various searching techniques, constraint satisfaction problem and example problems-game playing techniques.
- Apply these techniques in applications which involve perception, reasoning and learning.
- Explain the role of agents and how it is related to environment and the way of evaluating it and how agents can act by establishing goals.
- Acquire the knowledge of real world Knowledge representation.
- Analyze and design a real world problem for implementation and understand the dynamic behavior of a system.
- Use different machine learning techniques to design AI machine and enveloping applications for real world problems.

**CS 317L Artificial Intelligence and Machine Learning Lab**

Max. Marks : 100 L T P C  
 (CA: 40 + ESA: 60) 0 0 4 2

**Learning Outcomes:**

After successful completion of the course students will be able to

- Understand problem solving in Python.
- Able to handle different kinds of data processing algorithms.
- Implement supervised and unsupervised machine learning algorithms in Python.
- Able to optimize machine learning algorithms.

**IT 302 Internet and Web Technology**

Max. Marks : 100 L T P C  
 (CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:**

After successful completion of the course students will be able to

- Describe the working of Internet & World Wide Web.
- Develop a dynamic webpage by the use of java script, HTML & CSS.
- Write a server side java application called Servlet to catch
- Write a server side java application called JSP to catch form data sent from client, process it and store it on database.
- Develop web application using JSP with database connectivity.

### **IT 302L Internet and Web Technology Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Design web pages containing tables, images and links using HTML and CSS.
- Design web pages using DIV, Class and ID selector.
- Design dynamic web pages using Java Script and PHP
- Develop a server side java application called JSP to catch form data sent from client, process it and store it on database.

### **ELE 509 Microprocessors and Microcontrollers**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Recall and apply a basic concept of digital fundamentals to Microprocessor based personal computer system.
- Describe the architecture and Instruction set of Intel 8085 microprocessor.
- Provide practical hands on experience with Assembly Language Programming.

- Illustrate how the different peripherals (8255, 8253 etc.) are interfaced with Microprocessor.
- Distinguish and analyze the properties of Microprocessors & Microcontrollers.

### **ELE 306L Microprocessors and Microcontrollers Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Write programs to run on 8086 microprocessor based systems.
- Design system using memory chips and peripheral chips for 16 bit 8086 microprocessor.
- Understand and devise techniques for faster execution of instructions, improve speed of operations and enhance performance of microprocessors.
- Understand multi core processor and its advantages.

### **CS 405 Compiler Design**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Specify and analyze the lexical, syntactic and semantic structures of advanced language features.
- Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
- Write a scanner, parser, and semantic analyzer without the aid of automatic generators
- Describe techniques for intermediate code and machine code optimization
- Design the structures and support required for compiling advanced language features.

### CS 439L Compiler Design Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### Learning Outcomes:

After successful completion of the course students will be able to

- Develop understanding for implementing programs for lex code.
- Implement program for Yacc tool to develop a scanner and parser.
- Apply the knowledge of patterns, tokens & regular expressions in programming for solving problems.

### CS 411 Computer Graphics

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

After successful completion of the course students will be able to

- Apply knowledge of mathematics, science, and engineering to implement basic transformation and scan conversion.
- Apply the knowledge of co-ordinate system that is necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- Apply aesthetic judgments and critical thinking skills to art and graphics related issues.
- Recognize and evaluate critical and aesthetic issues within computer graphics and the mixed media.

### CS 411L Computer Graphics Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### Learning Outcomes:

After successful completion of the course students will be able to

- Implement various line drawing and circle drawing algorithms.

- Implement algorithms for polygon drawing.
- Implement boundary fill algorithm and flood-fill Algorithm to fill convex regions.
- Implement problems based on object translations, scaling, rotations and projections.
- Implement algorithms based on line clipping, anti-aliasing and curve fitting.

## **CS 508 Big Data Analytics**

### **CS 508L Big Data Analytics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Understand big data analytics and identify the main sources of large scale big data in the real world.
- Learn various frameworks like Hadoop. NOSQL to efficiently store retrieve and process Big Data for Analytics.
- Implement several Data Intensive tasks using the Map Reduce Paradigm in Hadoop.
- Program applications using tools like Hive, pig, NO SQL for Big data Applications.
- Construct scalable algorithms for large Datasets using Map Reduce techniques.
- Apply the knowledge of Big Data gained to fully develop DBA applications for real life applications.

## **IT 410 Information Systems and Security**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Appreciate the value of information to the modern organization.

- Describe the key encryption techniques of cryptography.
- Appreciate the difficulties that arise when valuable information needs to be shared.
- Learn Confidentiality, Integrity and Availability.
- Apply protocols to implement secure message exchanges.

## **IT 401 Data Mining and Warehousing**

### **IT 401L Data Mining and Warehousing Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Describe the basic concepts of data mining and data warehousing.
- Apply skills for different data mining techniques in the analysis of data.
- Describe the schema and organization of data in data warehouse.
- Apply data mining techniques in wide variety of data like spatial, time series, text, multimedia and World Wide Web.
- Get experience and encouragement of exploring data mining techniques in real world and doing research.

## **CS 441 Computer Vision**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Identify basic concepts, terminology, theories, models and methods in the field of computer vision.
- Describe basic methods of computer vision related to multi-scale representation, edge detection and detection of other primitives, stereo, motion and object recognition.

- Assess which methods to use for solving a given problem, and analyze the accuracy of the methods.

## **CS 419 Distributed Computing**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Study software components of distributed computing systems. Know about the communication and interconnection architecture of multiple computer systems.
- Give the hardware and software concepts of distributed operating systems, various design issues like transparency, flexibility etc., and communication and synchronization in distributed operating systems.
- Apply scheduling in distributed operating systems, fault tolerance, real-time distributed systems, and designing of distributed file systems.
- Develop various synchronous and asynchronous algorithms: Leader election, shortest path problem, minimal spanning tree, randomized co-ordinate attack problem, consensus problems and construction of the breath first tree, spanning tree, and maximal independent set.
- Have in-depth knowledge of asynchronous shared memory model including various classical algorithms of mutual exclusion and resource allocation.

## **CS 602 Digital Image Processing**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Describe the basics of Digital Image Processing & thorough understanding of linear systems, matrix theory, image sampling and quantization.
- Illustrate image enhancement techniques in spatial and frequency domain.
- Employ concepts related to image restoration and analysis.
- Use techniques related to feature extraction, edge detection and segmentation.
- Describe basic concepts of pattern recognition, statistical decision making and clustering.

### **CS 431 Real Time Systems**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:**

After successful completion of the course students will be able to

- Present the mathematical model of the system.
- Develop real-time algorithm for task scheduling.
- Illustrate the working of real-time operating systems and real-time database.
- Work on design and development of protocols related to real-time communication.

### **CS 433 Soft Computing**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:**

After successful completion of the course students will be able to

- Apply the theory and concepts of neural networks, neuro-modeling, several neural network architectures and their applications.
- Describe the concepts of fuzzy sets, knowledge representation using fuzzy rules, approximate reasoning, fuzzy inference systems, and

fuzzy logic control and other machine intelligence applications of fuzzy logic.

- Describe evolutionary computation like genetic algorithms and its power to optimize the problem in hand.

### **IT 412 Internet of Things**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Understand the concept of IoT.
- Understand what constitutes an IoT design solution.
- Identify the sensors and basic electronic design needed for different IoT solutions.
- Analyze basic protocols of IoT.
- Implement basic IoT applications on Arduino and Raspberry Pi to provide IoT solutions for various domains.

### **CS 445 Pattern Recognition**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Explain and define concepts of pattern recognition.
- Explain and distinguish procedures, methods and algorithms related to pattern recognition.
- Apply methods from the pattern recognition for new complex applications.
- Analyze and breakdown problem related to the complex pattern recognition system.
- Design and develop a pattern recognition system for the specific application.

- Evaluate quality of solution of the pattern recognition system.

## **RS 401 Geoinformatics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Describe spatial database, Co-ordinate and projection system
- Analyze vector and raster based analysis in Geographical Information Sciences
- Describe different types of satellite system and digital image processing
- Describe global cover based global position systems i.e. GPS, GLONASS
- Describe applications of remote sensing and GIS in natural resources management

## **CS 528 Modeling and Simulation**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Describe the components of system and its principles.
- Illustrate conceptualization of model in system analysis, design and postulation.
- Describe the role of creating a model for any system in simulating it.
- Describe the applications of various simulation techniques in various real life scenarios.
- Learn the different statistical techniques used in simulation process and describe the characteristics of different simulation languages and their use.

## **MCTR 403 Robotics and Automation**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Develop skills of creating industrial and mobile robot projects
- Implement robots like KUKA, PUMA in real industrial world
- Create innovative robot designs using mathematical concepts of kinematics
- Develop autonomous mobile robots in surveillance, security, home and office services.

## **IT 413 Multimedia Systems**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Develop technical aspect of Multimedia Systems.
- Describe various file formats for audio, video and text media.
- Design interactive multimedia software.
- Apply various networking protocols for multimedia applications.
- Evaluate multimedia application for its optimum performance.

## **CS 404R Client Server Computing and Applications**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Understand real life application using client-server architecture.
- Learn concepts of network and its usage in client-server model.
- Design distributed database for various application.

### **CS 444R Parallel Computing**

**Max. Marks : 100**

L	T	P	C
0	0	0	2

**Learning Outcomes:**

After successful completion of the course students will be able to

- Understand the concepts of parallel computing.
- Learn the basics of pipeline and vector processing.
- Designing various matrix and graph algorithms for parallel processing.
- Understand the concepts of program and data flow computers.

### **IT 402R Electronic Commerce**

**Max. Marks : 100**

L	T	P	C
0	0	0	2

**Learning Outcomes:**

After successful completion of the course students will be able to

- Recognize the business impact and potential of e-Commerce.
- Discuss the current drivers and inhibitors facing the business world in adopting and using e-Commerce.
- Explain the economic consequences of e-Commerce.
- Create and refine ecommerce website and application designs based on industry's usability standards.
- Assess the suitability of various design principles for ecommerce websites and discuss emerging e-commerce topics.

### **IT 403R Enterprise Resource Planning**

**Max. Marks : 100**

L	T	P	C
0	0	0	2

**Learning Outcomes:**

After successful completion of the course students will be able to

- Make students able to learn fundamental concepts of ERP system and ERP related technologies.

- Provide students knowledge of different ERP modules and manufacturing perspectives of ERP.
- Use ERP system in different business organizations by having knowledge of latest scenario of ERP market in e-business.

### **IT 404R IT in Bussiness**

**Max. Marks : 100**

L	T	P	C
0	0	0	2

**Learning Outcomes:**

After successful completion of the course students will be able to

- Understand the role of Information Technology in Management.
- Develop strategies for corporate and management secotrs.
- Understand the role of Information Technology in modern industry.

# **BANASTHALI VIDYAPITH**

**Bachelor of Technology  
(Electronics and Instrumentation Engineering/  
Electrical and Electronics Engineering/  
Mechatronics Engineering/  
Electronics and Communication Engineering)**



## **Curriculum Structure**

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022  
Seventh Semester Examination, December, 2022  
Eighth Semester Examination, April/May, 2023

**BANASTHALI VIDYAPITH  
P.O. BANASTHALI VIDYAPITH  
(Rajasthan)-304022**

July, 2019

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## **Department of Automation**

### **Electronics and Instrumentation Engineering**

The Bachelor of Technology (B.Tech.) program in Electronics and Instrumentation Engineering (EIE) has a strong blend of Measurement, Control and Automation. The program deals with control and monitoring of sophisticated real world problems. This branch has scope of Electronic Measurement, Process Control, Robotics, Automation, Control System Design and Optimization. The program was started in 2011 and progressing on high growth path with best practices focusing on student centric approach. The department is a blend of dynamic and well experienced faculties. The main aim of this programme is to transform the student into professionally competent and socially sensitive engineers capable of working in multicultural global environment through quality education in the field of Electronics and Instrumentation Engineering.

The aim of this programme is to enhance learning and research spirit in the students by making them acquaintance with modern technologies in Electronics and Instrumentation to operate the growing needs of the industries. The motive is to inculcate continuous practical knowledge through skill based learning approach using team works and leadership qualities. The course will bestow students, the capability to provide cost effectiveness solutions for social needs with deliberation surrounding.

#### **Program Educational Objectives**

- To acquaint technical skills in the students for designing engineering systems by using instrumentation and related field of electronics.
- To create professional abilities that nurtures them for new employment opportunities in advanced areas of Electronics and Instrumentation as well as Electronics Engineering.
- To adorn with skills for solving technical problems related to Robotics, Embedded system, Biomedical, Fiber Optics, Digital Control system, Virtual Instrumentation, Analytic Instrumentation, Process control.

- To develop overall personality having attributes of ethical and moral values using women empowerment, humanities, and sociological courses.

## Program Outcomes

A graduate in Electronics and Instrumentation Engineering will be able to: -

- PO 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- PO 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO 5. Modern tool usage:** Demonstrate their technical ability to design and analyze Electronics and Instrumentation circuits, computer based programs through Programmable Logic Controller (PLC), MATLAB, Lab-VIEW, AUTOCAD and Arduino and IOT.
- PO 6. The Engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO 7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

- PO 8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO 9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- PO 10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO 11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
- PO 13. Self learning and entrepreneurship:** Graduate will be able to participate and succeed in campus placements and competitive examinations like Public sector, GATE, GRE etc. An understanding of the industry needs through direct exposure with the industries under the Entrepreneurship Development Cell.
- PO 14. Higher education and research:** An ability to take interest in higher education, research avenues through various trainings and research laboratory exposure.

## **Electrical and Electronics Engineering**

Electrical and Electronics Engineering is a professional engineering discipline that deals with the development of technologies for generating and harnessing electricity for a wide range of applications. The field first became an identifiable occupation in the late nineteenth century, with the commercialization of the electric telegraph and power supply. The field now covers a range of sub disciplines, including those that deal with power, control systems, electronics, signal processing and telecommunications.

Electrical engineering surrounds us everywhere in modern society. The electrical engineer supplies us with the ability to harness electricity which has transformed our lives. It gives us light, heat, entertainment, communication systems and comfort. Electrical engineers create and design products and information systems using scientific principles combined with natural curiosity, problem-solving and innovation.

