



**Sri Sathya Sai College for Women, Bhopal**

**Program Outcomes,  
Program Specific Outcomes  
&  
Course Outcomes**

**2023-24**

# **Programmes Offered**

## **Under Graduate Courses**

- B.A.
- B.C.A
- B.Com.
- B.Sc.

## **Professional Courses**

- B.Ed.

## **Post Graduate Courses**

### **M.A.**

- English
- Hindi
- Political Science

### **M.Com.**

### **M.SC.**

- Biotechnology
- Chemistry
- Computer Science
- Mathematics
- Zoology

# **Program- Undergraduate Courses**

## **Program Outcomes:**

- A graduate student will develop critical thinking.
- A student after graduation will acquire life skills and become a better human being, will
- develop language competence and be proficient in oral communication and written skill.
- Students can pursue career in multi and interdisciplinary fields.
- Students can understand the use of analytical methods required for interpreting and analyzing results and drawing conclusions as supported by their data.
- Students will have better employability in the field of finance, industry, administration, social and extension work, IT sectors, research and many others.
- Students will develop confidence to appear for various competitive exams related to public and private sectors.

## **Program Specific Outcomes:**

### **(A) Faculty of Arts**

#### **(I) BA (Bachelor of Arts)**

The Faculty of Arts offers the following subjects under Under-graduate program—**Political Science, History, English Literature, Hindi Literature, Sociology, Economics, Home-Science, Psychology and Music. Foundation Course (English Language, Hindi, Entrepreneurship Development, Yoga and Environmental Education)** is a common compulsory subject for all the students.

- ❖ The study of various subjects under this Faculty enables the students to acquire life skills and be a better human being.
- ❖ Students will develop language competence and expected to be proficient in oral communication and written skills.
- ❖ The students will inculcate a sense of national pride and respect for the nation by studying varied cultures, customs, literature, architecture, constitution, life skills, music, society etc.
- ❖ The study of various subjects under Humanities will facilitate students to become efficient leaders, able administrators, extension workers, entrepreneurs and extension workers.

## **(i) Department of Economics**

### **Program Specific Outcomes:**

- ❖ To provide students a well-founded education in economics.
- ❖ To provide and adapt curricula that prepares our graduates for employment and further study as economists.
- ❖ To provide students with the opportunity to focus on applied and policy issue in economics.
- ❖ To apply the concept of equilibrium to both microeconomics and macroeconomics.
- ❖ To identify key macroeconomics indicators and measures of economics changes, growth and development.
- ❖ To develop the ability to explain core economics terms, concepts and theories.
- ❖ Assess the role of domestic and international institutions and norms in shaping economics.
- ❖ Apply both oral and written communication skills within the discipline.
- ❖ Demonstrate quantitative reasoning skills.
- ❖ Demonstrate the ability to collect, process and interpret data, including statistical inference.
- ❖ Be able to use critical thinking skills within the discipline of economics about economic matters.

### **Course Outcomes**

#### **Class –B.A. I Year**

##### **Major Paper I: Micro Economics**

- Students will be able to explain consumer's and producer's behavior and their optimum decisions.
- Students will be able to know about the firms and industry, markets and their decisions about optimum production.
- They will be also able to explain they theory of distribution and concept of economic welfare.
- Learning microeconomics is an excellent way to gain an understanding of many factors that affect us in the real-world, such as methods of buying goods, product pricing and input pricing, Ultimately, learning microeconomics is key in learning about the principles of economics.

##### **Major Paper II /Minor/Elective: Paper II, Indian Economy**

- Student will be able to sharpen the analytical skills by highlighting on broad overview of the Indian economy.
- They will be familiar with the issues related to Agriculture, Industry, Foreign Trade, Economic Planning and Various Economic Problems of India.
- Students will be acquainted with broad overview of Madhya Pradesh Economy.
- They will be able to develop, analyze and interpret events and issues related to Indian Economy.

## Class – B.A. II Year

### Major Paper I: MACRO ECONOMICS (Theory)

- After completing this course, students will be able to explain the difference between macroeconomics and microeconomics, common macroeconomic variable, national income and determination of output and employment in classical and Keynesian approaches.
- They will be able to understand the consumption and investment function of an economy and to derive IS-LM curves and use the framework to explain the working of an economy.
- Students will also be able to explain to concept, measurement and effects of inflation, deflation and the various theories of trade cycle.

### Major Paper II / Minor/ Elective: MONEY, BANKING AND PUBLIC FINANCE (Theory)

Students successfully completing this course will have the ability to

- Explain the quantity theory of money, Determinants of money supply, the process of credit creation, credit control and other functions of commercial banks and central bank.
- Describe the role of public expenditure and effects of taxation and public debt in developing country.

## Class – B.A. III Year

### DSE Group A Paper I: Economics of Growth and Development / o`f) ,oa fodkl dk vFkZ'kkl=

After completing this course-

- Students will be able to understand the theories of development and growth models so as to explain the development of growth process of various countries, states and regions.
- It will also give an idea about how they are different by giving empirical details of various indicators of growth and development in India in comparison to other parts of the world.
- Students will be able to use theories of growth and development to analyse the problems of the developing world.

### DSE Group A Paper II: Statistics / lkafj;dh

On completing the course-

- Students will be able to understand and development the insights and knowledge base of various concepts of statistics such as methods of data collection, measures of central tendency and dispersion.
- They will also be able to understand the various techniques of correlation and regression coefficient, time series, index number and probability.
- They will be able well aware of source of data collection in India and interpret empirical data relating to sectors.

## Minor/Elective

### Gender Economics / tsaMj vFkZ'kkl=

After completing this course, students will be able -

- Become Familiar with theoretical concepts in the area of gender economics
- Develop the ability to understand the methodology of gender analysis.
- Develop the ability to understand the demography of female population and its role in development.
- Analysis the various gender issues affecting developments.

## (ii) Department of English

### Program Specific Outcomes

- ❖ The students should familiarize with the artistry and utility of the English language through

the study of different genres of literature.

❖ The students are expected to develop critical faculties necessary in an academic environment and on the job in an increasingly complex, interdependent world.

- ❖ The under graduate students should be comfortable in performing research, analysis, and criticism of literary and cultural texts from different historical periods and genres.
- ❖ The students are encouraged to develop intellectual flexibility, creativity, and cultural literacy so that they may engage in life-long learning.
- ❖ To develop intellectual, personal and professional abilities through effective communicative skills; ensuring high standard of behavioral attitude through literary subjects and shaping the students socially responsible citizens.
- ❖ The student will become skilled in interpreting literary language and literary artefacts through various forms of literature such as poetry, drama, prose, novel and short story
- ❖ Students should be proficient in oral communication and writing.

## Course Outcomes

### Class – B.A. I Year

#### Major Paper I: Study of Drama (Theory)

The course will inculcate team work, communicative ability, creativity and aesthetic sense in students, enabling them to understand, in detail, drama and the theatre Through this course, the students will acquire the knowledge of—

- Different genres of drama, like comedy, tragedy, epic, theatre and commedia dell'arte.
- Distinctive features of Sanskrit, Greek, English, American and Indian plays.
- Dramatic techniques and elements like plot, theme, character, spectacle and narrative.

#### Major Paper I: Applied Drama (Practical)

- The course will inculcate teamwork, communicative ability, creativity and aesthetic sense in students. Enabling them to understand, in detail, drama and the theatre. Through this course, the students will acquire the knowledge of:-
- Different genres of drama, like comedy, tragedy, epic theatre, and commedia dell'arte
- Distinctive features of Sanskrit, Greek, English, American, and Indian plays.
- Dramatic techniques and elements like plot, theme, Character, spectacle and narrative.

#### Major Paper II / Minor/Elective: Study of Poetry (Theory)

- The Study of Poetry will not only instruct and delight the students, but also inspire them to have positivity, creativity, and a new way of thinking After the study of this paper, the students will be able:
- To identify, interpret, analyze and appreciate the various elements of poetry,
- To develop literary intellect, and
- To appreciate the lyrical and sonorous quality of language

#### Major Paper II / Minor/Elective: Applied Poetry (Practical)

- The Study of Poetry will not only instruct and delight the students, but also inspire them to have positivity. creativity, and a new way of thinking. After the study of this paper, the students will be able:
- To identify, interpret, analyze and appreciate the various elements of poetry,
- To develop literary intellect

- To be able to appreciate the lyrical and sonorous quality of language and create poetry.
- The course is beneficial for learners in understanding the mechanism of literature in a creative manner. This course will:
- Accelerate the confidence of students for extempore English and surge their knowledge.
- Promote the analytical and arguing capacity of students.

### **Class – B.A. II Year**

#### **Major Paper I: Study of Prose (Theory)**

After the completion of this course, the student will be able to:

- Analyze literary devices, forms and techniques in order to appreciate and interpret the text.
- Broaden analytical skills and develop critical thinking skills
- Cultivate wisdom and world-view within themselves, and
- Develop language and communication skills and creativity.

#### **Major Paper I: Experiments with Prose (Practical)**

- Upon the completion of this course, the students will be able to grasp the technicalities of prose. The course will help the students to
- Strengthen their knowledge of Communicative English, Vocabulary, Syntax etc.
- Experiment with various prose styles,
- Distinguish and categories linguistic undertones in Prose, and
- Discover a new appreciation for the propagation of ideas with language as the essential medium.

#### **Major Paper II / Minor/ Elective: Study of Fiction**

On completion of this course, the students will be able to engage with different narrative forms and views in fiction dealing with simple and complex issues. The course will motivate the students to:

- Understand various aspects and forms of fiction
- Trace the origin and development of English novel
- Appreciate morality and humanity
- Improve the understanding of the world and the complexities of human mind; and
- Expand creativity and imagination and enrich the vocabulary in a delightful manner.

#### **Major Paper II / Minor/Elective: Experiments with Fiction (Practical)**

On completion of this course, the students will be able to understand and apply various literary techniques to their craft. The course will help the students to:

- Conceptualize abstract ideas into concrete writing,
- Experiment with different genres of literature with theatrical activities,
- Analyze and compare the American and Indian English fiction,
- Expand creativity and imagination
- Strengthen their confidence and language skills with practical exercises: and
- Articulate complex ideas and emotions

### **Class – B.A.III Year**

#### **DSE Paper I: English Language: Structure and Translation (Theory) Group A**

On successful completion of this course, the student will be able to:

- Define the English language structures and their functioning in relation to phonology and morphology.
- Evaluate the relationship between the English language and society.
- Establish an understanding of the English language's artistry and utility.

- Comprehend the elements and scope of translation,
- Apply and practice techniques of English Grammar,
- Depict the production of speech sounds and IPA symbol.

### **DSE Paper I: Practicing English Language: Structure and Translation (Practical) Group A**

On Successful completion of this course, the students will be able to:

- Define language structures, pronunciation and functioning of the language.
- Evaluate the relationship between language and society.
- Establish an understanding of the artistry and utility about the English language.
- Comprehend the elements and scope of translation.
- Acquire mastery over communicative competence in English.
- Apply and practice the techniques of English Grammar.

### **DSE Paper II: Indian Diaspora Literature (Theory) Group A**

- Explain the theoretical background of international migration, race and ethnicity.
- Define the various attributes of the Indian diaspora and the ‘ambivalence’ of their attitudes towards their own motherland as well as their adopted homeland.
- Demonstrate the quest for cultural identity on the part of the citizens of the Indian diaspora and would be able to understand the psychological, social and political problems associated with diaspora culture.
- Discover their own country from a different prism through the eyes of writers who have lived in a composite culture,
- Create an interpretation of the texts in the context of diaspora conditions.