Electrical engineers work with electricity in a variety of areas - aircraft and automobiles; broadcasting and communications systems; lighting and wiring in buildings; machinery controls; power generating and transmitting; radar and navigation systems. They can be involved with the design of new products as well as testing equipment and solving problem

Electrical engineering program offer high quality education to students for abreast of latest global industrial and research requirements and fulfill responsibility towards community. The motive of the course is to transform students into professionally competent and socially sensitive engineers capable of working in multicultural global environment through quality education in the field of Electrical and Electronics Engineering.

### **Program Educational Objective**

- To prepare undergraduate students with appropriate blend of theoretical foundations, experimentation & technical implementation to comprehend and pinpoint problems in the field of electrical engineering.
- To offer students with a solid foundation in mathematical, scientific and engineering fundamentals required to solve electrical engineering

problems and also to pursue higher studies. Student will be able to employ her knowledge along with essential techniques & tools for modern engineering applications.

- To train students with good scientific and electrical engineering breadth so as to comprehend, analyze, design, and create novel products and solutions for the real life problems in the present electrical system.
- To inculcate professional and ethical attitude and skills like communication, teamwork, computational ability to relate electrical engineering issues to broader social context in students.
- To educate students with an academic environment aware of excellence, leadership, and the life-long learning needed for a successful professional career through independent studies, thesis, internships, *etc.*

### **Program Outcomes**

A graduate in Electronics and Instrumentation Engineering will be able to: -

- PO 1. Engineering knowledge:** Graduates will demonstrate knowledge of advanced mathematics, science and electrical engineering with the ability to apply the theoretical knowledge and concepts to the disciplines of electrical engineering.
- PO 2. Problem analysis:** Graduates will demonstrate an ability to identify, formulate, pinpoint and solve Electrical engineering problems keeping in view the present day power and energy requirement and its future prospect.
- PO 3. Design/development of solutions:** Graduate will demonstrate an ability to design and analyze electrical and power electronic circuits and conduct experiments enable to design, construct and operate complex interconnected power systems.
- PO 4. Conduct investigations of complex problems:** Graduates will demonstrate an ability to design study and analyze the digital and analog systems and components that serve as the fundamental components of the power engineering methods being increasingly used with the new technological advances.

- PO 5. Environment and sustainability:** Graduates will demonstrate an ability to visualize and work on laboratory and identify the theoretical models as predictors of real world behavior. This may include evaluating, establishing of validating a relationship between data and underlying physical principles.
- PO 6. Modern tool usage:** Graduate will demonstrate skills to use modern engineering tools, software, equipment to design, protect or assemble the system using specific methodologies with the help of appropriate tools to satisfy requirements. Graduates will demonstrate knowledge of professional and computer language skills that will eventually develop them into skilled researchers in an atmosphere that is technically advanced and conducive.
- PO 7. Communication:** Graduate will be able to communicate effectively in both verbal and written form. They will develop a better presentation skill on academic and personal grounds that will enhance their personality in all aspects.
- PO 8. The engineer and society:** Graduate will understand the impact of engineering solutions on the society and also be aware of contemporary issues relating to the exhausting resources and alternatives to continue uninterrupted power supply.
- PO 9. Individual and team work:** Graduate will develop confidence, self-motivation, positive belief, consistency, perseverance and team work.
- PO 10. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO 11. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
- PO 12. Self learning and entrepreneurship:** Graduate will be able to participate and succeed in campus placements and competitive examinations like Public sector, GATE, GRE etc. An understanding of the industry needs through direct exposure with the industries under the Entrepreneurship Development Cell.

**PO 13. Higher education and research:** An ability to take interest in higher education, research avenues through various trainings and research laboratory exposure.

## **Mechatronics Engineering**

Automation is playing an important role in the field of engineering day by day by improving efficiency and providing faster outputs. Automation comprises essence of Electronics, Electrical, Instrumentation, Information Technology and Mechanical Engineering which contribute together to automate any system. That is why Mechatronics Engineering was inherently introduced. The concept behind the Mechatronics Engineering was to produce a design solution that unifies each of these various subfields. This branch invests in the creation and implementation of smart devices, machines, processes and systems. The often-expressed desire to be at the forefront of a high-tech, knowledge-based economy opens plenty of career options that require diverse, multi-skilled graduates.

Hence it opens up opportunities for Mechatronics Engineering graduates to work in companies of all sizes and fields – from start-ups to multinational corporations, in areas from research to high-value manufacturing.

The Mechatronics Engineering impart high quality engineering education that combines academics with extensive practical experience and prepares our engineers for leadership in industry, business, academia and government.

### **Programme Educational Objectives**

- To offer industry oriented courses like pneumatics, Hydraulics, Computer Integrated Manufacturing, Programmable Logic Controller etc.
- To acquaint technical skills in the students for designing engineering systems by using concepts of electrical, electronics, Mechanical and Information Technology.
- To create professional abilities that nurtures them for new employment opportunities in advanced areas of Mechatronics Engineering.
- To develop overall personality having attributes of ethical and moral values using women empowerment, humanities, and sociological courses.

- To impart training to enable the students to solve the real time problems related to the field of Mechatronics Engineering and allied areas demanded by the industry and society.

## Programme Outcomes

A graduate in Electronics and Instrumentation Engineering will be able to: -

- PO 1. Engineering Knowledge:** Understand and apply the recent technological developments in Engineering to develop products to cater to the Societal & industrial needs.
- PO 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- PO 3. Design/development of solutions:** Design & develop solutions for complex problems in the entire spectrum of automation technology.
- PO 4. Design/development of solutions:** Think critically, follow innovations and developments in science and technology, demonstrate personal and organizational entrepreneurship and engage in life-long learning in various subjects.
- PO 5. Individual and Team:** Take individual and team responsibility, function effectively and respectively as an individual and a member or a leader of a team; and have the skills to work effectively in multi-disciplinary teams.
- PO 6. Modern tool usage:** Demonstrate their technical ability to design and analyze Electronics and Instrumentation circuits, computer based programs through Programmable Logic Controller (PLC), MATLAB, Lab-VIEW, AUTOCAD and Arduino and IOT.
- PO 7. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

- PO 8. Life Long Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.
- PO 9. The Engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- PO 10. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- PO 11. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- PO 12. Self learning and entrepreneurship:** Graduate will be able to participate and succeed in campus placements and competitive examinations like Public sector, GATE, GRE etc. An understanding of the industry needs through direct exposure with the industries under the Entrepreneurship Development Cell.
- PO 13. Higher education and research:** An ability to take interest in higher education, research avenues through various trainings and research laboratory exposure.

## **Electronics and Communication Engineering**

### **Programme Educational Objectives**

The B.Tech. (ECE) programme aims for the holistic development of students through the unique and innovative fivefold educational ideology of Banasthali Vidyapith. Electronics now become the integral part of our lives. As the world continues to rely on Electronics technology, there is a great requirement for those engineers who are able to design, create, and maintain the many products and systems that support electronics technology. Electronics engineers develop innovative technology solutions in a wide range of areas from handheld communications to solar panels; from cardiac pacemakers to autonomous robots; from wireless networks to bio-engineered sensors that detect dangerous pathogens; and intelligent surveillance systems that perform face and motion recognition.

The program aims to deepen the knowledge and skills of the students on the basic concepts and theories that will equip them in their professional work involving analysis, systems implementation, operation, production, and maintenance of the various applications in the field of Electronics and Communications. The curriculum is designed in a way that it will equip students with a solid grasp of mathematical, scientific, and engineering concepts, through classroom education and laboratory exercises. Graduates of the program are expected to develop and use professional skills that facilitate their continued carrier growth well beyond their graduation.

The main objectives of the program are:

- To provide students solid foundation in mathematical and engineering fundamentals required to solve engineering problems and also to pursue advanced studies. This serves them lifelong in their professional domain as well as higher education.
- To develop an ability to integrate fundamental knowledge of basic science, mathematics and engineering to work on complex problems in the field of Electronics and Communication.
- To prepare engineers to work in inter-disciplinary environment, either independently or in a team, and demonstrate leadership qualities.
- Practice the ethics of their profession, consistent with a sense of social responsibility and develop their engineering design, problem-solving

skills and aptitude for innovations as they work individually and in multi-disciplinary teams.

- Inculcate a lifelong learning culture.
- To formulate problems and projects and to plan a process for solution.
- Communicate effectively and manage resources skilfully as members and leaders of the profession.
- To prepare competent engineers at various national and international levels.

### **Programme Outcomes**

- PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and Electronics engineering to the solution of complex engineering problems.
- PO2. Problem analysis:** Review, Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using principles of mathematics, natural sciences, and engineering sciences.
- PO3. Design/development of solutions:** Develop solutions for complex engineering problems and design system components/processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- PO4. Conduct investigations of complex problems:** Use scientific and engineering knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- PO5. Modern tool usage:** Apply appropriate techniques, resources, and modern engineering tools including MATLAB, LabView, Proteus, VHDL, Arduino and related hardware to complex engineering activities with an understanding of the limitations.
- PO6. The engineer and society:** Apply reasoning gained by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

- PO7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge for sustainable development.
- PO8. Ethics:** Apply ethical principles and commit to professional ethics responsibilities and norms of the engineering practice.
- PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary surroundings.
- PO10. Communication Skill:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- PO11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply as a member and leader in a team, to manage projects and in multidisciplinary environments.
- PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

## MATH 103 Calculus

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Define limit, infinite series and sequence of partial sums of an infinite series, Convergence and Divergence of an infinite series.
- Relate the limit of a function at a point to the limit of a sequence at that point and tell when a function will fail to have a limit at a point.
- Define monotonic functions and find a connection between monotonicity of a function and derivative of a function.
- Demonstrate the concept of Divergence, Curl, Green's theorem, Stokes's theorem.

## MATH 107 Linear Algebra

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Define basic terms and concepts of matrices, vectors and complex numbers
- Use basic vector space concepts such as linear space, linear dependence, basis, dimension, linear transformation;
- Be familiar with the concepts of eigenvalue, eigenspace and eigenvector and know how to compute these objects;
- Use the characteristic polynomial to compute the eigenvalues and eigenvectors of a square matrix and use them to diagonalise matrices when this is possible; discriminate between diagonalizable and non-diagonalisable matrices.
- Use gauss-jordan elimination to solve systems of linear equations and to compute the inverse of an invertible matrix

### **PHY 101 Applied Optics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcome:**

After completion of the course students will be able to:

- Appreciate the efficacy of Fourier transforms and their application to physical systems.
- Understand linear, time-invariant systems.
- Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems
- Understand dispersion in waves and model dispersion using Fourier theory.
- Understand diffraction and imaging in terms of Fourier optics and gain physical and intuitive insight in a range of ph

### **PHY 106 Modern Physics**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcome:**

After completion of the course students will be able to:

- Development of an understanding of the interrelationships of science, engineering and technology.
- Will have skill for problem solving and engineering skills, which then has broad applications.
- Will have a career paths for Engineering physics are usually (broadly) "engineering, applied science or applied physics through research, teaching or entrepreneurial engineering". This interdisciplinary knowledge is designed for the continuous innovation occurring with technology.

- Will have strong ground to provide a more thorough grounding in applied physics of any area chosen by the student (such as nanotechnology, mechanical engineering, electrical engineering, control theory, aerodynamics, or solid-state physics).

### **CHEM 101 Chemistry**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcome:**

On completion of course, the students will be able to:

- explain the basics of atomic structure and chemical bonding.
- explain the behavior of the system through phase, degree of freedom and component.
- explain the basics of electrochemistry, different type of corrosion and their prevention.
- differentiate nanoscience, nanotechnology, nanochemistry, conventional and non-conventional energy sources and their applications.

### **BIO 101 Biology**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the basic organization and classification of living organisms.
- Describe fundamental cellular functions.
- Learn the basic concept of molecular biology and recombinant DNA technology.

### **CHE 102 Thermodynamics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning outcomes:**

The students will be able to:

- Carryout thermodynamic analysis of real systems.
- Carryout thermodynamic analysis multiphase systems with chemical changes.
- Understand thermodynamic functions and their relationships

**PHY 109 Engineering Mechanics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcome:**

After completion of the course students will be able to:

- Students will demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.
- Students will show that they have learned laboratory skills, enabling them to take measurements in a physics laboratory and analyze the measurements to draw valid conclusions.
- Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently

**CS 109 Computer Fundamentals and Programming**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After successful completion of the course, students will be able to:

- Describe the concepts of computer basics and programming.
- Explain the organization and operations of a computer system.

- Design the combinational and sequential circuits.
- Employ the logical thinking for analyzing problems, designing and implementing algorithmic solutions.
- Employ the skills for the use of the C programming language to implement the real world applications.

### **CS 109L Computer Fundamentals and Programming Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Perform internal and external DOS commands.
- Implement problems based on expressions containing constants, variables and operators.
- Implement problems based on conditional statements, switch and loops.
- Implement problems based on array, pointers, functions, files and command line arguments.

### **EEE 101 Electrical Engineering**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes**

The Students will be able to:

- Understand the importance of electrical engineering
- Solve complex DC circuits
- Solve& predict the behavior of AC circuit
- Understand different machines along with measurement techniques

- Select appropriate element, device or machines with respect to application

### **EEE 101L Electrical Engineering Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes**

The Students will be able to:

- Handle measuring instruments and apparatus
- Identify the various electrical and electronic components as per the ratings
- Verify circuit laws and solve electrical networks
- Analyze the characteristics of semiconductor devices
- Design basic AC & DC circuits

### **ENGG 101L Engineering Drawing and Graphics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

#### **Learning Outcomes**

The Students will be able to:

- Apply the concepts of engineering drawing in their respective field of interest.
- Implement various BIS and ISO concepts of drawing.
- Draw the sectional views of various engineering objects.
- Use engineering curves in tracing the paths of simple machine components.
- Draw various views related to real objects.
- Draw and read plan of industrial standards.
- Visualize the design ideas using software.