### **DSE Paper II: Evaluation of Indian Diaspora Literature (Practical) Group A**

On Successful completion of this course, the students will be able to:

- Explain and evaluate the theoretical backgrounds of international migration, race, and ethnicity.
- Analyse the various attributes of the Indian diaspora and the ‘ambivalence’ of their attitudes towards their own motherland as well as their adopted homeland,
- Demonstrate the quest for cultural identity on the part of the citizens of the Indian diaspora and would be able to understand the psychological, social and political problems associated with diaspora culture,
- Discover our own country from a different prism through the eyes of writers who have lived in a composite culture.
- Create an interpretation of the texts in the context of diaspora conditions.

### **Minor/Elective**

#### **Indian English Poetry and Drama (Theory)**

On successful completion of this course, the student will be able to:

- Appreciate the historical trajectory various genres of Indian Writing in English from colonial times till the present.
- Evaluate critically the contributions of major Indian English poets and dramatists.
- Analyse how the sociological, historical, cultural and political contexts impacted the texts selected for study.
- Interpret the strengths and constraints of Indian English as a literary medium,
- Develop a literary sensibility and display an emotional response to the literary texts and cultivate a sense of appreciation for them.

#### **Evaluation of Indian English Poetry and Drama (Practical)**

On Successful completion of this course, the students will be able to:



- Appreciate the historical trajectory of various genres of Indian Writing in English from colonial times to till the present.
- Evaluate critically the contributions of major Indian English poets and dramatists,
- Analyse how the sociological, historical, cultural and political context impacted the texts.
- Interpret the strengths and constraints of Indian English as a literary medium.
- Develop a literary sensibility and display an emotional response to the literary texts and cultivate a sense of appreciation for them,
- Cultivate critical thinking and creativity.

### **(iii) Department of Hindi**

#### **Program Specific Outcomes**

- ❖ To understand the basic concept and subject of Hindi and its origin.
- ❖ To make or not the importance of subject Hindi and its branches.
- ❖ To understand various aspect of Hindi literature with a process to reach method and giving new mode and direction.
- ❖ To make an attempt in different area and theory such as vocabulary and vice versa.
- ❖ To understand in the literature more in a border area then Mary confined to subject.
- ❖ To know about Hindi literature its roots cause perspectives and methods.
- ❖ Elaborating and understanding its philosophical methods of Hindi litu.
- ❖ Evaluating the concept of Hindi from past to present and making the society more closely through litu.

#### **Course Outcomes**

##### **Class -B. A. I year**

##### **Major Paper1: Hindi Kavya**

- By studying this course students will be familiar with the long tradition of Hindi poetry.
- Will be well-versed with the social, cultural and national background of the country by studying famous compositions.
- The personality of the students will develop, their vision of life will expand, so that they will be able to understand life and life values.
- There will be efficiency in creative skills, which will give them many possibilities of employment.

##### **Major Paper II / Minor/Elective: Karyalayin Hindi Evam Bhasha Computing**

- Through the course, students will be able to get acquainted with the basic information and working style of office work, so that they will be able to do office work.
- Will be able to get expertise in the field of knowledge science through new technology.
- There will be efficiency in language computing and there will be opportunities to get employment.

##### **Class -B. A. II year**

##### **Major Paper - I Aadhunik Hindi Gadya**

- Students will be familiar with Hindi prose Literature and major works.
- Literature study will develop sensitivity and human qualities in the students.

- Students will be inspired for creative writing and review in the field of literature. Publication of his works and will get employment opportunities in the field of teaching.

### **Major Paper -II / Minor/Elective- Anuvad Vigyan**

- Students will develop translation skills.
- Employment opportunities will be available in the field of translation of Indian and world language literature.
- Students will be able to adjust to the global competitive environment.

### **Class-B.A. III Year**

#### **DSE (Group A) Paper I Kavyanga vivechan evm janpadiya bhasha sahitya (Bundeli/Malvi/Bagheli)**

On Successful completion of this course students will be able to:

- Students will be able to understand poetry well by studying the main part of poetry.
- Will be able to acquire knowledge of regional language and literature.
- Will become familiar with the diversity of Indian culture through regional language literature.
- Students will be proficient in regional language skills. Will be able to establish their own professional are platforms and give presentations in the country and abroad through composing literature of regional languages and dialects, doing drama adaptations etc.

#### **DSE (Group A) Paper II Jansanchar madhyam sindant aur anuprayog**

On Successful completion of this course students will be able to:

- This is an employment-oriented course which will help the students to acquire skoll in mass media and get employment.
- Students will be able to interview important people.
- Students will gain a sense of social and national responsibility through journalism.

#### **DSE (Group B) Paper I: Hindi rashtriya kavyadhara**

- By studying this course, students will understand the meaning of national consciousness in ancient tradition and modern context will be
- Knowledgeable about students will be able to choose their own role in nation building through this course.
- Students with creative ability can earn fame and money in songs, music and films by creating poems and songs with national consciousness.
- Student will able to become familiar with the literary tradition in national consciousness.

#### **DSE (Group B) Paper II:Hindi Alochana**

On Successful completion of this course students will be able to:

- Critical conscience/ critical vision will develop in the students so that they will be able to get employment in the field of criticism writing and publishing.
- Students will be able to understand Indian knowledge and science I an absolute manner so that they can fulfill their social responsibilities. Will be able to get employment opportunities in social welfare related field
- The values of language teaching will be developed in the students so that they can develop creativity and knowledge in the field of language. Will be able to do new experiments.

### **Minor/Elective**

#### **Lok Sahitya Evam Lok Sanskriti**

- Students will be different from the folk lifestyle
- Will be able to do research work with their knowledge and experience by studying various genres of

folk literature.

- Will be able to get employment by developing skills in the field of folk art.
- Students interested in folk songs, music, drama, acting etc. will be able earn fame and money in the country and abroad by doing new experiment in the fields of music, drama and films etc.

#### **(iv) Department of History**

##### **Program Specific Outcomes**

Being a subject of social science, history has its own value in society and human life. It helps the students to develop their ethical and social value. They could gather knowledge about the heritage and tradition of their own country and the others. A history student may choose his or her career in journalism or any other editorial board. They may get job in museum, archives and libraries. Beside those, in the field of research and archaeology they may proceed. After the completion of course in History, the students will be able to.

- ❖ To become efficient Teachers, Administrators, Politicians, Historians, Archaeologists and Entrepreneurs etc. and enable them to write competitive examinations conducted by UPSC and other service commissions.
- ❖ To pursue higher studies and get employment opportunities in the disciplines like History, Archaeology and Tourism industry and also transform the society by applying, practicing and imparting rational thinking.
- ❖ Learn a basic narrative of historical events in a specific region of the world.
- ❖ To distinguish primary and secondary sources and also be able to understand and evaluate historical ideas, arguments, and points of view.
- ❖ To evaluate competing interpretations and multiple narratives of the past.
- ❖ To present clear and compelling arguments, based on critical analysis of diverse historical sources, and effectively communicate interpretations in written essays and/or other media.
- ❖ To learn to develop research questions and complete a well-supported piece of historical writing about it.
- ❖ The learners will also become familiar with the history of the pre-modern world, modern world, transnational or transcultural, circulations of ideas, people, and material goods, One or more national histories and regional comparisons etc.

#### **Course Outcomes**

##### **Class - B. A. I Year**

##### **Major Paper I: Idea of Bharat**

- Student will acquire knowledge regarding the Primitive life and cultural status of ancient India.
- They can gather knowledge about the society, culture, religion and political history of ancient India.
- They will also acquire the knowledge of changing, socio-cultural scenarios of India.
- By studying this paper, students will get to know the golden past of India and feel proud of themselves.

### **Major Paper II / Minor/ Elective: History of Ancient India (from early to 1205AD)**

- The student will learn to analyze the various stages of evolution and development of man in the Prehistorically. Protohistoric and History Age.
- To have an in depth knowledge about the ancient civilization of India like Indus –Saraswati Civilization, Vedic Civilization, Later Vedic Civilization ect and compare them with the other contemporary civilizations of tha world.
- To Explain in detail about golden past of India during the Mauryan and Gupta period, their conquest ,art, architecture and literature, etc.
- The will able to write meaningful essays on the brave and courageous Rajput clans and the South Indian Dynasties of India.

### **Class -B.A. II Year**

#### **Major Paper – I History of Medieval India from 1206 -1739AD (Theory)**

After studying this paper, the students will be able to:

- Present clear cut ideas about the consolidation of the Delhi Sultanate and contemporary Indian rulers. They will be able to give an analytical view of the various dynasties of the Delhi Sultanate, which dominated the political and cultural, landscape of that period for a long time.

#### **Major Paper – II / Minor/ Elective - History of Modern India from 1740 -1947AD (Theory)**

After studying this paper, the students will be able to:

- Understand in detail the colonial administration with all its salient features and the relations between the British and the Indian states. They will also learn about all the treaties the kings of India were forced to make with the British.
- To have a clear view of the political condition and major events during the last phase of the British rule in India. They will be able to answer queries related to the formation of Indian National Congress.

### **Class- B. A. III Year**

#### **Minor/Elective**

#### **Paper-I- History of Freedom Movement in Madhya Pradesh (1836-1947 E)/e/;izns'k esa Lora=rk vkUnksyu 1836&1947 CE**

On Successful completion of this course, the students will be able to:

- Know about the sources of freedom movement in Madhya Pradesh.
- Understand the significance of the Flag Satyagrah, Jungle Satyagrah and the revolt of the Bundelas in Madhya Pradesh.
- Know about the Non-cooperation Movement Civil Disobedience Movement and quit India Movement in Madhya Pradesh.
- Know about the role of the Prajamandal in the freedom Movement in Madhya Pradesh.
- Know about the role of Mahatma Gandhi in the freedom Movement in Madhya Pradesh.
- Familiar with the participation of Women and tribal people in the freedom Movement.
- Acquire knowledge about the contribution of the Princely States of Madhya Pradesh in the Freedom Movement.

### **Department of Home Science**

#### **Program Specific Outcomes**

- ❖ The Students will skilled at the best maximum use of family resources and organising family events.

- ❖ Students will have a better understanding of developmental aspects and problems faced during various stages in the life span.
- ❖ Students will be equipped with the knowledge of textile fabrics, home scale dyeing and printing, selection and care of garments.
- ❖ Students will get enabled for self-improvement with the knowledge of various disciplines of Home Science, one's own strength and legal rights.
- ❖ Students will become skilled extension workers.
- ❖ Students will be able to improve upon and maintain the nutritional status of the family and guide the community as well.

## Course Outcomes

Class B.A. I Year

### Major Paper I : Family Resource Management & Home Furnishing (Theory)

- Understand the meaning of management and can be a successful manager.
- Differentiate between right or wrong after learning the family values.
- Establish the right family values and will carry forward their family culture and good values.
- Understand use and importance of all the family resources like time, money and energy properly
- Simplify the daily activities by using work simplification techniques.
- Make balanced and surplus budget to improve the financial status and will also learn about savings and investments.
- Demonstrate skill in dry and fresh flower arrangement. This art has also been proven as job oriented in present scenario.
- Demonstrate skill in the home management and interior decoration.

### Major Paper I: Family Resource Management & Home Furnishing (Practical)

Students will be able to demonstrate skill in:-

- Time and energy management
- Make balanced and surplus budget to improve the financial status.
- Work simplification.
- Kitchen arrangement
- Flower decoration

### Major Paper II / Minor/ Elective: Fundamentals of Textiles and Clothing

After completing this course, the learner will be able to:

- Identify the textile fibers and describe the properties to textile fibers.
- Get knowledge about fabric construction and finishing processes.
- Learn various dyeing and printing methods.
- Define basic sewing terminologies.
- Understand body measurements.
- Explain the methods of developing paper patterns
- To know different parts of the sewing machine and their functions.

- Identify the causes of working defects of sewing machines and suggest their remedies.
- To select the appropriate clothing for various stages and occasions in life.

### **Major Paper II / Minor/ Elective: Fundamentals of Textiles and Clothing (Practical)**

- Identify the textile fibers and weaves
- Apply dyeing and printing methods on fabric.
- Make different types of temporary. permanent and decorative stitches.
- Prepare different types of seams. Give a neat finish to necklines and attach fasteners.
- Take body measurements correctly
- Explain the methods of developing paper patterns
- State the importance of ease and darts in garments
- Interpret the information contained in commercial patterns
- Draft child's bodice and sleeve block
- Draft peter pan and shirt collar on a basic neckline
- Adapt basic sleeve block to flared and puff sleeve
- Prepare samples of pleats, tucks. Gathers
- Adapt the basic bodice block to construct an A-line frock
- Construct a petticoat. skirt,pyjama and ladies' top.

## **Class B.A. II Year**

### **Major Paper I: Human Development**

After completion of the course, learners will be able to -

- Understand the meaning of human development.
- Get acquainted with all the stages and development of Life span.
- Knowing the adolescent stage, being aware of the changes happening in themselves, their problems and solutions.
- Understand the meaning and significance of marriage, marital adjustment and family relationship.
- Familiarise towards parenthood and Parental attitude.
- Sensitize for adulthood and old age.

### **Major Paper I: Human Development (Practical)**

By the completion of practical work of this course learner will be able to:

- Understand stages of pre-natal development and growth of the child.
- Develop an art to teach and deal with young children.
- Develop more understanding about adolescent, marriage and old age.

### **Major Paper II / Minor/ Elective: Basics of Nutrition and Extension Education**

After completion of the course the learner will be able to:

#### **Section A**

- Understand basic concepts in Food and Nutrition and interpret relation between food, nutrition and health.

- Know various functions of the food.
- Describe functions, dietary sources, symptoms and effects of deficiency or excess of important nutrients.
- Analyze the foods according to nutritional value and functions.
- Know the advantages of cooking and understand healthy cooking practices.
- Describe various methods of cooking and the principles underlying them.
- Analyze the effect of various methods of cooking on nutritional and non-nutritional components of food.

### **Section B**

- Understand the concepts of extension.
- Understand the role of Home Science Extension Education in national development.
- Learn the use of various methods for extending Home Science Knowledge to the communities.
- Develop better communication skills by understanding various elements of communication process.
- Understand the obstacles in communication process to make communications more effective.

### **Major Paper II / Minor/ Elective: Basics of Nutrition and Extension Education (Practical)**

On completion of this course, learners will be able to:

#### **Section-A**

- Gain knowledge about Indigenous food of the locale.
- Understand the importance of weights and measures in cooking.
- Demonstrate skills in basic food preparation. 4. Understand nutritional quality and concept of portion size.
- Demonstrate skills in preparation of low-cost nutritious recipes.

#### **Section-B**

- Prepare visual aids for communicating messages to the masses.
- Develop oral communication skills through participation in group discussion.

### **Class: B.A. III Year**

#### **DSE paper I: Landscape Decoration/Hkwfe LFky ITtk (Theory) Group A**

After completion of the course, learners will be able to -

- Find out the importance of Landscape decoration.
- Divide land according to use for landscape decoration
- Understand the principles of landscape decoration and use them in their own house.
- Identify and utilize the tools and equipments of landscape decoration.
- Select and maintain garden furniture.
- Understand the occupational form of nursery
- Compare the different bungalow, quarter and township landscape forms.
- Make the college environment clean and beautiful.

#### **DSE paper I: Landscape Decoration/Hkwfe LFky ITtk (Practical) (Group A)**

After completion of the course, learners will be able to -

- Gain knowledge of landscaping of bungalow, apartment and township.
- Do plantation according to different seasons.



- Do landscape decoration in their own house.
- Plan landscape decoration for college campus.
- Use information and communication technology in study work.
- Find knowledge about different water gardens.
- Find garden furniture requirements for their own college.
- Find out occupational form of nursery.

### **DSE paper II: Nutrition during lifecycle/thou pø volFkkvksa esa iks"k.k (Theory) (Group A)**

After completion of the course, learners will be able to -

- Understand the concept of balanced diet and Food pyramid.
- Understand the importance and use of food exchange list in meal planning.
- Understand the factors effecting meal planning
- Know the features of dietary guidelines for Indian and relevance of the same.
- Explain the nutritional and dietary needs and nutritional problems of adulthood and old age.
- Describe physiological changes, occurring during pregnancy, lactation and nutritional and dietary needs of pregnant and lactating woman.
- Describe growth and development nutritional needs and nutritional concerns during infancy and preschool years.
- Understand the growth and development nutritional and dietary needs during school age and adolescence.

### **DSE paper II: Nutrition during lifecycle/thou pø volFkkvksa esa iks"k.k (Practical) (Group A)**

On completion of this course, learners will be able to:

- Demonstrate skill in planning meals for lifecycle stages.
- Plan and prepare balanced meals and nutrition snacks for various age groups.

## **Elective/Minor**

### **Home Based Catering/x`g vk/kkfjr [kku&iku Isok (Theory)**

On successful completion of this course, the students will be able to -

- Understand the significance of Food service industry
- Learn Purchasing and storage of food materials
- Student will learn the quantity food production and entrepreneurship.
- Demonstrate skill in preparation of meals for different occasions and for different institutions

### **Home Based Catering/x`g vk/kkfjr [kku&iku Isok (Practical)**

On successful completion of this course, the students will be able to -

- Self-reliant and self-employed.
- Demonstrate skill in preparation of meals for different occasions and for different institutions

## **Department of Music**

### **Program Specific Outcomes**

The student is able to give a practical demonstration of ragas for a period of at least half an hour.

The students is able to demonstrate various aspects of ragas and their differentiation.

The students learns to write the practical composition according to the Notation system.

Learns about the music in the vedic period and also studies the works of music scholars of the past.



Understanding Tala or Rhythm structure .

- ❖ Learn about Vocal culture techniques with Major and Minor notes.
- ❖ Evaluate the mood created by the Raga rendition.
- ❖ The students studies about the life and contribution of the composers of Hindustani Music.

## Course Outcomes

### Class-B.A.I Year

#### Major Paper I : History of Indian Music(Theory)

- Introduction of types of Indian Music- 1.1 'Folk Music', 1.2 Semi Classical Music, 1.3 Light Music
- Reposting of Akashvani, Doordarshan and Music festival of Madhya Pradesh
- Introduction of life sketch of film playback singers of Madhya Pradesh and their contribution in Music.
- Harmonium which is used in Indian Music, its complete description

#### Major Paper I : History of Indian Music (Practical)

- The course aims to acquaint the students with the Hindustani Music system.
- The meaning of the initial technical words of music and to acquaint the student with Ragas and Talas.
- What is Notation system? It aims to introduce the students with the inventers of notations and his musical contributions.
- Student will come to know about the employment opportunities in the field of music.
- To Acquaint the student to tune the self-instrument and its formal repair.

#### Major Paper II /Minor /Elective: Multi Dimension of Hindustani Music (Theory)

- Introduction of types of Indian Music- 'Folk Music', 1.2 Semi Classical Music, 1.3 Light Music
- Reposting of Akashvani, Doordarshan and Music festival of Madhya Pradesh
- Introduction of life sketch of film playback singers of Madhya Pradesh and their contribution in Music.
- Harmonium which is used in Indian Music, its complete description

#### Major II /Minor /Elective : Multi Dimension of Hindustani Music (Practical)

- The course aims to acquaint the students with the Hindustani Music system.
- The meaning of the initial technical words of music and to acquaint the student with Ragas and Talas.
- To give some knowledge of Light Music in prescribed ragas.
- To give practical information in film songs or Bhajan based on classical ragas
- Informative knowledge of Folk Music based on local language
- Provide knowledge of Talas commonly used in light on film songs

### Class-B.A. II Year

#### Major Paper I : History of Indian Music (Theory)

- To knowledge of musical Terminology.
- To know origin and History of Indian Music.
- Description of Taanpura with Sketch and Tuning Practice

### **Major Paper I : History of Indian Music (Practical)**

- The course aims to acquaint the students with the Hindustani Music System.
- The meaning of the initial technical words of music and to acquaint the student with Ragas and Talas.
- To give some knowledge of Light music in prescribed ragas.

### **Major Paper II/Minor/Elective - History of Indian Music (Theory)**

- To knowledge of musical Terminology.
- To knowledge of principle of Indian music.
- To know Description of Tabla.

### **Major Paper II/Minor/Elective - History of Indian Music (Practical)**

- The course aims to acquaint the students with the Hindustani Music System.
- The meaning of the initial technical words of music and to acquaint the student with Ragas and Talas.
- To give some knowledge of Light music in prescribed ragas.

### **Class - B.A. III Year**

### **DSE Paper I: Basic Concept of Indian Music (Group A – Theory)**

1. To Introduce Dhamar and Chaturang singing style.
2. To Introduce Semi Classical Singing Style.
3. To provide complete information regarding job opportunities in the field of music.

### **DSE Paper I: Basic Concept of Indian Music (Group A – Practical)**

1. To develop competence of singing Vilambit Khayal and Drut Khayal in demarcated Ragas of prescribed syllabus.
2. To develop competence of singing semi classical style and Dhrupad Gayan Style.
3. To introduce multi style of semi classical music
4. To perform dugun and chaugun by hand & prescribed Talas.

### **DSE Paper II Basic Concept of Indian Music (Group A - Theory)**

1. To introduction of Western music system and swar saptak.
2. To introduction to Ancient Medieval and Modern shruti swar system.
3. Information of life sketch and contribution of music field artist of Madhya Pradesh.
4. Indian knowledge tradition, khyal, gayan, tradition in Madhya Pradesh

### **DSE Paper II Basic Concept of Indian Music (Group A – Practical)**

1. To develop competence of singing Vilambit Khayal and Drut Khayal
2. To develop competence of singing semi classical style and Dhrupad Gayan Style Alankars.
3. To introduce Dadra, Thumri, Tarana or Chaturang Vocal style
4. To perform dugun and chaugun by hand & prescribed Talas.

### **Minor / Elective: Multi Dimension of Indian Music (Theory)**

On Successful completion of this course, the students will be able to:

1. Explain Indian knowledge Tradition – Dhrupad Traditions in Music
2. Explain the Basics of Dhrupad
3. Know Musical Terminology
4. Able to Develop Skill, Essay Writing pertaining Music.

### **Minor / Elective Multi Dimension of Indian Music (Practical)**

On Successful completion of this course, the students will be able to:

- 1 Present Khyal with Gayaki
- 2 Perform Dhrupad and Dhamar
- 3 Perform light & classical and semi classical music
- 4 Practical knowledge increase

## **Department of Political Science**

### **Program Specific Outcomes**

- ❖ The Political Science undergraduate program was born out of recognition of the increasing Significance of cross-disciplinary studies in the social sciences.
- ❖ The program is organized around the combined perspectives and analytical tools of Political Science, International Relations and History.
- ❖ The Political Science degree furnishes the students with a unique multidisciplinary approach in social sciences and prepares them for further academic study and/or for careers in the public and the private sector.

### **Course Outcomes**

#### **Class – B.A. I Year**

##### **Major Paper I: Political Theory**

- Students will be able to understand meaning and significance of political theory, different ideologies and approaches.
- They will be able to explain concept of state and its changing nature.
- They will learn what is power and authority and how they are interwoven. These two concepts will further enhance their understanding of politics.
- They will be able to learn different dimensions of sovereignty and its relation with state.
- They will be able to explain liberty, equality, justice and rights. Understanding of these key political concepts will facilitate students in real political world.
- They will be able to explain different models of democracy and theories of representation.

##### **Major Paper II / Minor/ Elective: Indian Constitution**

Students will be able to understand the constitutional development in India.

- They will be able to answer how constituent assembly was formed.
- They will be able to describe the significance of the preamble, fundamental rights and directive principles of State Policy in the constitutional design of India.
- They will be able to answer questions pertaining to the function and role of the President, Prime Minister, Governor, Chief Minister, Parliament and State legislature and the courts in the constitutional design of India.
- They will be able to identify the power division in constitutional set up.