### **ENGG 103L Measurement Techniques Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Demonstrate an understanding of different adulteration and qualitative analysis of biomolecules.
- Develop understanding working with microscope.
- Learn a basic concept of plant identification and vegetational analysis.
- Gain hand on training to check purity of biomolecules.

### **MATH 209 Complex Variables**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Demonstrate understanding of the basic concepts underlying complex variables.
- Explain the essential concepts of complex functions and their role in today's mathematics and applied contexts.
- Demonstrate precise and proficient use of complex functions continuity, differentiability.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.
- Apply problem-solving using complex analysis techniques applied to diverse situations in physics, engineering and other mathematical contexts.

## **MATH 210 Differential Equations**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Identify, analyse and subsequently solve physical situation's whose behaviour can be described by ordinary differential equations.
- Solve systems of linear differential equations.
- Solve and interpret first order differential equations arising in problems related to newtonian mechanics, heat conduction, and fluid mixing.
- Apply partial differential techniques to solve the engineering problems.

## **ENGG 201 Structure and Properties of Materials**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes:**

The students will be able to:

- Relate fundamentals of material properties with its utilization
- Design and develop better products and equipment
- Identify needs and applications of materials economically.

## **ENGG 202 Basic Electronics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Understand the fundamental of semiconductors and design semiconductor circuits.

- Understand the different type of diode/ transistors with their responses.
- Analyze various types of oscillators available with their utilization.

### **CS 209 Data Structures**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Develop knowledge of basic data structures for storage and retrieval of ordered or unordered data. Data structures include: arrays, linked lists, stacks, queues, binary trees, heaps.
- Develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.
- Analyze and compare algorithms for efficiency using Big-O notation.
- Describe the concept of dynamic memory management, data types, algorithms, Big O notation.
- Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

### **CS 209L Data Structures Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

#### **Learning Outcomes:**

After successful completion of the course students will be able to :

- Implement problems based on basic data structures like stack and queues.
- Implement problems on linked lists.
- Implement problems for performing different operations like insertion, deletion and searching on binary tree and binary search tree.

## **CS 214 Object Oriented Programming**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to :

- Describe the features of C++ supporting object oriented programming.
- Explain the relative merits of C++ as an object oriented Programming language.
- Describe how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.
- Apply advanced features of C++ specifically stream I/O, templates and operator overloading
- Apply other features of the C++ language including templates, forms of casting, conversions, and file handling.

## **CS 214L Object Oriented Programming Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Implement problems based on expressions, arrays and strings.
- Carry out problems using functions, class, constructor and destructor.
- Implement problems using pointers, operator overloading, inheritance, file handling and exception handling.

## **EEE 203 Network Analysis & Synthesis**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

**Learning Outcomes**

The Students will be able to:

- Analyze circuits using circuit laws.
- Develop the understanding of the circuit theorems in network reduction.
- Understand the behavior of various circuit elements in transient conditions and evaluate the responses
- Analyze the different types of network functions by identifying poles and zeros
- Characterization of a two port network

**EEE 203L Network Analysis and Synthesis Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 2 1**

**Learning Outcomes**

The Students will be able to:

- Identify, formulate and solve electrical network
- Analyse behavior of circuit elements
- Calculation of impedance and admittance parameters of a given network

**ELE 206 Digital Electronics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

**Learning Outcomes**

The Students will be able to:

- Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.
- To understand, analyze and design various combinational and sequential circuits, Counters and registers.

- To design state machine diagrams and applications of Logic families
- Utilize the knowledge of memory devices and ADC/DAC in digital design applications.

### **ELE 201L Digital Electronics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- The students will become competent enough to identify different digital integrated circuits utilized in complex electronic circuits.
- Students will have the ability to put together the knowledge of combinational logic circuits in designing of real time applications.
- The students will become proficient in designing of basic memory elements and their applications.
- Students will have the ability to implement various real life applications using asynchronous sequential logic circuits.

### **EIE 204 Electrical and Electronics Measurements**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Student will analyze the performance of industrial measurement systems.
- Student will identify different type of transducers used in various real-time processes.
- Measurement of various electrical quantities can be carried out by students.

- Student will be able to design the bridge circuits used in measurement task.
- Systems will have ability to operate different waveform analyzers and Cathode ray oscilloscope employed for measurement of electrical qualities.

### **EIE 202L Electrical and Electronics Measurements Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 2 1**

#### **Learning Outcomes**

The Students will be able to:

- Recognize various materials by employ different sensors.
- Understand the working of different types of sensors and its applications.
- Student will be able to control and monitor industrial processes.
- Analyze various response of the system with the help of Digital Storage Oscilloscope.

### **EIE 204L Electrical and Electronics Measurements Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 2 1**

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Develop an understanding of construction and working of different measuring instruments.
- Develop an ability to use measuring instruments and AC and DC bridges for relevant measurement.
- Select appropriate passive or active transducers for measurement of physical phenomenon.

## **MCTR 201 Pneumatic Engineering**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### **Learning Outcomes**

The Students will be able to:

- The students will be able to explain the detailed functioning of Pneumatics Engineering.
- Students will be able to explain the properties of control elements based upon physical principles, and the roles they play within the system.
- By understanding and performing measurements on the pneumatic and control circuits, students will learn and apply troubleshooting strategies.
- To impart the knowledge of electro-pneumatics-systems.
- To impart the knowledge of Concepts, Design and Applications of Pneumatics Engineering.

## **MCTR 201L Pneumatic Engineering Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

### **Learning Outcomes**

The Students will be able to:

- Explore fundamentals of pneumatics and identify the different types of pneumatic system and circuit.
- Student will be able to assemble pumps and motors to rectify problems.
- Introduce efficient design of pneumatic system.
- Use software to simulate the pneumatic circuits.
- Build, Test and Troubleshoot pneumatic system.

## **ELE 202 Electromagnetic Field Theory**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After successful completion of the course, student will be able to:

- Apply vector calculus to static electric-magnetic fields in different engineering situations.
- Analyze Maxwell's equation in different forms (differential and integral) and apply them to diverse engineering problems.
- Examine the phenomena of wave propagation in different media and its interfaces and in applications of microwave engineering.

**EEE 306 Electrical Machines-I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes**

The Students will be able to:

- Understand the principle of electro-mechanical energy conversion
- Analyse the construction, classification and circuit model of DC machines
- Analyse the characteristics of DC machines and obtain their performance parameters
- Conduct various tests on the single phase transformer
- Apply various connection of three phase transformers for multiple applications

**EEE 202L Electrical Machines-I Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes**

The Students will be able to:

- Formulate and analyse working of DC machine and transformer
- Troubleshoot the operation of an electrical machine
- Select suitable measuring instrument for measurement of electrical parameters
- Exposition of advanced methods of controlling electrical machines

### **ECE 201 Signals, Systems and Networks**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Analyze linear time invariant system in time and frequency domain
- Apply network theorem to analyze the electrical circuit.
- Explain two port parameters.

### **ECE 202S Seminar**

**Max. Marks : 100**

**L T P C**

**0 0 2 1**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- To identify promising new directions of various cutting edge technologies.
- Undertake a critical review of the literature.
- Deliver well-organized technical presentations and prepare a technical report.

### **ELE 205 Semiconductor Devices and Circuits**

**Max. Marks : 100**

**L T P C**

(CA: 40 + ESA: 60) 4 0 0 4

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Explain the energy bands, temperature effects, carrier transport of semiconductor devices
- Explain the switching times, capacitance of PN junction, bipolar and unipolar transistor behavior and their differences
- Analyze the various feedback circuits and design power amplifiers.

### **ELE 205L Semiconductor Devices and Circuits Lab**

**Max. Marks : 100** L T P C  
 (CA: 40 + ESA: 60) 0 0 2 1

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Develop understanding of current voltage characteristics of various semiconductor devices.
- Design and analyze the various electronic circuits such as amplifiers and oscillators.
- Draw output waveforms of various clipper and clamper circuits.

### **ECO 307 Fundamentals of Economics**

**Max. Marks : 100** L T P C  
 (CA: 40 + ESA: 60) 3 0 0 3

**Learning Outcome:**

Upon Completion of the course student will be able to:

- Understand various aspects of economics that affects the day today functioning of business.
- Understand the concept of demand, supply and production and how the same is related to market.

- Understand the basic financial concepts that affects the functioning of the business.

### **MGMT 310 Principles of Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcome:**

Upon completion of the course the student will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership.
- Understand application of theories and management principles.

### **MATH 311 Numerical Methods**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Analyze and evaluate the accuracy of common numerical methods.
- Solve the nonlinear equations, system of linear equations and interpolation problems using numerical methods with error analysis.
- Examine the appropriate numerical differentiation and integration methods to solve engineering problems.
- Analyze the appropriate numerical method to find the eigen values and corresponding eigenvectors of a system.
- Apply the numerical methods to solve differential equations.

### **STAT 204 Probability and Statistical Methods**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
3	1	0	4

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Understand the concepts of random variables, probability distributions and independence of random variables.
- Understand the meaning of probability and probabilistic experiment
- Familiarize with the all approaches to probability theory and particularly, the axiomatic approach.
- Understanding the meaning of conditional probability.
- Distinguish between independent and uncorrelated random variables.
- Distinguish between discrete and continuous random variables and be able to represent them using probability mass, probability density, and cumulative distribution function.
- Identify important types of distributions such as exponential, Binomial, Poisson, Normal, and use them as suitable models in basic science and engineering problems.
- Understand the concept of statistical hypothesis and able to solve such type of real life problems.

### **ELE 311 Analog Integrated Circuit**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
3	1	0	4

### **Learning Outcomes**

The Students will be able to:

- Student will be able to understand the design and working of transistor amplifiers.
- Observe the effect of negative feedback on different parameters of an amplifier and different types of topologies.
- Will have the potential to build and troubleshoot analog circuits.

- Understand the fundamentals and areas of applications of integrated circuits.
- Demonstrate the ability to design practical circuits that perform the desired operations.

### **ELE 301L Analog Integrated Circuit Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Develop the skill to build, and troubleshoot Analog circuits.
- Student will be able to choose the appropriate integrated circuit modules to build a given application.
- Evaluate possible causes of discrepancy in practical experimental observations in comparison to theory.
- Examine the appropriate integrated circuit modules to build a given application

### **ELE 509 Microprocessors and Microcontrollers**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Analyze the architecture, programming and interfaces for higher versions of Microprocessor like 80286, 80386, Pentium.
- Evaluate the detailed working of microprocessor based computers and development boards.
- Implement the interfacing of peripheral devices with Microprocessor base in real time projects

- Utilize the architecture, programming and interfacing skills to build projects using Microcontroller 8051
- Understand the concepts of industrial and real time embedded system applications.

### **ELE 306L Microprocessors and Microcontrollers Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Develop syntax based programming skills for Microprocessor and Microcontroller based projects.
- Understand the instructions and register organization of 8086 Microprocessor programming.
- Create arithmetic, logical and functional programming for Microprocessor
- Perform emulations using and to use and develop 8086 programs.

### **EIE 308 Industrial Instrumentation**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Explain and identify various kinds of sensors and transducers employed in different types of industrial environments.
- Select and apply a suitable sensor for a given strain and pressure measurement application.
- Define the principle of working of various sensors used for temperature, level and flow rate measurement.

- Signify the importance of velocity and vibration measurement in standard industrial testing procedures.
- Understand and analyze a virtual instrument employed for a particular application.

### **EIE 308L Industrial Instrumentation Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Employ built-in functions in LabVIEW to solve various numerical problems.
- Develop Vis for solving problems involving different types of mathematical models and equations.
- Solve many simulation problems encountered in theory courses of the semester.
- Perform simulations using LabVIEW and develop optimization toolkits for various electrical and electronics engineering problems.
- Design and simulate projects for electrical and electronics engineering problems.

### **EIE 309 Linear Control System**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Design and implement feedback control scheme for any industrial process.
- Identify and utilize the various components employed in control systems.

- Design and apply the control scheme for controlling any plant under consideration.
- Utilize various types of frequency domain approaches in the development of a control scheme for complex dynamic process.
- Apply the compensation techniques and modern control approaches in design and analysis of control systems.

### **EIE 309L Linear Control System Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 2 1**

#### **Learning Outcomes**

The Students will be able to:

- Able to use and design the control schemes for various industrial processes.
- Capable to identify and employ various filters and compensators utilized in control system design.
- Apply many built-in functions in MATLAB to solve numerical problems
- Develop code for solving problems involving different types of mathematical models and equations.

### **MCTR 305 Robotics and Control**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

#### **Learning Outcomes**

The Students will be able to:

- Develop skills of creating industrial and mobile robot projects
- Implement robots like KUKA, PUMA in real industrial world
- Create innovative robot designs using mathematical concepts of kinematics

- Develop autonomous mobile robots in surveillance, security, home and office services.

### **MCTR 305L Robotics and Control Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Develop skills of creating industrial and mobile robot projects
- Implement robots like KUKA, PUMA in real industrial world
- Create innovative robot designs using mathematical concepts of kinematics
- Develop autonomous mobile robots in surveillance, security, home and office services.

### **EEE 308 Power Electronics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Analyze functioning of switching devices for various applications
- Operate the switches in series and parallel, protect the switches and apply commutation techniques for different circuits
- Analyze and design phase controlled rectifiers and their performance
- Implement of voltage regulators and cyclo-converters
- Design of inverter circuits

### **EEE 304L Power Electronics Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
_____				

(CA: 40 + ESA: 60) 0 0 2 1

### Learning Outcomes

The Students will be able to:

- Analyze functioning of switching devices
- Implement triggering circuit
- Apply appropriate commutation technique
- Analyze and design phase controlled rectifiers and their performance
- Design of cyclo-converters

## EIE 307 Industrial Automation

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### Learning Outcomes

The Students will be able to:

- Identify and employ the various components of Industrial automation to provide automated solution of given problem.
- Implement and deploy Programmable Logic Controller programs for industrial application.
- Design Supervisory Control and Data Acquisition based monitoring and control application for industrial system.
- Operate and understand the distributed control system utilized in process industries.
- Understand and analyze the various data communication links and protocols.