#### **Class – B.A. IInd Year**

##### **Major Paper I - Western Political Thought (Theory)**

- The students will understand the significance of study of Political Philosophy.
- The students will know the key ideas of Greek Political thinkers Plato and Aristotle
- They will be able to explain what was the ideal state according to Plato and how was it linked to his scheme of education and theory of justice.
- Students would learn the key ideas of idealist thinkers.

### **Major Paper II / Minor/ Elective - Indian Political Thinkers (Theory)**

- Students will be able to think to Manu and Kautilya.
- Students will be able to explain Social and Political Ideas of Rajaram Mohan Roy, Swami Vivekananda, Lokmanya Bal Gangadhar Tilak, Shri Aurobindo Gosh and other great Indian leaders.
- They will be able to understand the contribution of Women in Indian Political Thought.

### **Class – B.A. III Year**

#### **DSE Paper I: Comparative World Constitution (Group B - Theory)**

On successful completion of this course, the students will be able to:

- Students would be able to explain how legislatures, executive and judiciary work in these countries and how they interact with each other in their respective political systems.
- Students will be able to understand the various ways in which executive, legislature, and judiciary of one country differs from another, their merits and demerits and will be able to develop a framework of comparative analysis.
- Overall, students will be able to develop a broad spectrum about constitutions and their working.

#### **DSE Paper II: International Relations and Contemporary Issues (Group B - Theory)**

Students will be able to explain:

- Development, different definitions, theories and key concepts of International Relations.
- Globalization and its impact on the world
- Changing international political order
- Role and functions of United Nations, promotion of peace, security, economic and social development through UNO.
- Global economy and multilateral institutions
- Understanding of global issues.

#### **Minor/ Elective: State Politics in India**

- This course intends to acquaint students with the practical aspects of state politics in India. Students will be exposed to the ideology, structure, and functioning of the political parties which play the pivotal role in Democratic policy. At the End of the Course: Students would be able to learn the key drivers of Indian political system.
- The students will be able to explain how caste, religion language have influenced the identity politics in India.
- They will be able to explain the ideology, social base and function of key political parties.
- They will be able to critically examine and explain the development issues in India especially in the farm and industrial sectors.

## **(v) Department of Psychology**

### **Program Specific Outcomes**

- ❖ Students are expected to know the evolution of psychology and the major pioneers in the field.
- ❖ Students will be acquainted with the concepts and laws of Human Development.
- ❖ Students will understand and apply psychological principles to personal, social and organisational issues.
- ❖ Students will get an insight into one's own and others behaviour and mental processes and apply effective Strategies for self management and self improvement.
- ❖ Students will understand and apply basic research methods including research design, data analysis and interpretations.

### **Course Outcomes**

#### **B.A. I Year**

##### **Major Paper I: Personality Development**

- Students will gain knowledge of personality.
- Students will learn to implement coping strategies for better adjustment
- Students will develop skills to enhance self- esteem self-regulation and self-presentation
- Acquisition of life skills based on happiness and positive thinking.
- Students will learn the skills of SWOC communication time and stress management for their life

##### **Major Paper I Practical: Report Presentation**

- Students will learn to evaluate their strength, weaknesses, opportunities and challenges.
- Students will develop ability to enhance their personality through applications of communications skills, time and stress management.

##### **Major Paper II / Minor/Elective: Introduction to Psychology**

- To develop knowledge and skill in life through learning principle.
- Learn to apply technique of memory improvement in everyday life.
- Learn to gain self regulation for quality of life.
- Acquisition of life skills through motivation.

##### **Major Paper II Practical / Minor/Elective: Introduction to Psychology**

On the completion of this course, learners will be able to:

- Students will learn to apply practical application of psychological concept of attention, learning and emotions.
- Students will develop the skills of memory improvement.
- Students will acquire the knowledge of achievement motivation in their life.
- Students will learn to evaluate SWOC.
- Students will develop ability to enhance their personality through applications of communication skills, time and stress management.

## **B.A. II Year**

### **Major Paper I: Psychopathology (Theory)**

- Students will be able to critically assess the information related to the study of behavior and mental processes.
- Students will gain knowledge about causes, types, and prevention of abnormal behavior.
- Students will be able to compare biological, psychological and social views of abnormal behavior.
- Students will be able to utilize the acquired knowledge in the area of specific learning disabilities.

### **Major Paper I: Psychopathology (Practical)**

- Students will be able to critically assess the information related to the study of behavior and mental processes.
- Students will gain knowledge about causes, types, and prevention of abnormal behavior.

### **Major Paper II / Minor/Elective: Guidance and Counselling Psychology (Theory)**

- Students will gain knowledge of nature and process of counselling along with the difference between guidance and counselling.
- Students will develop skills of counselling for solving the problems of clients in different areas.

### **Major Paper II / Minor/Elective: Guidance and Counselling Psychology: (Practical)**

- Student will gain knowledge of nature and process of counselling along with the difference between guidance and counselling.
- Student will develop skills of counselling for solving the problems of clients in different areas.

## **Class- B.A. III Year**

### **DSE Group B Paper I: Social Psychology/ lekt euksfoKku**

- Students will gain insight about social Psychology and its relationship with other Social Sciences, approaches and methods of Social Psychology.
- Students will learn about Person perception attribution and Inter-Personal Attraction.
- Students will be aware about attitude and prejudice and their role in Social Behavior.
- Students will develop awareness about group behaviour, conformity and leadership.
- Students will be capable for developing understanding about pro-social behavior, aggression and socialization like issues.

### **DSE Group B Paper I: Social Psychology Practical / lekt euksfoKku izk;ksfxd**

- Students will be able to study about group-relations
- Students will be capable of perceiving others
- Students will gain insight about the measurements of attitudes, prejudices and conformity like social behaviour.
- Students will be able to identify relevant social situations and their influences on social behavior.

### **DSE Group B Paper II: Developmental Psychology/ fodklkRed euksfoKku**

- Student will gain knowledge about Human development
- Students will be able to understand the factors needed for Human development.
- Students will develop skill to deal with family, peers media and ecology in their development context.
- Students will be able to understand about cognitive development and Language development.
- Students will gain Insight about moral, social and emotional development with their roles.

### **DSE Group B Paper II: Developmental Psychology/ fodklkRed euksfoKku**

- Students will gain knowledge about different Psychological tests and their application
- Students will be able to recognize emotions
- Students will be aware about the process of development of Language and creativity
- Students will develop insight about the developmental case studies.

#### **Minor/Elective:**

##### **Health Psychology/ LokLF; euksfoKku**

- Students will gain knowledge about the relationship between health and psychology
- Students will get the orientation of indigenous perspective of health psychology.
- Students will learn the effect of psychological aspects on the development of medical illnesses
- Students will acquire the knowledge of effect of stress on health
- Students will master the skill of health enhancing practices.

##### **Health Psychology Practical / LokLF; euksfoKku izk;ksfxd**

- Student will learn to measure mental health of individuals
- Students will learn to handle different attitude scales
- Students will develop insight about stress management techniques
- Students will gain insight about Yoga, meditation & Nutrition and their role for Physical and mental health.

## **Department of Sociology**

### **Program Specific Outcomes**

- ❖ The programmer seeks to develop in student the sociological knowledge and skills that will enable them to think critically and imaginatively about society and social issues.
- ❖ Better understanding of real life situation. The ability to apply sociological concepts and theories to the real world and ultimately their everyday lives.
- ❖ Sociological understanding: The ability to demonstrate sociological understanding of phenomena for example how individual biographies are shaped by social structures
- ❖ Better Understanding of real life situation: The ability to apply sociological concepts and theories to the real world and ultimately their everyday lives.
- ❖ Observation powers: a sensible observation power is necessary to identify the research problems in field study so a perception about human society slowly grows up.

## **Course Outcomes**

### **B.A I Year**

#### **Major Paper I: Indian Society and Culture**

- This paper is expected to bring familiarity among student about Indian Society. It will present a Comprehensive integrated and empirical profile of Indian society. It is supposed that the structure and processes operative in the society. The changing agents operating in Indian society presented in this paper will also enable student to gain a better understanding of their own situation and region.
- Get an impression about the basic composition of Indian society. Its historical moorings basic philosophical foundations of the society and the institutions.

- The student will have extensive comprehension of Indian traditions and the opportunity to explore and express them.
- They will also learn in detail about the three layers of Indian society namely “Aranyak Lok Gramya and Nagar”
- After reading this course the student will be able to understand and strengthen local regional employment avenues

### **Major Paper II / Minor/ Elective: Basic Concepts of Sociology**

- The course is designed to incorporate all the key concepts of Sociology which would enable the learner to develop keen insight to distinguish between the common sense knowledge and Sociological knowledge
- The conceptual learning of Society, Social group, Social structure, Social institution ect, will help students in their day to day living.
- By studying this paper students will get information about various employment opportunities in government, corporate, N.G.O. and self-employment sector.

## **B.A. II Year**

### **Major I: Basic Concepts of Social Research (Theory)**

- This paper will help in developing research insight among the students. They will learn about the nature of scientific method and the way to attain value neutrality.
- It will teach students about the importance of reality and the ways to obtain objective and reliable information.
- It will develop reading, writing and reasoning skills among the students.

### **Major II/Minor/Elective: Social Change and Development (Theory)**

Social change is inevitable, hence learning about human society is incomplete without comprehension of change.

- This paper is designed to give the student an extensive knowledge about social change and its overall impact on society.
- This paper will introduce the students with the concept, various factors, processes and theories of social change.
- It will also give them knowledge about the concept of development and its consequence.

## **B.A III Year**

### **DSE Grupe B Paper I: Foundation of Sociology Thought**

After completing this Course student will be able to understand the followings-

- The original text of sociological thought.
- They will be able to critically analyze the theoretical arguments of different scholars.
- Student will be able to apply sociological theories to understand the Social phenomena in the practical world.
- This course will be helpful to develop deep scientific and logical understanding about society, culture and traditions among students.

### **DSE Grupe B Paper II: Crime and Society**

By this curriculum student will successfully to gain the following knowledge-

- Major outcome of this course will make the students to discover and analyze the fundamental knowledge of crime; criminals and the scientific and logical understanding about the causes of crime remove the fallacy related with these.
- This syllabus will be helpful to aware the students about the new pattern of crime such as organized professional and cyber crime.



- The knowledge of constitutional provisions of crime, rules of compensation and justice for victims will prove important for students.
- The new provisions related with punishment, prison and prisoner will make the thinking of students more scientific.
- This course will provide students a wide area of job opportunities in government, research, medical, legal, social sector and consultancy etc.

### **Minor/Elective**

#### **Sociology of Indian Tribes**

Present syllabus introduces the student about different known and unknown part of tribal society-

- This syllabus will provide the scientific knowledge and demography of tribes and scheduled tribes.
- Students will be able to understand the socio-cultural specialty of tribal society, their traditional economy and political organization.
- Study of tribal problems will be able to develop the feeling of co-existence in students and will turn their thinking more logical and scientific.
- Study of this paper will help the student to succeed in different competitive examination and interviews.
- This course will provide student a vast area of job opportunities in the field of government, private, research and NGO's sector etc.

### **(A) Faculty of Computer Science & Application**

#### **(II) BCA (Bachelor of Computer Applications)**

### **Program Specific Outcomes**

The primary objective of this program is to provide a foundation of computing principles and business practices for effectively using/managing information systems and enterprise software. It helps students analyze the requirements for system development and exposes students to business software and information systems.

At the end of the Program, students will be able to:

- ❖ Understand the concepts of key areas in computer science.
- ❖ Analyze and apply latest technologies to solve problems in the areas of computer applications.
- ❖ Apply technical and professional skills to excel in business.
- ❖ Communicate effectively in both verbal and written form.
- ❖ Develop practical skills to provide solutions to industry, society and business.
- ❖ Job roles include Web Development, Software/ Application development, Software Engineer, Software Tester, System Analyst, Business Analyst to name a few.
- ❖ Provide IT based services in the public domain.
- ❖ Work in a team/group for execution of projects.
- ❖ Pursue higher studies - MCA/ M.Sc.-CS/IT/ MBA/ MS(IT).

### **Course Outcomes**

## **Class – BCA I Year**

### **Major I: Computer Fundamentals, Organization and Architecture**

After the successful completion of this course, student will be able to do the following:

- Understand the basic structure, operation and characteristics of digital computer.
- Design simple combinational digital circuits based on given parameters.
- Understand the working of arithmetic and logic unit.
- Know about hierarchical memory system including cache memories and virtual memory.
- Know the contributions of Indians in the field of computer architecture and related technologies.

### **Major I Lab: Computer Fundamentals and Digital Lab**

After the successful completion of this course, student will be able to do the following:

- Familiarity with parts of the computer and peripheral devices used with the computer.
- Realization of the basic logic and universal gates.
- Verify the behavior of logic gates using truth tables.
- Implement Binary-to -Gray, Gray-to -Binary code conversions.
- Design half and full adder circuit using basic gates.
- Design and construct flip flops and verify the excitation tables.

### **Major II: Programming Methodology & Data Structures**

After the successful completion of this course, student will be able to do the following:

- Develop simple algorithms and flow charts to solve a problem with programming using top down design principles.
- Writing efficient and well-structured computer algorithms/programs.
- Learn to formulate iterative solutions and array processing algorithms for problems.
- Use recursive techniques, pointers and searching methods in programming.
- Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles.
- Have knowledge of complexity of basic operations like insert, delete and search on these data structures.
- Possess ability to choose a data structure to suitably model any data used in computer applications.
- Assess efficiency tradeoffs among different data structure implementations.
- Implement and know the applications of algorithms for searching and sorting.
- Know the contributions of Indians in the field of programming and data structures.

### **Major II Lab: Programming Methodology & Data Structures Lab**

After the successful completion of this course, student will be able to do the following:

- Develop simple algorithms and flow charts to solve a problem with programming using top down design principles.
- Writing efficient and well-structured computer algorithms/programs.
- Learn to formulate iterative solutions and array processing algorithms for problems.
- Use recursive techniques, pointers and searching methods in programming.
- Possess ability to choose a data structure to suitably model any data used in computer applications.
- Implement and know the applications of algorithms for searching and sorting etc.

**Minor: Operating System**

After the successful completion of this course, student will be able to do the following:

- Describe the importance of computer system resources and the role of operating system in their management policies and algorithms.
- Specify objectives of modern operating systems and describe how operating systems have evolved over time.
- Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks.
- Describe the concepts of memory management techniques.
- Identify the best suited process management technique for any process.
- Describe various file operations, file allocation methods and disk space management.
- To understand and identify potential threats to operating systems and the security features to guard against them.
- Learn to operate the Linux system.

**Minor Lab: Operating System Lab**

After the successful completion of this course, student will be able to do the following:

- Operate the Linux system.
- Do administration
- Use Vi Editor

**Elective: Discrete Mathematics**

After the successful completion of this course, student will be able to do the following:

- Apply the Boolean algebra, switching circuits and their applications.
- Minimize the Boolean function using Karnaugh Map.
- Understand the lattices and their types.
- Graphs, their types and applications in study of shortest path algorithms.
- Test whether two given graphs are isomorphic.
- Understand the Eulerian and Hamiltonian graphs.
- Represent graphs using adjacency and incidence matrices.
- Understand the discrete numeric functions, generating functions and Recurrence Relations.

**Vocational: Web Designing**

After the successful completion of this course, student will be able to do the following:

- Code a handful of useful HTML & CSS examples
- Build semantic, HTML & CSS webpage
- Write basic scripts
- Use Names, Objects and Methods
- Add interactivity to a Web page.
- Create Dynamic Web pages using Java Script in HTML forms.

**Class – BCA II Year****Major I: Data Communication and Computer Networks**

After the successful completion of this course, student will be able to do the following:

- Demonstrate the Basic Concepts of Networking, Networking Principles, Routing Algorithms, IP Addressing and Working of Networking Devices.
- Demonstrate the Significance, Purpose and application of Networking protocols and Standards.
- Describe, compare and contrast LAN, WAN, MAN, Intranet, Internet, AM, FM, PM and Various Switching Techniques.
- Explain the working of Layers and apply the various protocols of OSI & TCP/IP model.
- Analyze the Requirements for a Given Organizational Structure and Select the Most Appropriate Networking Architecture and Technologies.
- Design the Network Diagram and Solve the Networking Problems of the Organizations with Consideration of Human and Environment. Install and Configure the Networking Devices.

### **Major I Lab: Computer Networks Lab**

After the successful completion of this course, student will be able to do the following:

- Learn and identify various cables used in the networking.
- Learn, identify various connectors used to connect different cables.
- Use the various tools for preparing the connectors for cables.
- Configure and manage various local area networks at home and at work place.

### **Major II: Database Management Systems Using PL/SQL**

After the successful completion of this course, student will be able to do the following:

- Explain the features of database management systems and relational database.
- Design conceptual models of a database using ER modelling for real life applications and construct queries in relational algebra.
- Create and populate a RDBMS for a real-life application, with constraints and keys, using SQL.
- Retrieve any type of information from a database by formulating complex queries in SQL.
- Analyse the existing design of a database schema and apply concepts of normalization to design an optimal database.

### **Major II Lab: DBMS Using PL/SQL Lab**

After the successful completion of this course, student will be able to do the following:

- To create database & views
- Execute simple & advance SQL queries
- Use DBMS tools in the areas of database applications.

### **Minor: Internet Application using Java Programming**

After the successful completion of this course, student will be able to do the following:

- Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
- Read and make elementary modifications to Java programs that solve real-world problems.
- Validate input in a Java program.
- Design and use basic applet for web page

### **Minor Lab: Java Programming Lab**

After the successful completion of this course, student will be able to do the following:

- Develop simple applications of java.
- Implementation and use of conditional statement.
- Learn to formulate iterative solutions and array processing algorithms for problems.
- Learn to implement method overloading and overriding.
- Implementation of inheritance and interface in java.

- Develop a small applet program using awt.

### **Elective: E-Commerce**

On the completion of this course student will be able-

- To learn the fundamentals of E-Commerce and its process.
- To understand the role of E-Commerce in the present scenario along with the concepts of security and its applications.
- To gain knowledge of e-commerce business needs and resources and match to technology considering human factors and budget constraints.
- To apply knowledge of changing technology on traditional business models and strategy.
- To have skills to Communicate effectively and ethically using electronic communication.

### **Vocational: Web Development using PHP & MySQL**

After the successful completion of this course, student will be able to do the following:

- Discover how the web works, what makes websites work.
- Implement simple and impressive design from basics to advanced – so as to focus on goal oriented and user centric designs.
- Use Server-Side Scripting.
- Implement concept of data persistence.
- Apply skills to program logic using PHP and handle data using MySQL.
- Develop dynamic websites using PHP & MySQL.

### **Class – BCA III Year**

#### **DSE Paper I: Computer Graphics (Group A)**

On successful completion of this course, the students will be able to:

- Understand The basics of computer graphics, different graphics systems and applications of computer graphics.
- Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.
- Use of geometric transformations on graphics objects and their application in composite form.
- Explore scene with different clipping methods and its transformation to graphics display device.
- Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.
- Render projected objects to naturalize the scene in 2D view and use of illumination models for this.

#### **DSE Paper I: Computer Graphics Lab (Group A)**

On successful completion of this course, the students will be able to:

- Understand The basics of computer graphics, different graphics systems and application of computer graphics.
- Discuss various algorithms for scan conversion and filling of basic objects and their conversion analysis.
- Use of geometric transformations on graphics objects and their application in composite form.
- Extract scene with different clipping methods and its transformation to graphics display device.
- Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.
- Render projected objected to naturalize the scene in 2D view and use of illumination models for this.

#### **DSE Paper II: Python Programming (Group A)**

On successful completion of this course, the students will be able to:

- Develop and execute simple Python programs.

- Structure a Python program into functions.
- Using Python lists, tuples to represent compound data.
- Develop Python Programs for file processing

### **DSE Paper II: Python Programming Lab (Group A)**

On successful completion of this course, the students will be able to:

- Develop Simple programs in Python
- Knowledge of conditional and loop statements.
- Learning of Tuple, List, Directory in Python
- Knowledge of Files and OOPs Concepts in Python.
- Introductory Knowledge of Pandas, PDBC and Numpy.

### **Minor**

#### **Cloud Computing**

On successful completion of this course, the students will be able to:

- Learn fundamentals of cloud computing
- Understand cloud architecture, types and services
- Apply concepts of cloud computing in real applications
- Gain deep insight of security in cloud computing.
- Have knowledge of market Based management of Clouds

### **Elective**

#### **Cyber Security**

On successful completion of this course, the students will be able to:

- Identify the key components of cyber security network architecture.
- Employ, design and implement appropriate security technologies and policies to protect computers and digital information.
- Analyze threats and risks within context of the cyber security architecture.
- Apply cyber security architecture principles.
- Gain familiarity with prevalent network and distributed system attacks.

## **(B) Faculty of Commerce**

### **(III) B.Com. (Bachelor of Commerce)**

#### **Programme Specific Outcomes**

- ❖ Learners will be able to prove proficiency with the ability to engage in competitive exam like C.A., C.S., ICMA etc.
- ❖ Learner will acquire the skills like effective communication, Decision making, Problem solving in day to day business affairs.
- ❖ Students can acquire practical skills to work as Tax Consultant, Audit Assistant, and other financial supporting services.
- ❖ After completing three years of B.Com. program, students would gain a thorough grounding in the fundamentals of commerce.
- ❖ The students get the practical exposures which would equip them to face the modern day challenges in commerce.
- ❖ To build a strong foundation of knowledge in different areas of commerce.

- ❖ To develop the skill of applying concepts and techniques used in commerce.
- ❖ To develop an attitude for working effectively and efficiently in a business environment.
- ❖ To expose students about entrepreneurship.
- ❖ To enable a student to be capable of making decisions at personal and professional.

## **Department of Commerce**

### **Course Outcomes**

#### **B.Com. I Year**

##### **Major Paper I: Financial Accounting**

- Acquire conceptual knowledge of basics of accounting.
- Identify event that need to be recorded in the accounting records.
- Equip with the knowledge of accounting process and preparation of accounts of sole trader.
- Identify and analyze the reasons for the difference between cash book and pass book balances.

##### **Major Paper II: Business Regulatory Framework**

- The outcome of this course is to provide the students with practical legal knowledge of general business law issues.
- To understand the Essentials of A valid contract.
- To understand the laws of the Act, consideration and the various modes of discharge of a contract to explain the various laws with regards to the sale of goods and performance of a sale contract and remedial measures to familiarize the students with the various law with regard to consumer protection in India and the functions of various consumer forums.
- To understand the meaning and the various legislations with regard to the cyber laws.

##### **Minor: Business Organization and Communication**

- To understand the basics of the business and be able to imbibe how any business can be organized successfully.
- The chapters related to communication enable to elucidate how communication plays an important role in modern business scenario.

##### **General Elective: Business Economics**

- Understand how households (demand) and businesses (supply) interact in various market structures to determine price and quantity of a goods produced.
- Represent demand, in graphical form, including the downward slope of the demand curve and what shifts the demand curve.
- Understand the links between production costs and the economic models of supply.
- Understand the concept of pricing.

#### **B.Com. II Year**

##### **Major Paper I: Corporate accounting**

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

- Understanding the regulatory environment in which the companies are formed and operate.
- Develop Solid foundation in accounting and reporting requirements of the corporation Act and Accounting Standards.

- Describe the rationale, merits and demerits of issuing bonus shares for a company.
- Prepare financial statements (Profits & Loss Account, Balance Sheet, etc.) using online software.
- Analyze the case study of major amalgamation of companies in India.
- Describe the process of e-filing of annual reports of companies.