## EIE 307L Industrial Automation Lab

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

### Learning Outcomes

The Students will be able to:

- Programming of Siemens Programmable Logic Controllers and other Programmable Logic Controllers with similar specifications.
- Design and deploy Programmable Logic Controller programs using timers and counters.
- Design applications based on logic and arithmetic operations using Programmable Logic Controllers.
- Implement the various real life applications using Programmable Logic Controllers.

### **EEE 309 Power System-I**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
3	1	0	4

#### **Learning Outcomes**

The Students will be able to:

- Understand generation of electric power and calculate transmission line parameters
- Analyze the performance of short, medium and long transmission lines
- Identify pin, post and suspension insulators
- Estimation of string efficiency and mechanical design of overhead transmission lines
- Understand corona effect, electromagnetic interference with communication lines and travelling waves
- Implementation of insulated cables, distribution system, and voltage and frequency control methods.

### **EEE 309L Power System-I Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	2	1

#### **Learning Outcomes**

The Students will be able to:

- Perform various arithmetic and matrix operations in MATLAB
- Implement MATLAB commands, control operators
- Calculation of various problems using MATLAB programming
- Design electrical circuits using MATLAB simulink
- Estimate power system parameters using MATLAB programming

### **EEE 307 Electrical Machines-II**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcomes**

The Students will be able to:

- Develop various types of models used for synchronous machines like, hydro, steam turbine, governors & excitation systems
- Understand the construction, connections, principle of operation of three-phase & single phase induction motor
- Understand equivalent circuits representation of three phase & single phase induction motor
- Understand calculation of the performance characteristics (current/speed and torque/speed) of the three-phase & single phase induction motor
- Understand the starting and speed control methods of three-phase induction motor
- Understand the construction, connections, principle of operation of single-phase induction and special purpose motors
- Perform tests on synchronous and induction machines

### **EEE 301L Electrical Machines-II Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 2 1**

#### **Learning Outcomes**

The Students will be able to:

- Understand calculation of the performance characteristics (current/speed and torque/speed) of the three-phase & single phase induction motor
- Understand the starting and speed control methods of DC motor
- Understand the construction, connections, principle of operation of transformer
- Perform tests on DC and induction machines

### **EEE 310 Power System-II**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Model various power system components (synchronous machine, transformer, transmission line) and representation of 3 phase system using per unit system & symmetrical components
- Calculate and analyze the symmetrical and unsymmetrical faults in power system
- Solve load flow/power flow problems on transmission line with various analysis methods and interpret the result
- Analyse transient and steady state stability for power system
- Determine the economic schedule of thermal generators

### **EEE 310L Power System-II Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Model various power system components (synchronous machine, transformer, transmission line) and representation of 3 phase system using per unit system & symmetrical components
- Calculate and analyze the symmetrical and unsymmetrical faults in power system
- Solve load flow/power flow problems on transmission line with various analysis methods and interpret the result
- Analyse transient and steady state stability for power system
- Determine the economic schedule of thermal generators

### **MCTR 304 Hydraulics Engineering**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- To understand the basic principles of Fluid Mechanics.
- To interpret about Continuity equation, Euler's equation, Bernoulli's theorem.
- To differentiate types of valves.
- To describe the different type's compressors, pumps, actuators and their applications.
- To understand the working of hydraulic motor.
- To know about hydraulic oils and they can design the hydraulic circuits.

### **MCTR 304L Hydraulics Engineering Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Recognize standard schematic symbols for common fluid power components.
- Design the hydraulic circuit using direction control valve, non return valve, throttle non return valve & controlling by pressure relief valve.
- Understand the basics behind the pressure intensification.
- Understand basic fluid power and troubleshoot electro-hydraulic circuits using schematic diagrams.
- Understand the operation, application, and maintenance of common fluid power components such as pumps, compressors, valves, cylinders, motors, accumulators, pipe, hose, and fittings.

### **ELE 310 Analog Electronics**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
4	0	0	4

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Explain the operation and properties of Op-amp.
- Explain the design of differential amplifiers, active filters, oscillators, and other linear and non-linear circuits using linear integrated circuits.
- Design and analysis of single stage, multistage amplifiers and high frequency amplifiers.

### **ELE 310L Analog Electronics Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	2	1

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Design, construct, and analyze the various analog circuits to compare experimental results in the laboratory with theoretical analysis.
- Observe the amplitude and frequency responses of common amplification circuits

- Construct the desired Electronic design to meet specific requirements.

### **ECE 301 Analog Communication**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Explain different blocks in communication system and how noise affects communication using different parameters.
- Distinguish between different amplitude modulation schemes with their advantages, disadvantages and applications and analyse generation and detection of FM signal and comparison between amplitude and angle modulation schemes.
- Identify different types of radio receiver circuits.

### **ECE 301L Analog Communication Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Demonstrate Amplitude modulation and demodulation techniques.
- Demonstrate frequency modulation and demodulation technique.
- Analyze generation and detection of FM signal and comparison between amplitude and angle modulation schemes.
- Compare different modulations and demodulations to recognize the advantages and disadvantages of them.
- Identify different radio receiver circuits and role of AGC.

### **EIE 311 Control Systems**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Formulate mathematical model for physical systems and simplify representation of complex systems using reduction techniques.
- Use standard test signals to identify performance characteristics of first and second-order systems.
- Apply root locus technique for stability analysis.
- Analyse performance characteristics of system using Frequency response methods.

### **EIE 302L Control Systems Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Understand the concept of time response and frequency response of any physical system.
- Mathematical modeling of physical system to find out of transfer system.
- Analyze the stability of system with the help of system response.

### **ECE 304 Digital Communication**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Analyse and implement the concept of Probability Theory, Random Variables, Error Control Theory and Information Theory in Digital Communication Systems
- Explain the concept of Analog to Digital Conversion, Sampling, Quantization, Pulse Modulation and PCM
- Describe and analyse mathematically the Digital Modulation Techniques-ASK, FSK, PSK

### **ECE 304L Digital Communication Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Understand the concept of Sampling and various Pulse Modulation techniques i.e. Pulse Amplitude Modulation and demodulation, Pulse Position Modulation and demodulation and Pulse Width Modulation and demodulation.
- Analyze the behavior of Pulse Code Modulation and demodulation.
- Explain the working of Digital Modulation Techniques ie: Amplitude Shift Keying, Phase Shift Keying and Frequency Shift Keying.

### **ECE 305 Microwave Engineering**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Understand various parameters of waveguide and use of component as per applications
- Design impedance matching network for any transmission line or system

- Analyse and find applications and limitations of microwave Semiconductor devices.
- Find various applications of microwave engineering in specific area

### **ECE 305L Microwave Engineering Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
0	0	2	1

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Understand the concept and working of microwave bench and different components connected on a bench.
- Analyze the behaviour of various microwave components.
- Verify properties/ characteristic of microwave source, tees and directional coupler.

### **EIE 310 Process Control**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

L	T	P	C
4	0	0	4

#### **Learning Outcomes**

The Students will be able to:

- Understand the basic principles & importance of process control in industrial process plants
- Understand the use of block diagrams & the mathematical basis for the design of control systems;
- Design and tune process (PID) controllers and Use appropriate tools for the modelling of plant dynamics and the design of well-tuned control loops
- Specify safety required in instrumentation, use of control techniques to ensure that well-tuned control is achieved and demonstrate their knowledge in designing the control loops for these processes

- Understand the importance and application of good instrumentation for the efficient design of process control loops for process engineering plants.

### **EIE 310L Process Control Lab**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Programming of Programmable Logic Controllers and its applications in process industry.
- Design and deploy Programmable Logic Controller programs using timers and counters.
- Design applications based on logic and arithmetic operations using Programmable Logic Controllers.
- Implement the various real life applications using Programmable Logic Controllers.

### **ECE 411 Communication Engineering**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Use different modulation and demodulation techniques used in analog communication
- Identify and solve basic communication problems
- Analyze transmitter and receiver circuits
- Compare and contrast design issues, advantages, disadvantages and limitations of analog communication systems

- Understand various spreading techniques and determine bit error performance of various digital communication systems.
- Differentiate between different pulse modulation and demodulation techniques and signal multiplexing for various applications.

### **MCTR 419 Mechatronics Systems**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcomes**

The Students will be able to:

- Develop skills to monitor and control real world industrial systems
- Implement projects for industrial and home automations
- Analyze and create own innovative filters and signal conditioning applications
- Perform computer based controlling of industries using PLC, SCADA and HMI

### **MCTR 419L Mechatronics Systems Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 4 2**

#### **Learning Outcomes**

The Students will be able to:

- Simulate the basic electric, hydraulic and pneumatic system using simulation software.
- Develop an understanding of plc ladder diagram related to industrial automation systems and measure its performance.
- Design Mechatronics system according to an Industrial Applications.
- Combine the real time control systems with peripheral devices through programmable interface techniques.

### **ELE 410 Digital Signal Processing**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Demonstrate the analytical representation of discrete time signals.
- Apply techniques in time and frequency domain to the analysis and design of discrete time systems.
- Analyze discrete time systems in both time and frequency domain.
- Design and analysis of the frequency response of discrete-time signals and systems.
- Design, Analyze and Implement Digital IIR and FIR filters.

### **ELE 304L Digital Signal Processing Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

#### **Learning Outcomes**

The Students will be able to:

- Able to generate elementary signals/ waveforms and perform arithmetic operations on signals.
- Able to plot frequency response of a given system and verify the properties of LTI system
- Able to carry out simulation of DSP systems.
- Able to demonstrate the applications of FFT to DSP.

### **EEE 404 Switchgear and Protection**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- Design the feasible protection systems needed for each main part of a power system
- Understand different applications of the relays, circuit breakers, grounding for different elements of power system
- Understand characteristics of different type of relays
- Design the ratings for fuses according to the requirement
- Elucidate various protection schemes of various power system components like alternators, transformers and bus-bars
- Understand various methods of over voltage protection in power systems

### **EEE 411L Switchgear and Protection Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 2 1**

#### **Learning Outcomes**

The Students will be able to:

- Assemble & de-assemble air circuit breaker
- Understand interconnection of contractor & MCCB
- Apply accurate protection scheme through ETU
- Implement soft starting for 3-phase induction motor
- Apply star-delta starting for 3-phase induction motor

### **MCTR 408 Computer Integrated Manufacturing System**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcomes**

The Students will be able to:

- To apply the concepts to manufacturing industries to automate its various functions.
- To perform various operations on CNC machines in a manufacturing industry.
- To increase the productivity of a manufacturing industry.
- To perform all of the functions of a manufacturing industry with high accuracy and quality.
- To design automated material handling and storage system in a manufacturing industry.
- To apply the concepts of computer aided production management in a manufacturing industry.

### **MCTR 408L Computer Integrated Manufacturing System Lab**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
0	0	2	1

#### **Learning Outcomes**

The Students will be able to:

- To control the robot operations in real environment manually as well as using simulation software.
- To manufacture the complex objects by computer assisted part programming.
- To perform various operations on CNC machines in a manufacturing industry.
- To apply the basics of Gantry system to pick and place robots.
- To design Vision Inspection System for several parametric inspections of the specimens.
- To design various automatic material handling systems.

### **ECE 409 Antenna Analysis**

**Max. Marks : 100**

L	T	P	C
_____	_____	_____	_____

(CA: 40 + ESA: 60)

4 0 0 4

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Recall electromagnetic plane waves. Apply principles of electromagnetic to explain antenna radiation. Explain various antenna parameters.
- Explain antenna as a point source. Design antenna patterns for different cases.
- Explain dipole antennas. Establish mathematical equations for various parameters of thin linear antenna.
- Explain loop, slot, patch and horn antennas. Derive expressions for the parameters of loop and slot antennas.

### **ECE 409L Antenna Analysis Lab**

**Max. Marks : 100****L T P C**

(CA: 40 + ESA: 60)

**0 0 2 1**

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Use HFSS tool to design and analysis of antennas.
- Design various type of antennas
- Measure and analyse radiation pattern of antennas.

### **ECE 402 Fiber Optics and Communication**

**Max. Marks : 100****L T P C**

(CA: 40 + ESA: 60)

**4 0 0 4**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Explain the light propagation through optical fibers.
- Explain the various light sources and optical detectors.

- Design fiber optic transmitter and receiver system.

### **ECE 402L Fiber Optics and Communication Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Understand the characteristics of an optical fiber and LED.
- Understand and measure the basic properties of propagation of light in dielectric Optical fibre including losses, attenuation and coupling.
- Explain the working of optical power meter and various sensors.

### **VLSI 401 VLSI Design**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Explain the basic theory of crystal growth, wafer fabrication and IC fabrication technology.
- Explain the different VLSI design styles, overview of ICs and fabrication steps of MOS, CMOS and BJT.
- Design and analyse the output characteristics of different MOS inverters
- Design combinational and sequential circuit.

### **VLSI 402L VLSI Design Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>1</b>

**Learning Outcomes:** After completion of this laboratory course, students will be able to:

- Use VHDL for design of digital circuits
- Model complex digital systems at several level of abstractions; behavioral and structural, synthesis and rapid system prototyping.
- Develop and simulate register-level models of hierarchical digital systems

### **ECE 303 Communication Networks**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Recognize and describe about the working of Computer Networks.
- Illustrate reference models with layers, protocols and interfaces.
- Combine and distinguish functionalities of different Layers.
- Model the LAN and WAN configuration using different media

### **EIE 408 Artificial Neural Network and Fuzzy logic**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcomes**

The Students will be able to:

- To comprehend the concepts of feed forward neural networks
- To analyze the various feedback networks.
- To understand the concept of fuzziness involved in various systems and fuzzy set theory.
- To comprehend the fuzzy logic control and adaptive fuzzy logic and to design the fuzzy control using genetic algorithm.
- To analyze the application of fuzzy logic control to real time systems.

### EEE 402 Energy Efficiency and Conservation

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### Learning Outcomes

The Students will be able to:

- To understand the basic principles of Energy conservation
- To interpret about Concept and Scope of Demand Side Management
- To describe the Distribution System.
- To know about Efficiency in Motors and Lighting system.

### EIE 415 Nonlinear Control System

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### Learning Outcomes

The Students will be able to:

- To demonstrate non-linear system behavior by phase plane and describing function methods
- To perform the stability analysis nonlinear systems by Lyapunov method develop design skills in optimal control problems
- To derive discrete-time mathematical models in both time domain (difference equations, state equations) and zdomain (transfer function using z-transform).
- To predict and analyze transient and steady-state responses and stability and sensitivity of both open-loop and closed-loop linear, time-invariant, discrete-time control systems.

### EIE 402 Digital Control System

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### Learning Outcomes

The Students will be able to:

- To have in-depth knowledge and critical understanding of the theory and principles of digital control systems and their applications
- To distinguish the specific characteristics and differences of discrete/digital, hybrid and analog systems.
- To transform an analog system to discrete and vice versa
- To analyze the behavior of a discrete system in time domain and in frequency domain
- To design and synthesize controllers that will be implemented using digital hardware.
- To apply digital control systems' principles and techniques to discrete or continuous time systems.

### **EIE 401 Analytical Instrumentation**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- To understand the basic principles & importance of Analytical Instruments in industrial process plants
- To understand the use of block diagrams for the design of analytical and industrial instruments.
- To understand the importance and application of various chromatographic techniques.
- To understand the importance of Environmental Pollution monitoring instruments.

### **EIE 413 Fiber Optic and Laser Instrumentation**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

### Learning Outcomes

The Students will be able to:

- To recognize and classify the structures of Optical fiber and types.
- To discuss the channel impairments like losses and dispersion.
- To analyze various coupling losses.
- To classify the Optical sources and detectors and to discuss their principle.
- To familiar with Design considerations of fiber optic systems.
- To perform characteristics of optical fiber, sources and detectors, design as well as conduct experiments in software and hardware, analyze the results to provide valid conclusions.

### **EIE 301 Biomedical Instrumentation**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

### Learning Outcomes

The Students will be able to:

- To describe the origin of biopotentials and explain the role of biopotential electrodes;
- To inspect common biomedical signals and distinguish characteristic features;
- To identify common signal artifacts, their sources and formulate strategies for their suppression;
- To outline the design of cardiac pacemakers, neurostimulators and defibrillators;
- To explain and contrast measurement principles for blood flow, pressure and volume as well as respiratory variables
- To define and discuss biochemical sensors; and Identify, explain and judge patient safety issues related to biomedical instrumentation.

### **EIE 306 Virtual Instrumentation**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- To recognize the components of virtual instrumentations and apply them for PC based measurement.
- To understand the basics of interfacing of VI and get an adequate knowledge of virtual instrumentation.
- To write VI programs for different applications and employ LabVIEW software for control, measurement and data acquisition.
- To understand the common instrument interfaces with their industrial specification and standards.
- To interface the supporting hardware of VI with LabVIEW and develop computer based control system.

### **EIE 417 Power Plant Engineering**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- To understand the basics related to Power Plants.
- To differentiate types of Power Plants.
- To describe the different components related to Power Plants.
- To understand the working of Steam, Diesel, Gas, and Nuclear power plants.
- To know about Unconventional Methods of Power Generation.

### **EEE 401 Electrical Drives and Control**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>

(CA: 40 + ESA: 60)

4 0 0 4

**Learning Outcomes**

The Students will be able to:

- To understand definition, scope, objectives, and limitation of electric drives, power transistor and SCR.
- To analyze the construction and characteristics and application of D.C. motor.
- To analyze the construction and characteristics and application of three phase induction motor .
- To analyze the speed control methods of A.C. and D.C. motor
- To analyze the construction and characteristics and application of sensor, transducer and switches.
- To analyze the industrial applications of electric drives.

**EEE 401L Electrical Drives and Control Lab****Max. Marks : 100****L T P C****(CA: 40 + ESA: 60)****0 0 2 1****Learning Outcomes**

The Students will be able to:

- To understand definition, scope, objectives, and limitation of electric drives, power transistor and SCR.
- To analyze the construction and characteristics and application of D.C. motor.
- To analyze the construction and characteristics and application of three phase induction motor.
- To analyze the speed control methods of A.C. and D.C. motor
- To analyze the construction and characteristics and application of sensor, transducer and switches.
- To analyze the industrial applications of electric drives.

### **MCTR 402 Mechatronics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

#### **Learning Outcomes**

The Students will be able to:

- To develop skills to monitor and control real world industrial systems
- To implement projects for industrial and home automations
- To analyze and create own innovative filters and signal conditioning applications
- To perform computer based controlling of industries using PLC, SCADA and HMI.

### **MCTR 402L Mechatronics Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 2 1</b>

#### **Learning Outcomes**

The Students will be able to:

- To simulate the basic electric, hydraulic and pneumatic system using simulation software.
- To develop an understanding of plc ladder diagram related to industrial automation systems and measure its performance.
- To design Mechatronics system according to an Industrial Applications.
- To combine the real time control systems with peripheral devices through programmable interface techniques..

### **MCTR 403 Robotics and Automation**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes**

The Students will be able to:

- To develop skills of creating industrial and mobile robot projects
- To implement robots like KUKA, PUMA in real industrial world
- To create innovative robot designs using mathematical concepts of kinematics
- To develop autonomous mobile robots in surveillance, security, home and office services.

**MCTR 403L Robotics and Automation Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 2 1**

**Learning Outcomes**

The Students will be able to:

- To develop skills of creating industrial and mobile robot projects
- To implement robots like KUKA, PUMA in real industrial world
- To create innovative robot designs using mathematical concepts of kinematics
- To develop autonomous mobile robots in surveillance, security, home and office services.

**EEE 409 Power System Operation and Control**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcome:**

The Students will be able to:

- Understand the techniques to control power flows, frequency and voltage.
- Explore the significance of voltage control.

- Understand the concept of flexible AC transmission and the associated problems.
- Learn the power system security and its application as a system operator.

### **EEE 409L Power System Operation and Control Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 2 1**

#### **Learning Outcome:**

The Students will be able to:

- Understand the techniques to obtain transmission line parameters.
- Explore the significance of voltage control.
- Perform the study of frequency control.
- Learn the economic load dispatch optimization from the perspective of system operator.

### **EEE 410 Power System Restructuring and Deregulation**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcome:**

The Students will be able to:

- Familiarize with concepts and need for deregulated power systems.
- Solve market based power flow and unit commitment problems.
- Understand power market development in India and across the world.

### **EEE 410L Power System Restructuring and Deregulation Lab**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**0 0 2 1**

**Learning Outcome:**

The Students will be able to:

- Understand different commercial software tools used for power system studies.
- Solve different problems related to power system operation.
- Understand congestion management in power system.

**MCTR 420 Operation Research**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes**

The Students will be able to:

- To understand the basics of Linear Programming.
- To describe the different types of Inventory Models.
- To understand the Transportation and Assignment problem and application.
- To know about Game Theory problem and application.

**MCTR 413 Industrial Engineering**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes**

The Students will be able to:

- To understand the basics of Management and Management structure.
- To interpret about Production Planning and Control, Work Study.
- To differentiate types of cost.
- To describe the different type of Plant Layout.
- To understand the Material Handling.

- To know about network techniques, CPM and PERT, time estimates.

### **MCTR 417 Manufacturing Science**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- To understand the Metal Cutting and force analysis in the operation.
- To interpret about Hot and Cold working.
- To differentiate among the Modern Machining Methods.
- To describe the different Bulk Deformation Processes.
- To know about Production of Machine Components.

### **MCTR 422 Production Technology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes**

The Students will be able to:

- To understand the foundation and design of gate riser system.
- To differentiate among types of Welding and related methods.
- To understand the working of Lathe, Shaper and drilling machine.
- To describe the different operation performed on Lathe, Shaper and Drilling machine.

### **ECE 408 Analytical Instrumentation**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Explain majorly pH conductivity & dissolved component analyzer, dissolved oxygen analyzer, sodium analyzer, silica analyzer and moisture measurement.
- Evaluate the performance of Spectro-photometers, FTIR Spectrometers and their applications.
- Describe modern trends in NMR Spectrometers, X-ray Spectrometry, and Mass Spectrophotometers with their applications.

### **ECE 404 Optical Network**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Describe the important components such as multiplexer, filters.
- Explain the multiplexing technique
- Explain the signalling and routing of WDM network elements
- Describe the protection technique in SONET/SDH and IP network

### **ECE 406 Satellite Communication**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Identify the fundamentals of orbital mechanics, the characteristics of common orbits used by communications and other satellites.
- Understand the systems required by a communications satellite to function and the trade-offs and limitations encountered in the design of a communications satellite system.
- Understand the radio propagation channel for Earth station to satellite and satellite to satellite communications links, and the basics of

designing antenna systems to accommodate the needs of a particular satellite system.

- Understand how analog and digital technologies are used for satellite communications networks and the topologies and applications of those networks, as well as the comparison to alternative communications systems.

### **ELE 403 Basics of Nanoelectronics**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Explain the fundamental science and quantum mechanics behind nanoelectronics.
- Explain the basic concepts behind the operation of nano scale MOSFET
- Describe the various techniques and approaches for the fabrication of nano-scale devices

### **ECE 403 Mobile Communication**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

**Learning Outcomes:** After successful completion of the course, student will be able to:

- To understand the various generations of mobile communications and basics of wireless communication
- To understand the concept of cellular communication
- Can test mobile communication equipment for the technical functionality
- Knowledge of GSM mobile communication standard, its architecture, logical channels, advantages and limitations

### **ECE 405 Radar Navigation**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Understand the basic concept of Radar and applications of various types.
- Understand the different Radar Performance factors.
- Explain the operation of CW& FM Radar.
- Understand the Satellite navigation system.

### **RS 401 Geoinformatics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Describe spatial database, Co-ordinate and projection system
- Analyse vector and raster based analysis in Geographical Information Sciences
- Describe global cover based global position systems i.e. GPS, GLONASS
- Describes applications of remote sensing and GIS in natural resources management

### **ELE 402 Audio and Video Systems**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Understand the fundamental concepts of television transmitter, receiver systems and the transmission of video signals and importance of television standards.
- Understand different colour television systems used worldwide and its compatibility.
- Understand principles of recording and reproduction of disc and video cassette recorders.

# BANASTHALI VIDYAPITH

## Bachelor of Technology (Biotechnology)



### Curriculum Structure

- First Semester Examination, December, 2019
- Second Semester Examination, April/May, 2020
- Third Semester Examination, December, 2020
- Fourth Semester Examination, April/May, 2021
- Fifth Semester Examination, December, 2021
- Sixth Semester Examination, April/May, 2022
- Seventh Semester Examination, December, 2022
- Eighth Semester Examination, April/May, 2023

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**

## **Programme Educational Objectives**

The B. Tech. Biotechnology programme aims at holistic development of the students through the unique and innovative five-fold educational ideology of Banasthali Vidyapith.

Biotechnology is an applied discipline of biological science that makes use of living organisms, its components and biological processes to create products and other technology based systems for the welfare of mankind. Past few decades have witnessed a steady growth towards invention and innovation oriented research/startups using biotechnology. Thus, the B. Tech Biotechnology programme has been designed to provide fundamental knowledge of biotechnology and engineering, which can be applied by the students to pursue higher studies or in related industries, to find solutions related to process and product development. It will sensitize the students towards the societal, environmental and ethical issues being faced by a biotechnologist. The key objectives of the programme are to:

- provide fundamental theoretical and practical knowledge of biotechnology to pursue higher education and professional careers
- help graduates to identify and analyze issues, which need biotechnological interventions and find solutions thereof
- sensitize students towards bioethics, IPR and biosafety issues
- inculcate the habit of working in a team with interdisciplinary approach
- develop scientific skills, temperament and communication skills, which will promote a lifelong learning
- nurture overall growth and development of the students.

## Programme Outcomes

- PO1: Fundamental Knowledge:** Acquire fundamental knowledge of engineering and biotechnology, which include biochemistry, principles of chemical processes, data structures, biophysics and structural biology, object oriented programming, recombinant DNA technology, basic bioinformatics, animal and plant biotechnology, genetics and foundations courses.
- PO2: Planning ability:** Demonstrate effective planning abilities including conceptual skills, interpersonal skills, decision making and problem solving skills, time and resource management and organizational skills.
- PO3: Problem analysis:** Identify, devise, review research literatures, and analyze biotechnological/engineering problems to find justifiable solutions.
- PO4: Modern tool usage:** Understand, select and apply suitable tools and techniques with proper methodology together with computational tools with an understanding of their limitations.
- PO5: Leadership skills:** Inculcate the habit of working in a team keeping individual identity and gradually develop leadership skills in a multidisciplinary setting.
- PO6: Professional Identity:** Apply logics gained through conceptual knowledge to carry out responsibilities relevant to the professional engineering practice.
- PO7: Bioethics:** Understand the ethical implications of biological research, honour personal values and apply in profession/research/society. Understand what is wrong and right, make decision and take responsibilities associated with the outcome.
- PO8: Communication:** Communicate effectively on intricate engineering/biotechnological issues with the engineering community and with society like, being able to interpret and write effective reports/ document, deliver effective presentations, and correspond through clear instructions.

- PO9: The biotechnologist and society:** Apply proper reasoning through fundamental concepts to assess societal, environmental, health, safety and legal issues and the consequent responsibilities relevant to the professional biotechnological practice.
- PO10: Environment and sustainability:** Understand the significance of ecosystem and its impact on living organisms and search for eco-friendly solutions for sustainable development.
- PO11: Life- long learning:** Recognize the necessity of independent and life-long learning, self assessment, and individual development through introspection and feedback from peers in the broadest context of technological change.

## MATH 103 Calculus

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Define limit, infinite series and sequence of partial sums of an infinite series, Convergence and Divergence of an infinite series.
- Relate the limit of a function at a point to the limit of a sequence at that point and tell when a function will fail to have a limit at a point.
- Define monotonic functions and find a connection between monotonicity of a function and derivative of a function.
- Demonstrate the concept of Divergence, Curl, Green's theorem, Stokes's theorem.