### **Major Paper II: Cost accounting**

This subject of cost accounting is very important to make the student of commerce subject self-reliant, students from its study

- Know the principles, concepts, benefits, utility of cost accounting
- In the event of setting up their own industry, being self-sufficient in cost accounting, they will be able to acquire knowledge of the methods of material issue, control and labor payment.
- Will be expert in finding out unit cost, finding tender price, finding contract cost and finding profit
- Develop decision making ability through marginal cost analysis, standard cost analysis.
- Will be able to get employment as a cost analyst in small, big business houses.

### **Minor: Business Statistics**

At the end of the course, students should be able to:

- Develop the ability to analyze and interpret data to provide meaningful information to assist in management decision making activities;
- Apply a basic knowledge of statistics to business disciplines;
- Apply appropriate graphical and numerical descriptive statistics for different types of data;
- Apply probability rules and concepts relating to discrete and continuous random variables to answer questions within a business context;
- Explain and interpret a variety of hypothesis tests to aid decision making in a business context;
- Use simple/multiple regression models to analyze the underlying relationship between the variables.

### **Elective I: Principles of Management**

On having completed this course, student should be able to:

- Demonstrate understanding of the role of managers in an organization
- Summarize the elementary concepts, principles and theories of management
- Examine the managerial functions having an impact on the organizational effectiveness
- Identify the contemporary issues and challenges in management
- Develop ethical workplace practices.
- Appraise the sources of influence to inspire the actions of other organizational members and evaluate the best control methods.

## **B.Com. III Year**

### **DSE Major Paper I: Income Tax Law & Practice (Group A)**

- To introduce the basic concept of income tax.
- It helps to build an idea about income from salaries, house property, business profession, capital gains and other sources as a concept.
- It gives more idea about the deductions u/s 80 and how to compute tax liability and about the filling of returns.

### **DSE Major Paper II: Goods and Service tax & Custom Duty (Group A)**

- Connect with the genesis of goods and service tax (GST), decipher the constitutional amendment carried out to install in India and comprehend the composition and working of GST council.
- Understanding the meaning of supply under GST law.
- Comprehend the utilization of input tax credit.



- Understand the provisions for registration under GST law.
- Know the basic concepts of customs Act and to compute the assessable value for charging customs duty.

### **Minor: Management Accounting**

After studying this subject, the students:

- Be well versed in a thorough analysis of any company's financial statements such as profit and loss account and position statement, and be able to make accurate estimates of the financial position, solvency and profitability of that company.
- By studying the cash flow statement, you will get the knowledge of proper use of cash in the organization and adequate availability of cash of the organization.
- After getting the knowledge of marginal cost, will be able to make or buy the item, fix the price, stop production etc.
- Learn to control costs by creating different types of budgets from budgetary control.
- Prepare the managerial report of the company.

### **Elective: International Business**

- To Understand the most widely used international business terms and concepts.
- To identify the role and impact of political, economic, social and cultural variables in international business.
- To Analyze international business from multi-centric perspective, avoiding ethnocentrism.
- Understand the process of globalization, its impact on the evolution and growth of international business.
- Understand the significance of different forms of regional economic integration and to appreciate the role played by various international economic organizations such as the WTO, UNCTAD, IMF and World Bank.
- Familiarize students with the international financial environment, and get them acquainted with the basic features of the foreign exchange market - its characteristics and determinants.

## **Department of Computer Application**

### **Program Specific Outcomes**

On the Completion of the program, students will gain a strong foundation of knowledge in different areas of Commerce and Computer Application courses. The student will be able to pursue higher education and take-up jobs in the field of Commerce and Computer Applications. The program develops an attitude for working effectively and efficiently in a business environment.

At the end of the Program, students will be able to:

- ❖ Graduates will be able to develop strong understanding of core Commerce and Computer Application courses.
- ❖ Able to take up challenging career options in Commerce and IT sector.
- ❖ Motivated to pursue higher education.
- ❖ Gain updated knowledge to take up employment.
- ❖ Become ethically and socially responsible commerce graduates with computer application knowledge.
- ❖ Pursue higher studies – M.Com. / MCM/MSW/ CA/ MBA/PGDCA.

### **Course Outcomes**

**Class – B.Com. (Computer Application) I Year**

**Generic Elective: M.S. Office**

On the completion of this course student will be able -

- To Create and manage professional documents using word.
- Analyze, manage and present data using excel.
- Create and manage presentation using power point.
- To insert a table, picture, or drawing into the document.
- To Prepare the document to be sent as a circular letter.

### **Vocational: Web Designing**

After studying this Course, the student will be able to –

- Code a handful of useful HTML & CSS examples
- Build semantic, HTML & CSS webpage
- Write basic scripts
- Use Names, Objects, and Methods
- Add Interactivity to a Web Page
- Create Dynamic Web Pages using Java Script in HTML forms.

### **Class – B.Com. II Year**

#### **Generic Elective: Computer Maintenance & Troubleshooting**

On the completion of this course student will be able to -

- Identify and understand the hardware components in the computer system.
- Install, configure and update operating systems, device drivers and softwares.
- Install, configure and maintain various components in computer system and peripheral devices.
- Diagnose faults, repair and maintain computer system and its peripherals.
- Do preventive maintenance of computer system and its peripherals.

#### **Vocational: Web Development using PHP & MySQL**

After studying this Course, the student will be able to –

- Discover how the web works, what makes websites work.
- Implement simple and impressive design techniques, from basics to advanced – so as to focus on goal oriented and user centric designs.
- Use Server-Side Scripting.
- Implement concept of data persistence.
- Apply skills to program logic using PHP and handle data using MySQL.
- Develop dynamic websites using PHP & MySQL.

### **Class – B.Com. III Year**

#### **Paper I: Web Designing**

After studying this subject, students will be able to –

- Use basic HTML tags.
- Create Table, Frames, Forms.
- Create and use various types of CSS.
- Designing web pages.
- Understand the concepts of Web Publishing

## **Paper: II Digital Marketing**

After studying this subject, student will be able to –

- Evaluate and apply key concepts related to digital marketing.
- Demonstrate the role of digital marketing in business strategy.
- Understand the importance of Search Engine Optimization (SEO).
- Set up Google Analytics account and add Analytics code in a website.

**(C) Faculty of Science**  
**(IV) B.Sc. (Bachelor of Science)**  
**B.Sc. (Physical Science)**

**Program Specific Outcomes**

- ❖ Students will learn to think in a critical manner.
- ❖ Students will develop the proficiency in acquisition of data using variety of laboratory instruments and in the analysis and interpretation of such data.
- ❖ Student should learn how to design and conduct an experiment (or series of experiment) demonstrating their understanding of scientific method and process.
- ❖ Students are also expected to have an understanding of the analytical methods required to interpret and analyze results and draw conclusions as supported by their data.
- ❖ Students will learn the applications of numerical techniques for modelling physical systems for which analytical methods are inappropriate or of limited utility.
- ❖ Describe the methodology of science and relationship between theory and observation.
- ❖ Analyze physical problems and develop, correct solutions using natural laws.

**(i) Department of Chemistry**

**Program Specific outcomes**

The Program enables the students

- ❖ To understand basic facts and concepts in Chemistry including atomic structure, periodic properties, Chemistry of different elements, thermodynamics, chemical kinetics, electrochemistry, aromaticity, electrophilic & nucleophilic substitutions reaction mechanism in organic compounds and chemistry of biomolecules.
- ❖ Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
- ❖ Students will be able to explain the central role of chemistry in our society and will be able to handle social, economic, and environmental issues.
- ❖ Make aware and handle the sophisticated instruments /equipment's.
- ❖ Students will be able to clearly communicate the chemistry related topics.
- ❖ Learn handling of apparatus and chemicals properly.

**Course Outcomes**

**B.Sc. I Year**

**Major I: Fundamentals of Chemistry**

The students will be able to understand: -

- Chemical techniques used in Ancient India
- Various theories and principles applied to reveal atomic structure.
- Significance of quantum numbers
- Basic understanding of periodic properties of elements
- Theories related to chemical bonding
- Acid base concepts, pH and buffer
- Factors responsible for reactivity of organic molecules.

- Concept and mechanism of chemical kinetics
- Properties of electrolytes

### **Major I Practical: Qualitative and Quantitative chemical analysis**

The students will learn the following aspects: -

- Importance of chemical safety and lab safety while performing experiments in laboratory
- Qualitative inorganic analysis.
- Elemental analysis of organic compounds (non instrumental).
- Qualitative identification of functional group of organic compounds.
- Techniques of pH measurements
- Preparation of buffer solution

### **Major II/Minor: Analytical Chemistry (paper II)**

The students will be able to understand: -

- Basic concepts of mathematics for chemists.
- Fundamentals of analytical chemistry and steps involved in analysis.
- Basic knowledge of computer for chemists
- Basic concepts of chemical equilibrium
- Principles of chromatography and chromatographic techniques
- Various techniques of spectroscopic analysis

### **Major II/Minor - Practical II Analytical Chemistry**

The students will learn the following aspects: -

- Concepts and analytical methods in chemistry
- Preparations of solutions of different concentration
- Standardization of the solution
- Identification of components by chromatographic techniques
- Analysis by spectral techniques

## **B.Sc. II year**

### **Major- I Reactions, Reagents and Mechanism in Organic Chemistry –**

By the end of this course students will acquire the knowledge of following aspects of chemistry:

- Various organic reactions, reagents and their mechanisms which will be helpful in understanding organic synthesis.
- Application of the reactions in the various industries like pharmaceutical, polymer, pesticides, textile, dyes etc.
- Important key reactions used in further study and research work.

### **Major- I Organic Qualitative analysis, Reactions, and Synthesis –**

By the end of this course students will acquire the knowledge of following practical aspects of chemistry:

- To perform various reactions, which will be helpful in understanding in organic synthesis.
- To use reagents to perform organic reactions.
- To prepare various organic compounds.
- To use chromatographic techniques to monitor organic reactions.
- Applications of reactions in the industries, example pharmaceutical, polymer, pesticides, textile, dyes etc. industries.
- These experiments will also be useful in further studies and research work.

### **Major- II Transition Elements, Chemi-energetics Phase Equilibria -**

By the end of this course students will learn the following aspects of chemistry:

- Introductory idea about Traditional Indian Chemistry.
- Chemistry of d- & f- block Elements, Basic Concepts of Coordination Chemistry.
- Stereochemistry of Transition Metal Complexes.
- Laws of Thermodynamics.
- Concepts of Phase Equilibrium with reference to Solid Solution, Liquid-liquid Mixtures, Partially Miscible Liquids.
- Basic Concepts of Electrochemistry.

### **Major II/ Minor- Metal Complex Preparation, Thermochemistry & Phase equilibrium experiments (Practicals)**

By the end of this courses students will learn the following aspects of laboratory exercises of Chemistry.

- Preparation of inorganic complexes.
- Use of the calorimeter for thermochemistry experiments.
- Determination of enthalpy of various systems and reactions.
- Experiments on phase equilibria.
- Construction of phase diagrams.
- Study of reaction equilibrium.

## **B.Sc. III Year**

### **Minor/Elective**

#### **Pharmaceutical and Medicinal Chemistry (Theory)**

After successfully completing this course module student will be able to:

- Understand importance of pharmaceutical chemistry and pharmacopeia.
- Learn intellectual property rights, patents trademark and copyright.
- Understand Definition, Classification of the drugs with examples and structures.
- Describe the structure activity relation of some important class of drugs.
- Describe the overall process of drug discovery and the role played by medicinal chemistry in this process.
- Relate the structure and physical properties of drugs to their pharmacological activity.
- Explain physio-chemical properties related to QSAR.