## MATH 107 Linear Algebra

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Define basic terms and concepts of matrices, vectors and complex numbers
- Use basic vector space concepts such as linear space, linear dependence, basis, dimension, linear transformation;
- Be familiar with the concepts of eigenvalue, eigenspace and eigenvector and know how to compute these objects;
- Use the characteristic polynomial to compute the eigenvalues and eigenvectors of a square matrix and use them to diagonalise matrices when this is possible; discriminate between diagonalizable and non-diagonalisable matrices.
- Use gauss-jordan elimination to solve systems of linear equations and to compute the inverse of an invertible matrix

## PHY 101 Applied Optics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

Upon successful completion, students will have the knowledge and skills to:

- Appreciate the efficacy of Fourier transforms and their application to physical systems.
- Understand linear, time-invariant systems.
- Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems
- Understand dispersion in waves and model dispersion using Fourier theory.
- Understand diffraction and imaging in terms of Fourier optics and gain physical and intuitive insight in a range of physics.

## PHY 106 Modern Physics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

Upon successful completion, students will have the knowledge and skills to:

- Development of an understanding of the interrelationships of science, engineering and technology.
- Will have skill for problem solving and engineering skills, which then has broad applications.
- Will have a career paths for Engineering physics are usually (broadly) "engineering, applied science or applied physics through research, teaching or entrepreneurial engineering". This interdisciplinary knowledge is designed for the continuous innovation occurring with technology.
- Will have strong ground to provide a more thorough grounding in applied physics of any area chosen by the student (such as nanotechnology, mechanical engineering, electrical engineering, control theory, aerodynamics, or solid-state physics).

## CHEM 101 Chemistry

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcome:

On completion of course, the students will be able to:

- explain the basics of atomic structure and chemical bonding.
- explain the behavior of the system through phase, degree of freedom and component.
- explain the basics of electrochemistry, different type of corrosion and their prevention.
- differentiate nanoscience, nanotechnology, nanochemistry, conventional and non-conventional energy sources and their applications.

## BIO 101 Biology

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

After successful completion of the course, students should be able to:

- Understand the basic organization and classification of living organisms.
- Describe fundamental cellular functions.
- Learn the basic concept of molecular biology and recombinant DNA technology.

## CHE 102 Thermodynamics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning outcomes:

The students will be able to:

- Carryout thermodynamic analysis of real systems.
- Carryout thermodynamic analysis multiphase systems with chemical changes.
- Understand thermodynamic functions and their relationships

### **PHY 109 Engineering Mechanics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon successful completion, students will have the knowledge and skills to:

- Students will demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.
- Students will show that they have learned concept of Newtonian mechanics and kinematics.
- Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently

### **CS 109 Computer Fundamentals and Programming**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Describe the concepts of computer basics and programming.
- Explain the organization and operations of a computer system.
- Design the combinational and sequential circuits.
- Employ the logical thinking for analyzing problems, designing and implementing algorithmic solutions.

- Employ the skills for the use of the C programming language to implement the real world applications.

## **CS 109L Computer Fundamentals and Programming Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 4 2**

### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Perform internal and external DOS commands.
- Implement problems based on expressions containing constants, variables and operators.
- Implement problems based on conditional statements, switch and loops.
- Implement problems based on array, pointers, functions, files and command line arguments.

## **EEE 101 Electrical Engineering**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

### **Learning Outcomes**

The Students will be able to:

- Understand the importance of electrical engineering
- Solve complex DC circuits
- Solve& predict the behavior of AC circuit
- Understand different machines along with measurement techniques
- Select appropriate element, device or machines with respect to application

## **EEE 101L Electrical Engineering Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes**

The Students will be able to:

- Handle measuring instruments and apparatus
- Identify the various electrical and electronic components as per the ratings
- Verify circuit laws and solve electrical networks
- Analyze the characteristics of semiconductor devices
- Design basic AC & DC circuits

## **ENGG 101L Engineering Drawing and Graphics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 6 3</b>

### **Learning Outcomes**

The Students will be able to:

- Apply the concepts of engineering drawing in their respective field of interest.
- Implement various BIS and ISO concepts of drawing.
- Draw the sectional views of various engineering objects.
- Use engineering curves in tracing the paths of simple machine components.
- Draw various views related to real objects.
- Draw and read plan of industrial standards.
- Visualize the design ideas using software.

## **ENGG 103L Measurement Techniques Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>3</b>

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Demonstrate an understanding of different adulteration and qualitative analysis of biomolecules.
- Develop understanding working with microscope.
- Learn a basic concept of plant identification and vegetational analysis.
- Gain hand on training to check purity of biomolecules.

**MATH 209 Complex Variables**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After successful completion of the course, students will be able to:

- Demonstrate understanding of the basic concepts underlying complex variables.
- Explain the essential concepts of complex functions and their role in today's mathematics and applied contexts.
- Demonstrate precise and proficient use of complex functions continuity, differentiability.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.
- Apply problem-solving using complex analysis techniques applied to diverse situations in physics, engineering and other mathematical contexts.

**MATH 210 Differential Equations**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After successful completion of the course, students will be able to:

- Identify, analyse and subsequently solve physical situation's whose behaviour can be described by ordinary differential equations.
- Solve systems of linear differential equations.
- Solve and interpret first order differential equations arising in problems related to newtonian mechanics, heat conduction, and fluid mixing.
- Apply partial differential techniques to solve the engineering problems.

**ENGG 201 Structure and Properties of Materials**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Relate fundamentals of material properties with its utilization
- Design and develop better products and equipment
- Identify needs and applications of materials economically.

**ENGG 202 Basic Electronics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Understand the fundamental of semiconductors and design semiconductor circuits.
- Understand the different type of diode/ transistors with their responses.
- Analyze various types of oscillators available with their utilization.

## CS 209 Data Structures

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Develop knowledge of basic data structures for storage and retrieval of ordered or unordered data. Data structures include: arrays, linked lists, stacks, queues, binary trees, heaps.
- Develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.
- Analyze and compare algorithms for efficiency using Big-O notation.
- Describe the concept of dynamic memory management, data types, algorithms, Big O notation.
- Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

## CS 209L Data Structures Lab

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### Learning Outcomes:

After successful completion of the course students will be able to

- Implement problems based on basic data structures like stack and queues.
- Implement problems on linked lists.
- Implement problems for performing different operations like insertion, deletion and searching on binary tree and binary search tree.

## CHEM 203 Principles of Chemical Processes

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand basic concept of biochemical equation and material balance.
- Develop concept of energy balance, thermodynamic approaches, unit operations.
- Apply the gained knowledge in bioprocess industries.

**BT 201 Biochemistry**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Learn about the biomolecules forming the cellular structure.
- Identify and compare the various biochemical pathways and their use.
- Translate skills in research, quality control, production and diagnostics.

**BT 208S Seminar**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 2 1**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Show competence in identifying, defining and explaining relevant topics.
- Deal with nerves and develop the ability to speak in public.
- Use body language and voice modulations to grab the listener's attention and hold their interest, which is important for effective presentation.
- Use slides and visual aids effectively.

## BT 204L Biotechnology Lab-I

**Max. Marks : 100** **L T P C**

**(CA: 40 + ESA: 60)** **0 0 4 2**

### Learning Outcomes:

After successful completion of the course, students should be able to:

- Gain hands on training to quantitatively analyze biomolecules.
- Demonstrate an understanding of spectrophotometrically analysis biomolecules.
- Hands on training on measuring techniques.
- Solve problems for mass balance and energy balance and equations numerically.

## CS 214 Object Oriented Programming

**Max. Marks : 100** **L T P C**

**(CA: 40 + ESA: 60)** **4 0 0 4**

### Learning Outcomes:

After successful completion of the course students will be able to

- Describe the features of C++ supporting object oriented programming.
- Explain the relative merits of C++ as an object oriented programming language.
- Describe how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.
- Apply advanced features of C++ specifically stream I/O, templates and operator overloading
- Apply other features of the C++ language including templates, forms of casting, conversions, and file handling.

## **CS 214L Object Oriented Programming Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After successful completion of the course students will be able to

- Implement problems based on expressions, arrays and strings.
- Carry out problems using functions, class, constructor and destructor.
- Implement problems using pointers, operator overloading, inheritance, file handling and exception handling.

## **BT 203 Biophysics and Structural Biology**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Develop a basic understanding of molecular and quantum mechanics in studying biomolecules.
- Solve questions of macromolecular folding and interactions.
- Understand the molecular processes behind locomotion, neuronal signaling and vision.

## **BT 206 Cell and Molecular Biology – II**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand functions of cell organelles and regulation of cellular processes.

- Explain the role and mechanism of cell signaling.
- Develop detailed understanding of fundamental processes viz., replication, transcription and translation.

### **BT 205L Biotechnology Lab-II**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Learn techniques related to histochemical localization of biomolecules.
- Gain hand on training to analyze stages of cell division.
- Predict structure of biomolecules using bioinformatics tools.

### **ECO 307 Fundamentals of Economics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcomes:**

Upon Completion of the course student will be able to :

- Understand various aspects of economics that affects the day today functioning of business.
- Understand the oncept of demand, supply and productin and how the same is related to market.
- Understand the basic financial concepts that affects the functioning of the business.

### **MGMT 310 Principles of Management**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>

#### **Learning Outcome:**

Upon completion of the course the student will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership.
- Understand application of theories and management principles.

### **STAT 204 Probability and Statistical Methods**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Understand the concepts of random variables, probability distributions and independence of random variables.
- Understand the meaning of probability and probabilistic experiment
- Familiarize with the all approaches to probability theory and particularly, the axiomatic approach.
- Understanding the meaning of conditional probability.
- Distinguish between independent and uncorrelated random variables.
- Distinguish between discrete and continuous random variables and be able to represent them using probability mass, probability density, and cumulative distribution function.
- Identify important types of distributions such as exponential, Binomial, Poisson, Normal, and use them as suitable models in basic science and engineering problems.
- Understand the concept of statistical hypothesis and able to solve such type of real life problems.

### **BT 310 Microbiology and Immunology**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Explain bacterial and fungal classification and ultra structure.
- Discuss different techniques related to isolation, staining and maintenance of microbes.
- Understand fundamental concept of immunology.

**BT 309 Metabolic Engineering**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Provide basic concept about cellular metabolism, pathway design and bioenergetics.
- Understand regulatory mechanisms and metabolic modeling.
- Develop analytical skills to address metabolic engineering problems.

**BT 308 Genetics and Genetic Engineering**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Explain the theoretical and experimental foundation of classical and molecular genetics.
- Develop comprehensive concept of genetic engineering including vectors and techniques.
- Identify various applications of genetics and genetic engineering.

## **BT 303L Biotechnology Lab-III**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 8 4</b>

### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Demonstrate microbial and immunological techniques.
- Understand chromosome structure and solve genetic problems.
- Learn various techniques of genetic engineering.
- Gain hands on training for experiments related to properties of enzyme.

## **CHEM 301 Analytical Techniques**

### **CHEM 301L Analytical Techniques Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### **Learning Outcome:**

On completion of course, the students will be able to:

- understand the principle and various types of chromatography.
- understand and apply the concept and application of electrophoresis.
- understand the principles of NMR, UV-visible and IR spectroscopy.
- perform theoretical calculations related to the techniques discussed.

## **BIN 301 Basic Bioinformatics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Demonstrate basic skills in information retrieval, programming languages and operating systems.

- Identify various biological databases and develop data mining methods.
- Predict 3D structure of proteins and their regular structural elements for the integrity of the structure.

### **BT 302 Bioprocess Engineering**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Develop comprehensive concepts on various processes in bioreactors mediated microbial process.
- Apply engineering principles to address issues in bioprocesses and delineate problems associated with production of biomolecules in bioreactor.
- Plan a career in research field in the biotechnology industry.

### **BT 311 Recombinant DNA Technology**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the concept of DNA synthesis, amplification and sequencing.
- Apply strategies of cloning in both prokaryotes and eukaryotes.
- Explain use of molecular probes and DNA finger printing for relevant applications.

### **BT 314L Biotechnology Lab-IV**

**Max. Marks : 100**

**L T P C**

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(CA: 40 + ESA: 60) 

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 0 0 8 4

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Demonstrate an understanding of production and estimation of commercially important molecules.
- Hands on training related to genetic manipulation techniques.
- Learn sequence alignment of biomolecules using bioinformatic tools.

### **BT 431P Project**

**Max. Marks : 100**

**L T P C**

(CA: 40 + ESA: 60)

**0 0 48 24**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Gain an exposure of working in the research institutions and industries.
- Access and understand the scientific literatures.
- Identify the relevant scientific problem.
- Develop research hypothesis, think analytically, design the experiments, carry out experimental work and present the results in a scientific manner.
- Develop the skills of writing a project report.
- Communicate the important scientific findings in the form of research paper, oral and poster presentation.

### **BT 418 Animal Biotechnology**

**Max. Marks : 100**

**L T P C**

(CA: 40 + ESA: 60)

**3 1 0 4**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Develop comprehensive concepts of cell and tissue culture techniques and methodology.
- Gain fundamental concepts of in vitro fertilization and animal cloning.
- Explain applications of cell and tissue culture in pharmaceutical industry.

### **BT 405 Environmental Biotechnology**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the biological process for sewage and wastewater management.
- Discuss role of biology in sustainable technology development.
- Explain the role of microbes in environmental remediation.

### **BT 429 Plant Biotechnology**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Develop comprehensive concepts of cell and tissue culture techniques and methodology.
- Understand the basic concepts of transgenic plants and molecular pharming.
- Comprehend the basic knowledge of chloroplast engineering and edible vaccines.

### BT 421L Biotechnology Lab – V

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>8</b>	<b>4</b>

#### Learning Outcomes:

After successful completion of the course, students should be able to:

- Understand various techniques of plant and animal biotechnology.
- Learn analytical techniques to estimate toxicity of hazardous component.
- Demonstrate an understanding to assess water pollution.
- Demonstrate animal cell culture techniques.

### BT 420 Biomedical Engineering

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

After successful completion of the course, students should be able to:

- Understand different human systems and associated physiological disorders.
- Explain the role of recent medical advances in diagnostics and treatment.
- Develop high employability as a biomedical scientist.

### BT 422 Food and Dairy Biotechnology

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### Learning Outcomes:

After successful completion of the course, students should be able to:

- Identify parameters affecting microbial growth and its effect on food.

- Demonstrate an understanding of various food processing and preservation methods.
- Describe contemporary food related policies and their implications.

### **BT 423 Genomics and Proteomics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the scope of genomics with special emphasis on functional and structural genomics.
- Describe role of proteomics and various techniques associated.
- Demonstrate practical insight of techniques and tools applied in Proteomic and genomic research.

### **BT 424 Immunotechnology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Explain structure and function of the immune system at cellular and molecular level.
- Describe immunization/vaccination, immunological disease and immunotherapy.
- Develop approaches for the immune intervention of diseases.

### **BT 425 Microbial Technology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Utilize various strategies for isolation, strain improvement, maintenance and containment of microbes.
- Describe strategies used for large scale production from microorganisms including over expression.
- Understand advances in field of microbial technology for societal benefit.

### **BT 427 Molecular Modeling and Drug Designing**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the scope of pharmacokinetics and computer aided drug designing.
- Identify and search potential drug leads using various tools of computational biology.
- Understand methodologies used for drug designing.

### **BT 428 Nanotechnology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the basic concepts of nanobiotechnology.
- Apply engineering concepts to the nano-scale domain and design processing conditions.
- Comprehend the legal issues in nanotechnology and environmental risk assessment.

### **BT 430 Plant Secondary Metabolites**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<hr/>				

(CA: 40 + ESA: 60) 

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 4 0 0 4

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand isolation techniques for plant secondary metabolites and their biosynthetic pathway.
- Demonstrate production of various secondary metabolites and factors affecting it.
- Explain large scale production of various secondary metabolites.

### **RS 401 Geoinformatics**

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **4 0 0 4**

**Learning Outcomes:**

After successful completion of the course students will be able to

- Describe spatial database, Co-ordinate and projection system
- Analyze vector and raster based analysis in Geographical Information Sciences
- Describe different types of satellite system and digital image processing
- Describe global cover based global position systems i.e. GPS, GLONASS
- Describe applications of remote sensing and GIS in natural resources management

### **BT 419 Bioethics and Biosafety**

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **4 0 0 4**

**Learning Outcomes:**

After successful completion of the course, students should be able to:

- Explain role of biotechnology in sustainable research and various ethical implications.

- Understand biosafety–objective, implementation, necessity and legislations.
- Develop preliminary understanding of Intellectual Property with emphasis on patents.

### **BT 316 Enzyme Engineering and Technology**

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**4 0 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Describe structure, functions and the mechanisms of action of enzymes.
- Develop concept of regulation of enzyme activity.
- Identify industrially relevant enzymes and describe their application.

### **BT 426R Molecular Diagnostics**

**Max. Marks : 100**

**L T P C**

**0 0 0 2**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Comprehend techniques used to diagnose diseases.
- Use the gained knowledge in pursuing career in diagnostic labs and related research areas.

### **BIO 601R Biodiversity and Conservation**

**Max. Marks : 100**

**L T P C**

**0 0 0 2**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the importance and gain knowledge of various aspects of ecosystems.
- Describe the physiological and ecological adaptations of different organisms for survival and growth in various types of natural and engineered ecosystems.

### **BT 432R Emerging Trends in Biofuel Technology**

**Max. Marks : 100**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Understand the production of different types of biofuel.
- Describe the environmental and social sustainability aspects of biofuel.
- Learn the present energy scenario and the need for energy conservation.

# **BANASTHALI VIDYAPITH**

**Bachelor of Technology (Chemical Engineering)**



## **Curriculum Structure**

First Semester Examination, December, 2019  
Second Semester Examination, April/May, 2020  
Third Semester Examination, December, 2020  
Fourth Semester Examination, April/May, 2021  
Fifth Semester Examination, December, 2021  
Sixth Semester Examination, April/May, 2022  
Seventh Semester Examination, December, 2022  
Eighth Semester Examination, April/May, 2023

**BANASTHALI VIDYAPITH**  
**P.O. BANASTHALI VIDYAPITH**  
**(Rajasthan)-304022**



July, 2019

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## **Programme Educational Objectives**

- To develop latitude of effectiveness in applying chemical engineering principles in engineering practice or for advanced study in chemical engineering, medicine, law, business and social work.
- To develop longitude of not only opening careers in the branch of study as well as interdisciplinary and multidisciplinary fields such as pharmaceuticals, microelectronics, chemicals, polymers/ advanced materials, food processing, energy, biotechnology and environmental engineering.
- To develop altitude of professionalism to function effectively in the complex modern work environment, both as individuals as well as in team, with the ability to assume leadership roles and achieve understanding and appreciation of ethical behavior, social responsibility and diversity.

## Programme Outcomes

Each graduate will be able to:-

- have an education that is supportive of a broad awareness of the diversity of the world and its cultures, and that provides an understanding of the impact of engineering practice in the global, economic, environmental, and societal context.
- demonstrate a working knowledge, including safety and environmental aspects, of material and energy balances applied to chemical processes; thermodynamics of physical and chemical equilibria; heat, mass, and momentum transport; chemical reaction engineering; continuous and stage wise separation operations; process dynamics and control; and chemical engineering design.
- have the ability to apply knowledge of mathematics, science and engineering to analyze and interpret data and design and conduct experiments safely, as well as the ability to design a process that meets desired specifications with consideration of environmental, safety, economic and ethical criteria.
- ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- have the ability to communicate effectively in written, oral, and graphical forms as well as work as a member of multidisciplinary teams, and have an understanding of team leadership.
- have knowledge of contemporary issues and will recognize the need for and have the ability to engage in lifelong learning.
- To develop longitude of not only opening careers in the branch of study as well as interdisciplinary and multidisciplinary fields such as pharmaceuticals, microelectronics, chemicals, polymers/ advanced materials, food processing, energy, biotechnology and environmental engineering.

## MATH 103 Calculus

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Define limit, infinite series and sequence of partial sums of an infinite series, Convergence and Divergence of an infinite series.
- Relate the limit of a function at a point to the limit of a sequence at that point and tell when a function will fail to have a limit at a point.
- Define monotonic functions and find a connection between monotonicity of a function and derivative of a function.
- Demonstrate the concept of Divergence, Curl, Green's theorem, Stokes's theorem.

## MATH 107 Linear Algebra

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

### Learning Outcomes:

After successful completion of the course, students will be able to:

- Define basic terms and concepts of matrices, vectors and complex numbers
- Use basic vector space concepts such as linear space, linear dependence, basis, dimension, linear transformation;
- Be familiar with the concepts of eigenvalue, eigenspace and eigenvector and know how to compute these objects;
- Use the characteristic polynomial to compute the eigenvalues and eigenvectors of a square matrix and use them to diagonalise matrices when this is possible; discriminate between diagonalizable and non-diagonalisable matrices.
- Use gauss-jordan elimination to solve systems of linear equations and to compute the inverse of an invertible matrix

## PHY 101 Applied Optics

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

### **Learning Outcomes:**

Upon successful completion, students will have the knowledge and skills to:

- Appreciate the efficacy of Fourier transforms and their application to physical systems.
- Understand linear, time-invariant systems.
- Understand the role of the wave equation and appreciate the universal nature of wave motion in a range of physical systems
- Understand dispersion in waves and model dispersion using Fourier theory.
- Understand diffraction and imaging in terms of Fourier optics and gain physical and intuitive insight in a range of physics.

## PHY 106 Modern Physics

**Max. Marks : 100**

**L T P C**

**(CA: 40 + ESA: 60)**

**3 1 0 4**

### **Learning Outcomes:**

Upon successful completion, students will have the knowledge and skills to:

- Development of an understanding of the interrelationships of science, engineering and technology.
  - Will have skill for problem solving and engineering skills, which then has broad applications.
  - Will have a career paths for Engineering physics are usually (broadly) "engineering, applied science or applied physics through research, teaching or entrepreneurial engineering". This interdisciplinary knowledge is designed for the continuous innovation occurring with technology.
  - Will have strong ground to provide a more thorough grounding in applied physics of any area chosen by the student (such as nanotechnology, mechanical engineering, electrical engineering, control theory, aerodynamics, or solid-state physics).

## CHEM 101 Chemistry

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
3	1	0	4

### Learning Outcome:

On completion of course, the students will be able to:

- explain the basics of atomic structure and chemical bonding.
- explain the behavior of the system through phase, degree of freedom and component.
- explain the basics of electrochemistry, different type of corrosion and their prevention.
- differentiate nanoscience, nanotechnology, nanochemistry, conventional and non-conventional energy sources and their applications.

## BIO 101 Biology

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
3	1	0	4

### Learning Outcomes:

After successful completion of the course, students should be able to:

- Understand the basic organization and classification of living organisms.
- Describe fundamental cellular functions.
- Learn the basic concept of molecular biology and recombinant DNA technology.

## CHE 102 Thermodynamics

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

L	T	P	C
3	1	0	4

### Learning outcomes:

The students will be able to:

- Carryout thermodynamic analysis of real systems.

- Carryout thermodynamic analysis multiphase systems with chemical changes.
- Understand thermodynamic functions and their relationships

### **PHY 109 Engineering Mechanics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

Upon successful completion, students will have the knowledge and skills to:

- Students will demonstrate proficiency in mathematics and the mathematical concepts needed for a proper understanding of physics.
- Students will show that they have learned concept of Newtonian mechanics and kinematics.
- Students will be capable of oral and written scientific communication, and will prove that they can think critically and work independently

### **CS 109 Computer Fundamentals and Programming**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Describe the concepts of computer basics and programming.
- Explain the organization and operations of a computer system.
- Design the combinational and sequential circuits.
- Employ the logical thinking for analyzing problems, designing and implementing algorithmic solutions.
- Employ the skills for the use of the C programming language to implement the real world applications.

## **CS 109L Computer Fundamentals and Programming Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Perform internal and external DOS commands.
- Implement problems based on expressions containing constants, variables and operators.
- Implement problems based on conditional statements, switch and loops.
- Implement problems based on array, pointers, functions, files and command line arguments.

## **EEE 101 Electrical Engineering**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes**

The Students will be able to:

- Understand the importance of electrical engineering
- Solve complex DC circuits
- Solve& predict the behavior of AC circuit
- Understand different machines along with measurement techniques
- Select appropriate element, device or machines with respect to application

## **EEE 101L Electrical Engineering Lab**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0 0 4 2</b>

### **Learning Outcomes**

The Students will be able to:

- Handle measuring instruments and apparatus
- Identify the various electrical and electronic components as per the ratings
- Verify circuit laws and solve electrical networks
- Analyze the characteristics of semiconductor devices
- Design basic AC & DC circuits

### **ENGG 101L Engineering Drawing and Graphics Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 6 3**

#### **Learning Outcomes**

The Students will be able to:

- Apply the concepts of engineering drawing in their respective field of interest.
- Implement various BIS and ISO concepts of drawing.
- Draw the sectional views of various engineering objects.
- Use engineering curves in tracing the paths of simple machine components.
- Draw various views related to real objects.
- Draw and read plan of industrial standards.
- Visualize the design ideas using software.

### **ENGG 103L Measurement Techniques Lab**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**0 0 6 3**

#### **Learning Outcomes:**

After successful completion of the course, students should be able to:

- Demonstrate an understanding of different adulteration and qualitative analysis of biomolecules.

- Develop understanding working with microscope.
- Learn a basic concept of plant identification and vegetational analysis.
- Gain hand on training to check purity of biomolecules.

### **MATH 209 Complex Variables**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Demonstrate understanding of the basic concepts underlying complex variables.
- Explain the essential concepts of complex functions and their role in today's mathematics and applied contexts.
- Demonstrate precise and proficient use of complex functions continuity, differentiability.
- Demonstrate capacity for mathematical reasoning through analyzing analytic functions.
- Apply problem-solving using complex analysis techniques applied to diverse situations in physics, engineering and other mathematical contexts.

### **MATH 210 Differential Equations**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course, students will be able to:

- Identify, analyse and subsequently solve physical situation's whose behaviour can be described by ordinary differential equations.
- Solve systems of linear differential equations.
- Solve and interpret first order differential equations arising in problems related to newtonian mechanics, heat conduction, and fluid mixing.
- Apply partial differential techniques to solve the engineering problems.

## **ENGG 201 Structure and Properties of Materials**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

### **Learning Outcomes:**

The students will be able to:

- Relate fundamentals of material properties with its utilization
- Design and develop better products and equipment
- Identify needs and applications of materials economically.

## **ENGG 202 Basic Electronics**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4 0 0 4</b>

**Learning Outcomes:** After successful completion of the course, student will be able to:

- Understand the fundamental of semiconductors and design semiconductor circuits.
- Understand the different type of diode/ transistors with their responses.
- Analyze various types of oscillators available with their utilization.

## **CHE 202 Chemical Process Calculations**

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### **Learning Outcomes:**

The students will be able to:

- Make material balances on unit operations and processes
- Perform simultaneous material and energy balances
- Understanding the degrees of freedom analysis and its significance
- Understand the concept of humidity and usage of psychrometric chart

## **CHE 204 Heat Transfer**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Understand and solve conduction, convection and radiation problems
- Design and analyze the performance of heat exchangers, condensers, boilers and evaporators
- Design and analyze reactor heating and cooling system

**CS 209 Data Structures**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

After successful completion of the course, students will be able to:

- Develop knowledge of basic data structures for storage and retrieval of ordered or unordered data. Data structures include: arrays, linked lists, stacks, queues, binary trees, heaps.
- Develop knowledge of applications of data structures including the ability to implement algorithms for the creation, insertion, deletion, searching, and sorting of each data structure.
- Analyze and compare algorithms for efficiency using Big-O notation.
- Describe the concept of dynamic memory management, data types, algorithms, Big O notation.
- Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

**CS 209L Data Structures Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

After successful completion of the course students will be able to

- Implement problems based on basic data structures like stack and queues.

- Implement problems on linked lists.
- Implement problems for performing different operations like insertion, deletion and searching on binary tree and binary search tree.

### **CHE 201 Chemical Engineering Thermodynamics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

The students will be able to:

- Apply fundamental concepts of thermodynamics to engineering applications.
- Estimate thermodynamic properties of substances in gas and liquid states.
- Determine thermodynamic efficiency of various energy related processes.
- Solve problems related to the solution thermodynamics.