#### **(ii) Department of Computer Science**

##### **Programme Specific outcomes**

- ❖ On the Completion of the program the students gain strong foundation of knowledge in different areas of Computer Science.
- ❖ The student will be able to pursue higher education and take-up jobs in the field of Computer Science.
- ❖ The program Develops proficiency in the practice of computing.

## **Course Outcomes**

### **Class – BSc I Year**

#### **Major I: Computer System Architecture**

On completion of this course, learners will be able to:

- Understand the basic structure, operation and characteristics of digital computer.
- Be able to design simple combinational digital circuits based on given parameters.
- Familiarity with working of arithmetic and logic unit as well as the concept of pipelining.
- Know about hierarchical memory system including cache memories and virtual memory.
- Understand concept and advantages of parallelism, threading, multiprocessors and multicore processors.
- Know the contributions of Indians in the field of computer architecture and related technologies.

### **Major I Lab - Computer Architecture Lab**

On completion of this course, learners will be able to:

- Realization of the basic logic and universal gates.
- Verify the behavior of logic gates using truth tables.
- Implement Binary-to -Gray, Gray-to -Binary code conversions
- Design half and full adder circuit using basic gates.
- Design and construct flip flops and verify the excitation tables.

### **Major II / Minor/ Elective - Programming Methodologies & Data Structures**

On completion of this course, learners will be able to:

- Develop simple algorithms and flow charts to solve a problem with programming using top down design principles.
- Writing efficient and well-structured computer algorithms/programs.
- Learn to formulate iterative solutions and array processing algorithms for problems.
- Use recursive techniques, pointers and searching methods in programming.
- Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles
- Have knowledge of complexity of basic operations like insert, delete, search on these data structures.
- Possess ability to choose a data structure to suitably model any data used in computer applications.
- Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc.
- Assess efficiency tradeoffs among different data structure implementations.
- Implement and know the applications of algorithms for searching and sorting etc.
- Know the contributions of Indians in the field of programming and data structures.

### **Major II Lab /Minor/ Elective Lab - Office Tools & Programming Methodology Lab**

On completion of this course, learners will be able to:

- Develop simple algorithms and flow charts to solve a problem with programming using top down design principles.
- Writing efficient and well-structured computer algorithms/programs.
- Learn to formulate iterative solutions and array processing algorithms for problems.
- Use recursive techniques, pointers and searching methods in programming.
- Possess ability to choose a data structure to suitably model any data used in computer applications.
- Implementation of algorithms for searching and sorting.

## **Class – BSc II Year**

### **Major I: Computer Networks & Information Security**

On completion of this course, learners will be able to:

- Define and describe the components of Data Communications System such as various protocols, OSI Model, data transmission in analog and digital format.
- Identify and differentiate among the network devices and drivers.
- Learn and describe various error detection and correction methods. Define the various terminologies used in Network and Application layers.
- Compare the various network technologies and can decide the suitable technology installation as per requirement and environment at any work place.
- Describe the various protocols and can identify the application areas of each protocol.
- Know the fundamentals of network and information security issues, laws, and various security technologies which can be applied on work place.

### **Major I Lab - Computer Networks Lab**

After completing this lab course, students will be able to:

- Learn and identify various cables used in the networking.
- Learn, identify various connectors used to connect different cables.
- Use the various tools for preparing the connectors for cables.
- Configure and manage various local area networks at home and at work place.

### **Major II / Minor/ Elective – Object Oriented Programming with Java**

On completion of this course, learners will be able to:

- Implement Object Oriented programming concept using basic syntaxes of control Structures, strings and function for developing skills of logic building activity.
- Identify classes, objects, members of a class and the relationships among them needed for finding the solution to a specific problem.
- Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
- Demonstrate understanding and use of different exception handling mechanisms and concepts of multi-threading for robust faster and efficient application development.
- Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events.
- Identify, Design & Develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture.

### **Major II Lab /Minor/ Elective Lab – Java Programming Lab**

After completing this lab course, students will be able to:

- Implement Object Oriented programming concept using basic syntaxes of control structures, strings and function for developing skills of logic building activity.
- Identify classes, objects, members of a class and the relationships among them needed for finding the solution to a specific problem.
- Demonstrates how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.
- Demonstrate understanding and use of different exception handling mechanisms and concepts of multi-threading for robust faster and efficient application development.



- Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events.
- Identify, Design & Develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture.

## **Class – BSc III Year**

### **DSE Paper I: Operating System (Group A)**

After the completion of this course, a student shall be able to do the following:

- Describe the importance of computer system resources and the role of operating system in their management policies and algorithms.
- Specify objectives of modern operating systems and describe how operating systems have evolved over time.
- Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks.
- Describe the concepts of multithreading and memory management techniques.
- Identify the best suited memory management technique for any process.
- Describe various file operations, file allocation methods and disk space management.
- To understand and identify potential threats to operating systems and the security features design to guard against them.
- Learn to operate the Linux system, along with its administration and Shell programming.
- Getting to know the Android OS and its application framework.

### **DSE Paper I: Operating System Lab (Group A)**

After the completion of this course, a student shall be able to do the following:

- Operate the Linux system, along with its administration and Shell Programming.
- Understand and be familiar with the Linux environment.
- Learn and run the various Linux commands.
- Use vi editor for programming.
- Learn and run the shell scripting programs.

### **DSE Paper II: Programming with Python (Group A)**

After the completion of this course, a student shall be able to do the following:

- Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
- Express proficiency in the handling of strings, functions and file handling.
- Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
- Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python with class, modules and packages.
- Identify the commonly used operations involving database connectivity and use of tkinter for GUI programming.

### **DSE Paper II: Python Programming Lab (Group A)**

After the completion of this course, a student shall be able to do the following:

- Understand the python environment and its text editor.
- Code and run the programs.
- Debug the program

- Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
- Identify the commonly used operations involving database connectivity and use of tkinter for GUI programming.

### **Minor/Elective**

#### **Data Analysis and Visualization with Python**

After the completion of this course, a student shall be able to do the following:

- Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
- Express proficiency in the handling of strings, functions and file handling.
- Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets.
- Develop proficiency in using NumPy for data manipulation.
- Create a variety of data visualizations using Matplotlib.
- Apply NumPy and Matplotlib to analyze and visualize real-world datasets.
- Complete a hands-on project involving data manipulation and visualization.

#### **Data Analysis and Visualization Lab using Python**

After the completion of this course, a student shall be able to do the following:

- Understand the python environment and its text editor.
- Code and run the programs.
- Debug the program
- Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements.
- Determine the methods to create and manipulate Python programs.
- Develop proficiency in data manipulation.
- Create a variety of data visualization using Matplotlib.

### **(iii) Department of Mathematics**

#### **Program Specific outcomes**

- ❖ Students are expected to acquire knowledge in areas of mathematics such as algebra, trigonometry, differential equations, vector analysis and geometry, Linear Algebra
- ❖ Students are expected to develop critical thinking.
- ❖ Formulate and develop mathematical arguments in logical manner.
- ❖ Acquire good knowledge of subject and to use it in various problems arising in other disciplines.
- ❖ Able to recognize, learn and appreciate the importance of lifelong learning process.

#### **Course Outcomes**

**Class: B.Sc. I year**

##### **Major Paper I: Algebra, Vector Analysis and Geometry**

The students will be able to

- Recognize consistent and inconsistent systems of linear equations by the row echelon form of the augmented matrix, using the rank of matrix.
- To find the Eigen value and corresponding Eigen vectors for a square matrix.
- Use the knowledge of vector calculus in geometry.

##### **Major Paper II/Minor/Elective: Calculus and Differential Equations**

The students will be able to

- Gain a substantial understanding about what Calculus is and why it is important branch in mathematics.
- Provide an insight to the standard concepts of ordinary differential equations.
- Strengthen the students' problem-solving skills by using tools of calculus and differential equations.

#### **Class: B.Sc. II year**

##### **Major Paper I: Abstract Algebra and Linear Algebra (Theory)**

The course will enable the students to:

- Recognize the algebraic structures as a group, and classify them as abelian, cyclic and permutation groups, etc.
- Link the fundamental concepts of groups and symmetrical figures.
- Analyze the subgroups of cyclic groups.
- Explain the significance of the notion of cosets, normal subgroups, and quotient groups.
- The fundamental concept of rings, fields, subrings, integral domains and the corresponding morphisms.
- Analyze whether a finite set of vectors in a vector space is linearly independent. Explain the concepts of basis and dimension of a vector space.
- Understand the linear transformations, rank and nullity, matrix of a linear transformation, algebra of transformations and change of basis.
- Compute the characteristic polynomial, eigenvalues, eigenvectors, and eigenspaces, as well as the geometric and the algebraic multiplicities of an eigenvalue and apply the basic diagonalization result.

##### **Major Paper II/Minor / Elective: Advanced Calculus and Partial Differential Equations**

The course will enable the students to:

- Understand many properties of the real line  $\mathbb{R}$  and sequences.
- Calculate the limit superior, the limit inferior, and the limit of a bounded sequence.
- Apply the mean value theorems and Taylor's theorem.
- Apply the various tests to determine convergence and absolute convergence of an infinite series of real numbers.
- Formulate, classify and transform partial differential equations into canonical form.

## **Class: B.Sc. III Year**

### **DSE Paper I: Numerical Methods and Scientific Computation (Group-A)**

The course will enable the students to:

- Understand numerical methods to find the solution of a system of linear equations.
- Compute interpolation value for real data.
- Find quadrature by using various numerical methods.
- Solve system of linear equations by using various numerical techniques.
- Obtain solutions of ordinary differential equations by using numerical methods.

### **DSE Paper II: Elements of Discrete Mathematics (Group-A)**

The course will enable the students to:

- Apply the Boolean algebra in switching circuits and their applications.
- Minimize the Boolean Function using Karnaugh Map.
- Understand the lattices and their types.
- Graphs, their types and its applications in study of shortest path algorithms.
- S. Test whether two given graphs are isomorphic.
- Understand the Eulerian and Hamiltonian graphs.
- Represent graphs using adjacency and incidence matrices.

### **Minor/Elective**

#### **Fundamentals of Boolean Algebra**

The course will enable the students to:

- Using the Boolean algebra in logical problems.
- Minimize the Boolean Function using Karnaugh Map.
- Understanding the various logic gates.
- Applying the circuits in logical problems.

#### (iv) Department of Physics

##### Program Specific outcomes

- ❖ Students are expected to acquire core knowledge in Physics including major premises of Mathematical Physics, Mechanics, Properties of Matter, Special Theory of Relativity, and Earlier development in physics – Contribution of Scientist, Thermodynamics, Statistical Physics, Optics, Electrostatics, Magneto statics, Electrodynamics, Quantum Mechanics, Spectroscopy, Nuclear Physics, Solid State Physics and Devices, Electronics, Atomic and Nuclear Physics, Nanotechnology.
- ❖ Students are expected to develop a written and oral communicating skill in communicating physics related topics.
- ❖ Students will realize and develop an understanding of Physics and Science in relation to society.
- ❖ Students should learn how to conduct series of experiments to understand scientific process, interpret and analyze results, draw conclusions as supported by their data.
- ❖ Learn to minimize errors and recognize the limitations of equipments.
- ❖ Realizing the application of Physics concepts in other disciplines.
- ❖ Apply conceptual understanding of Physics to general real-world situations.

##### Course Outcomes

Class: B. Sc. I

##### Major I: Thermodynamics and statistical Physics

- The course would enable the students to understand the basic Physics of heat and temperature in relation to energy, work, radiation and matter.
- The students are expected to learn that “how laws of thermodynamics are used in a heat engine to Transform heat into work”.
- This course will also develop an understanding of the various concepts of statistics and the methods to apply them in thermodynamics.
- Students will understand the importance of studying statistical mechanics with the behaviour of particles under classical and quantum conditions.