### **CHE 203 Fluid Mechanics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

The students will be able to:

- Understand the basic principles of fluid mechanics
- Analyze fluid flow problems with the application of the momentum and energy equations
- Analyze pipe flows as well as fluid machinery

### **CS 214 Object Oriented Programming**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Describe the features of C++ supporting object oriented programming.
- Explain the relative merits of C++ as an object oriented programming language.
- Describe how to apply the major object-oriented concepts to implement object oriented programs in C++, encapsulation, inheritance and polymorphism.
- Apply advanced features of C++ specifically stream I/O, templates and operator overloading
- Apply other features of the C++ language including templates, forms of casting, conversions, and file handling.

### **CS 214L Object Oriented Programming Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Implement problems based on expressions, arrays and strings.
- Carry out problems using functions, class, constructor and destructor.
- Implement problems using pointers, operator overloading, inheritance, file handling and exception handling.

### **CHE 315S Seminar**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>2</b>

In this course each student will select a topic and give a presentation to the audience.

#### **Learning Outcomes:**

The students will be able to:

- Improve communication skills
- Improve presentation of an idea/thought
- Learn about current trends in research, process design and other aspects which may be beyond the boundary of the curriculum

## ECO 307 Fundamentals of Economics

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

### Learning Outcomes:

Upon Completion of the course student will be able to:

- Understand various aspects of economics that affects the day today functioning of business.
- Understand the concept of demand, supply and production and how the same is related to market.
- Understand the basic financial concepts that affects the functioning of the business.

## MGMT 310 Principles of Management

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 0 0 3</b>

### Learning Outcome:

Upon completion of the course the student will be able to:

- Evaluate the global context for taking managerial actions.
- Understand conflict resolution, motivation and leadership.
- Understand application of theories and management principles.

## MATH 311 Numerical Methods

<b>Max. Marks : 100</b>	<b>L T P C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3 1 0 4</b>

### Learning Outcomes:

After successful completion of the course students will be able to

- Apply numerical methods to obtain approximate solutions to mathematical problems.
- Analyze and evaluate the accuracy of common numerical methods.
- Solve the nonlinear equations, system of linear equations and interpolation problems using numerical methods with error analysis.
- Examine the appropriate numerical differentiation and integration methods to solve engineering problems.
- Analyze the appropriate numerical method to find the eigen values and corresponding eigenvectors of a system.
- Apply the numerical methods to solve differential equations.

### **STAT 204 Probability and Statisticals Methods**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

#### **Learning Outcomes:**

After successful completion of the course students will be able to

- Understand the concepts of random variables, probability distributions and independence of random variables.
- Understand the meaning of probability and probabilistic experiment
- Familiarize with the all approaches to probability theory and particularly, the axiomatic approach.
- Understanding the meaning of conditional probability.
- Distinguish between independent and uncorrelated random variables.
- Distinguish between discrete and continuous random variables and be able to represent them using probability mass, probability density, and cumulative distribution function.
- Identify important types of distributions such as exponential, Binomial, Poisson, Normal, and use them as suitable models in basic science and engineering problems.
- Understand the concept of statistical hypothesis and able to solve such type of real life problems.

### **CHE 309 Mass Transfer**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Learn about the mass transfer diffusion
- Understand the operations of cooling tower and dryer
- Understand the mechanism of crystallization and absorption
- Understand important parameters and carryout complex calculations involved in a distillation column operation and design

### **CHE 312 Chemical Process Control**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Learn about field instrumentation
- Understand dynamic modeling and behavior of a system
- Understand design of controllers

### **CHE 320 Mechanical Operations**

**Max. Marks : 100**  
**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Understand the importance of size reduction and screening operations in mineral industries

- Classify various crushing and grinding units on the basis of working principle
- Select appropriate unit for a particular type of separation

### **CHE 307L Environmental and Fuel Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

The students will be able to:

- Determine different parameters associated with fuel analysis
- Evaluate pollutants quality
- Do sample collection and analysis of data to assess the environmental impact

### **CHE 318L Fluid Mechanics and Mechanical Operations Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Objectives:**

The students will be able to:

- Test basic concepts of fluid flow and calculate important parameters for given systems
- Carryout size analysis of a given sample and select appropriate unit for size reduction
- Classify various crushing and grinding units on the basis of working principle
- Select appropriate unit for a particular type of separation

### **CHE 313L Process Simulation Lab-I**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

The students will be able to:

- Handle simulation software
- Select and implement appropriate theoretical model
- Solve the process flow diagram using simulation software

### **CHE 303 Chemical Reaction Engineering**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
3	1	0	4

**Learning Outcomes:**

The students will be able to:

- Analyze chemical reactors and reaction systems
- Solve open-ended reaction engineering problems in teams
- Calculate operating parameters for isothermal and non-isothermal operation of ideal well-mixed batch and continuous reactors, and for ideal plug-flow reactors
- Formulate a set of consistent material and energy balance equations to describe operation of batch, semi-continuous and continuous reactor systems with single or multiple reactions, operating with and without heat exchange
- Choose an appropriate reactor type and operating conditions to achieve a desired output such as reactant conversion, selectivity and yield

### **CHE 305 Chemical Technology**

**Max. Marks : 100**  
(CA: 40 + ESA: 60)

L	T	P	C
3	1	0	4

**Learning Outcomes:**

The students will be able to:

- Understand important process industry in Chemical Engineering

- Understanding of basic operations involved
- Identify important aspects of a process flow diagram

### **CHE 311 Plant Design and Economics**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

#### **Learning Outcomes:**

The students will be able to:

- Understand concepts of process design and project management
- Synthesize feasible and optimum flow-sheet
- Design of energy integration of process (or heat exchanger network in the process)
- Estimation of capital investment, total product costs and profitability
- Optimum design of equipments based on economics and process considerations

### **CHE 319L Heat and Mass Transfer Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

#### **Learning Outcomes:**

The Students will be able to:

- Calculate important parameters involved in various modes of heat transfer and determine effect of operating/design variables on heat transfer
- Calculate various important parameters involved in mass transfer and determine effect of operating/design variables on mass transfer

### **CHE 321L Reaction Engineering and Process Control Lab**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

The Students will be able to:

- Calculate reaction kinetics parameter using various techniques
- Compare performance of various types of reactor and select appropriate reactor and configuration of reactors
- Model physical systems
- Operate control systems
- Design and tune control systems for typical chemical processes

**CHE 314L Process Simulation Lab-II**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>4</b>	<b>2</b>

**Learning Outcomes:**

The students will be able to:

- Handle simulation software
- Select and implement appropriate theoretical model
- Solve the process flow diagram using simulation software

**CHE 308 Environmental Pollution Control**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Understand direct and indirect impact on human health
- Understand methods to reduce pollution
- Do waste management and utilization

**CHE 402 Chemical Plant Simulation**

**Max. Marks : 100**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
_____	_____	_____	_____

(CA: 40 + ESA: 60) 3 1 0 4

**Learning Outcomes:**

The students will be able to:

- Understand the stages involved in the development of a process model
- Formulate a chemical engineering problem as a mathematical model from basic engineering principles
- Identify the appropriate numerical solutions used in solving the models
- Apply various simulation tools for solving the chemical engineering models developed

**CHE 411 Process Plant Safety and Hazard Analysis**

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **3 1 0 4**

**Learning Outcomes:**

The students will be able to:

- Students will be provided the guidance to key techniques and methods used in industry for identifying and documenting safety and health hazards and their controls.
- It also contains examples that explain how to identify hazards, analyze hazards and controls, document the results of an analysis, and manage residual risk

**CHE 401 Biochemical Engineering**

**Max. Marks : 100** **L T P C**  
 (CA: 40 + ESA: 60) **3 1 0 4**

**Learning Outcomes:**

The students will be able to:

- Kinetics of enzymatic reactions
- Understand about metabolic stoichiometry and energetic
- Design and analysis of biological reactors

- Do economic analysis bioprocess

### **CHE 409 Petroleum Refining Technology**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **3 1 0 4**

#### **Learning Objectives:**

The students will be able to:

- Introduction with the petroleum refinery worldwide
- Develop knowledge of different refining processes
- Develop knowledge of safety and pollution control in the refining industries.
- To find the suitable refining technology for maximizing the gasoline yield

### **CHE 410 Polymer Science and Technology**

**Max. Marks : 100** **L T P C**  
**(CA: 40 + ESA: 60)** **3 1 0 4**

#### **Learning Objectives:**

The students will be able to:

- Comprehend basics of polymer science
- Students would learn concept of average molar masses and molar mass distributions
- Students would be introduced elastomers, plastics and fibers that are used in the industry
- Students would learn fundamentals of Step-growth polymerization
- Students would learn fundamentals of Chain/addition polymerization-ionic and free radical polymerization

### **CHE 414 Advanced Heat Transfer**

**Max. Marks : 100** **L T P C**

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(CA: 40 + ESA: 60) 3 1 0 4

**Learning Outcomes:**

The students will be able to:

- Understand flow behaviour in boundary layers
- Do analogs study between heat, mass and momentum
- Recognize factors affecting during transport of mass and energy
- Do make energy balances in boundary layers

### **CHE 304 Advanced Chemical Reaction Engineering**

**Max. Marks : 100** **L T P C**

(CA: 40 + ESA: 60) 3 1 0 4

**Learning Outcomes:**

The students will be able to:

- Understand mechanism of catalytic reactions and analysis of kinetic data
- Understand yield and selectivity of reaction and diffusion in porous catalyst
- Design catalytic reactors
- Understand reactor design for different type of reactions

### **CHE 317 Advanced Mass Transfer**

**Max. Marks : 100** **L T P C**

(CA: 40 + ESA: 60) 3 1 0 4

**Learning Outcomes:**

The students will be able to:

- Understand concepts of distillation, liquid-liquid extraction, leaching and crystallization
- Carryout calculations involved in design of distillation, liquid-liquid extraction, leaching and crystallization units using various methods used in industries

### **CHE 310 Optimization of Chemical Processes**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Apply the knowledge of optimization to formulate the problems
- Apply different methods of optimization and to suggest a technique for specific problem with a single variable
- Apply different methods of optimization and to suggest a technique for specific problem with multivariable
- Apply of simplex method for linear optimization problems
- Understand how optimization can be used to solve the industrial problems of relevance to the chemical industry

**CHE 408 Nano-Science and Technology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Objectives:**

The students will be able to:

- Demonstrate the understanding of length scales concepts, nanostructures and nanotechnology
- Identify the principles of processing, manufacturing and characterization of nanomaterials and nanostructures
- Apply the electronic microscopy, scanning probe microscopy and nano-indentation techniques to characterize the nano-materials and nanostructures
- Evaluate and analyze the mechanical properties of bulk nanostructured metals and alloys, nano-composites and carbon nano-tubes

**CHE 406 Food Processing and Engineering**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

The students will be able to:

- Understand the importance of food processing
- Identify process conditions for food processing
- Carryout food processing at ambient temperature
- Select suitable medium such as heat, air, oil etc. for food processing
- Identify post processing operations for storage and distribution

**CHEM 301 Analytical Techniques**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**3 1 0 4**

**Learning Outcome:**

On completion of course, the students will be able to:

- understand the principle and various types of chromatography.
- understand and apply the concept and application of electrophoresis.
- understand the principles of NMR, UV-visible and IR spectroscopy.
- perform theoretical calculations related to the techniques discussed.

**MCTR 403 Robotics and Automation**

**Max. Marks : 100**

**(CA: 40 + ESA: 60)**

**L T P C**

**4 0 0 4**

**Learning Outcomes:**

After successful completion of the course students will be able to

- Develop skills of creating industrial and mobile robot projects
- Implement robots like KUKA, PUMA in real industrial world
- Create innovative robot designs using mathematical concepts of kinematics
- Develop autonomous mobile robots in surveillance, security, home and office services.

**CS 507 Artificial Intelligence**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcome:**

On successful completion of the course students will be able to

- Develop algorithms based on game playing and heuristic searching.
- Develop applications based on NLP concepts.
- Develop a cognitive agent.

**CS 511 Cloud Computing**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>4</b>	<b>0</b>	<b>0</b>	<b>4</b>

**Learning Outcomes:**

On successful completion of the course students will be able to

- Apply cloud computing model in real application.
- Use programming paradigms like MapReduce to create applications.
- Operate cloud by installing virtual machines and apply migration.
- Understand the challenges of cloud
- Aware about the Access Control mechanisms of cloud.

**CHE 407R Membrane Separation Technology**

<b>Max. Marks : 100</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(CA: 40 + ESA: 60)</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

The students will be able to:

- Understand the principles and materials properties for different membrane separation processes
- Identify the best membrane modules and manufacturing process for different applications
- Identify and design the suitable membrane separation technique for intended problem

### **CHE 404R Corrosion Engineering**

**Max. Marks : 100**

L	T	P	C
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

The students will be able to:

- Understand the electrochemical and metallurgical behavior of corroding systems.
- Apply the electrochemical and metallurgical aspects of combating eight forms of corrosion.
- Select or choose the testing procedures for corroding systems.
- Evaluate the polarization behavior of corroding systems.
- Design of suitable materials, methods to combat corrosion.
- Predict the function of corrosion inhibitor

### **CHE 405R Enzyme Engineering**

**Max. Marks : 100**

L	T	P	C
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

The students will be able to:

- Recognize the factors affecting enzyme activity and its kinetics
- Understand the role enzyme as a catalyst in chemical industries
- Understand how enzyme kinetics affects reactor design for large scale production

### **CHE 412R Renewable Energy Resources**

**Max. Marks : 100**

L	T	P	C
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

**Learning Outcomes:**

The students will be able to:

- Recognize the types of renewable energy resources

- Recognize the advantages of renewable energy resources on environment
- Do cost benefit analysis
- Efficiency of renewable energy systems as compared to conventional energy system

### **CHE 403R Computer Aided Process Plant Design**

**Max. Marks : 100**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>0</b>	<b>0</b>	<b>0</b>	<b>2</b>

#### **Learning Outcomes:**

The students will be able to:

- Create hierarchy of process design
- Develop models for preliminary systems
- Create CAD model for fluid, heat and mass transfer equipment