##### Major I Lab: Thermodynamics and statistical Physics Lab

- The students would gain practical knowledge about heat and radiation by performing various experiments
- The students will acquire knowledge about the different forms of a distribution of subatomic particles in the system using statistical methods.
- The students will be able to use various thermodynamical instruments in daily life

##### Major II/Minor/ Elective: Mechanics and General Properties of Matter

- The course would empower the students to develop the Idea about the behaviour of physical bodies.
- It will provide the basic concepts related to the motion of all the objects around us in daily life.
- The students would be able to build foundation to various applied field in science and technology especially in the field of mechanical engineering.

- The students will acquire the knowledge of basic mathematical methods to solve the various problems in physics.
- The students will be able to understand the relativistic effect and the relation between energy and mass.

### **Major II/Minor/ Elective Lab: Mechanics and General Properties of Matter Lab**

- The students would acquire basic practical knowledge related to mechanics through the experiments.
- Students will be familiar with various measurement devices by which they can measure various physical quantities with accuracy.
- The students will develop the concept related to the mechanics and measurement of properties of matter.

## **Class: B.Sc. II**

### **Major I: Wave and Optics**

After the completion of the course, the student should be able to:

- Develop an understanding of various aspects of harmonic oscillations and waves specially superposition of collinear and perpendicular harmonic oscillations.
- Explain several phenomena of daily life that can be explained as wave phenomena.
- Understand various optical phenomena, their principles, working and applications.
- Use the principle of wave motion and superposition to explain the Physics of polarization, interference and diffraction.

### **Major II/Minor/ Elective: Electricity Magnetism and Electromagnetic theory**

After the completion of the course, the student should be able to

- Understand the basic concepts of electricity and magnetism and their applications.
- Apply various network theorems and their applications in electronics, electrical circuit analysis, and electrical machines.
- Understand the construction and working of ballistic Galvanometer and Cathode Ray Oscilloscope.
- Understand the concept of electromagnetic waves and their reflection and refraction from a plane surface.

### **Major I: Wave and Optics Lab (practical)**

After the completion of the course, the student should be able to

- Study waves and their superposition using cathode ray oscilloscope.
- Explain various optical properties like interference, diffraction and polarization.
- Use various optical instruments like telescope, grating, spectrometer, polarimeter etc.
- To observe the different optical phenomenon like refraction, diffraction, interference and polarization of light and their application in science.

### **Major II/Minor/ Elective: Electricity Magnetism and EMT Lab (Practical)**

After the completion of the course, the student should be able to

- Verify various laws in electricity and magnetism such as Lenz's law, Faraday's law.
- Understand the construction, working and uses of various measuring instruments.
- Verify various network theorems, using simple electrical circuits.

## **Class: B.Sc. III Year**

### **DSE Paper I: Quantum Atomic and Molecular Physics (Theory)**

On successful completion of the course, the students will be able to –

- Understand the basics of Quantum Mechanics.
- Know the Quantum Mechanics and its applications.
- Understand the structure of atoms and characteristics of X-rays.
- Analyze the molecular spectra such as electronic, rotational and vibrational through various spectroscopic techniques.

- Identify the various materials using Raman spectroscopic techniques

### **DSE Paper I: Quantum Atomic and Molecular Physics (Practical)**

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

- Develop practical knowledge for the determination of Planck's constant and Rydberg's constant using different methods.
- Understand the working of methods used to determine electronic charge and specific charge of electron.
- Determine the first excitation potential of gas (argon) by Franck Hertz Experiment.
- Use constant deviation spectrograph, spectrometer and Fabry –Parot interferometer to determine different physical properties.
- Develop understanding for the use of G.M. counter for detection of radioactive source and determination of Stefan's constants.

### **DSE Paper II: Solid State Physics and Electronics (Theory)**

On successful completion of the is course. the students will be able to –

- Understand the structure of solids, space lattices and bonding of atoms in crystals.
- Develop basic understanding of physical properties of matter such as specific heat, electrical conductivity and lattice vibrations in crystals.
- Understand the principles related to energy bands in solid, semiconductor materials, concept of doping, operation of diodes and their applications.
- Develop the theoretical understanding on operation of transistor. amplifiers and oscillators and their applications in electronics.
- Understand basic concepts of modulation and demodulation of signals.

### **DSE Paper II: Solid State Physics and Electronics (Practical)**

On successful completion of the is course. the students will be able to –

- Develop the practical knowledge about solid state physics and electronic devices.
- Draw the characteristics curves of different diodes and transistors.
- Understand the application of diodes as rectifiers and regulated power supplies.
- Understand the working principle of amplifiers and oscillators.
- Understand the concepts of modulation and demodulation.

### **Minor/Elective: Quantum Mechanics Solid State Physics and Devices (Theory)**

On completion of the course, the students will be able to

- Understand the necessity of quantum mechanics and its applications.
- Explain the atomic structures and X-rays.
- Identify the molecular spectra such as electronic. rotational and vibrational.
- Identify the various materials using the Raman spectroscopic technique.
- Use different types of diodes and transistors in various electronic applications.
- Analyze the amplifiers and Oscillators

### **Minor/Elective: Quantum Mechanics Solid State Physics and Devices (Practical)**

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

- Determine of Planck's constant and Rydberg's constant using different methods.
- Determine electronic charge and specific charge of electron.
- Determine the first excitation potential of gas (argon) by Franck Hertz Experiment.
- Use constant deviation spectrometer and Fabry –Parot interferometer.
- Develop the practical knowledge about solid state physics and electronic devices.
- Draw the characteristic curves of different diodes and transistors.
- Understand the working principle of amplifiers and oscillators.

## **B.Sc. (Life Science)**

### **Program Specific Outcomes**

- ❖ The faculty of Science (Bio Sciences) offers following subjects at the UG level Zoology, Botany, Chemistry, Biotechnology and Microbiology which includes theory as well as practicals.
- ❖ The students interested in Biological Science can pursue multi and inter-disciplinary science careers in future.
- ❖ It helps to develop scientific temper beneficial for the society and also contributes in the scientific developments of the nation.
- ❖ Students can pursue their career in diverse fields including both public and private sectors.
- ❖ Science graduates can serve in industries, establish their own industrial unit or startups.
- ❖ Bio-Science graduates apply their broad knowledge of science across a range of fields, with in-depth knowledge in at least one area of study, while demonstrating an understanding of the local and global contexts in which science is practiced.

### **(i) Department of Biotechnology**

#### **Program Specific outcomes**

- ❖ Biotechnology is a field of applied biology that involves the use of living organisms and bioprocesses in engineering, technology, medicine and other fields.
- ❖ Biotechnology being a multidisciplinary field is in great demand because of its various applications in the field of research and development. The advantage of studying this degree course is that the candidate can further pursue higher studies in specialized fields of sciences i.e. Biotechnology, Microbiology, Biochemistry, Molecular Biology, and Genetics etc.
- ❖ An introduction to the fundamentals of Biotechnology will be an asset for the performance of the students in near future. The objective of the department is to promote safe implication of technology by keeping in mind the ethical standards and to develop human resource to meet the growing demand for biotechnologists in the field of food, agriculture, medicine and environment management.
- ❖ The course involves both theory and practical courses where in emphasis is laid on the knowledge content (based on the topics in the curriculum), utility value (their application in real life) and current scenarios etc. There is ample number of opportunities for the students of Biotechnology in the field of medical and veterinary sciences, pollution control and waste management.

### **Course Outcomes**

#### **CLASS: B.Sc. I Year**

#### **Major I: Cell Biology and Biochemistry**

- Understand basic of cell biology.
- Appreciate the importance of bonding and spatial arrangements of molecules for proper functioning and stability.
- Understand both the physical as well as chemical properties of the biomolecules



- The student could pursue a career in biochemical testing. The decrease or increase in the amount of some of the biomolecules can have clinical significance.
- Student can also go in for medical laboratory Technique Courses opening opportunities in hospitals and pathological laboratories.

### **Major I Lab: Work for Cell Biology and Biochemistry**

- Understand basic techniques of cell biology.
- Know the physical as well as chemical properties of biomolecules
- pursue a career in biochemical testing. The decrease or increase in the amount of some of the biomolecules can have clinical significance.
- Take medical laboratory Technique Courses opening opportunities in hospitals and pathological laboratories.

### **Major II: Microbiology and Immunology**

- Microbial diversity and nutrition.
- Immune system, its properties and types.
- Immunoglobulin structure types and functions and can apply the concept of hypersensitivity and vaccination for different disease
- Perform various immunological techniques

### **Major II Lab: On Microbiology and Immunology**

On completion of this course learners will be able to have sufficient scientific understanding of microbiology and immunology.

- Students apply concept Principle and type of sterilization methods viz performing microbiological experiments.
- Students apply the concept and characteristics of antiseptic disinfected and their mode of action in day-to-day life.
- Students will apply principle, working and application of instruments Laminar airflow, Autoclave, Hot air oven etc.

### **CLASS: B.Sc. II Year**

#### **Major I: Basic Molecular Biology (Theory)**

- Students will be able to explain role of different protein/enzyme involved in cell signaling.
- They will be able to understand mechanism of genetic damage caused by mutation and role of various repair system in neglecting the effect of these mutation.
- Students will be able to explain mechanism of DNA replication, transcription, translation and other related process

#### **Major I Practical**

- Students will be able to explain role of different protein/enzyme involved in cell signaling.
- They will be able to understand mechanism of genetic damage caused by mutation and role of various repair system in neglecting the effect of these mutation.
- Students will be able to explain mechanism of DNA replication, transcription, translation and other related process

#### **Major II: Recombinant DNA Technology (Theory)**

- The objectives of this course are to teach students with various approaches to conduct genetic engineering and their application in biological research as well as in biotechnology industries.
- Genetic engineering is a technology that has been developed based on our fundamental understanding of the principles of molecular biology and this reflected in the contents of this course.
- Given the impact of genetic engineering in modern society, the students should be endowed with strong theoretical knowledge of this technology.
- In conjunction with the practical in molecular biology and genetic engineering, the students should be able to take up biological research as well as placement in the relevant biotech industry.

#### **Major II Lab Work for Recombinant DNA Technology (Practical)**

- The objectives of this course are to teach students with various approaches to conduct genetic engineering and their application in biological research as well as in biotechnology industries.
- Genetic engineering is a technology that has been developed based on our fundamental understanding of the principles of molecular biology and this reflected in the contents of this course.
- Given the impact of genetic engineering in modern society, the students should be endowed with strong theoretical knowledge of this technology.
- In conjunction with the practical in molecular biology and genetic engineering, the students should be able to take up biological research as well as placement in the relevant biotech industry.

#### **CLASS: B.Sc. III Year**

#### **DSE Paper I: Environmental Biotechnology (Theory)/ lk;kZoj.k tSo izkS|ksfxdh (IS)kafrd) (Group B)**

On Successful completion of this course, the students will be able to:

- Deep understanding of existing and emerging technologies that are important in the area of environment and the principles and techniques which underline the environmental issues including air and water pollution.
- Empowers the students with the knowledge of Domestic waste water treatment, Classification of wastewater treatment (physical, chemical and biological)
- Students learn about concepts of Biodegradation, Biodegradation of hydrocarbon, and Measurement of biodegradation. Bioremediation-Concept, Methods of Bioremediation (In-situ and Ex-situ Bioremediation) and Xenobiotic biodegradation.
- Learners will understand the concept of biodiversity: conservation and management, rules and acts.

#### **Environmental Biotechnology (Practical)/ iz;ksxkRed vkuqoaf'kdh (izk;ksfxd)**

On successful completion of this course, the students will be able to:

- Deep understanding of existing and emerging technologies that are important in the area of environment issues including air and water pollution.
- Empowers the students with the knowledge of Domestic waste water treatment, Classification of wastewater treatment (physical, Chemical and biological)
- Students learn about concepts of Biodegradation, Biodegradation of hydrocarbon, Measurement of biodegradation. Bioremediation – Concept, Methods of Bioremediation (Insitu and Ex-situ Bioremediation) and Xenobiotic biodegradation.
- Learners will understand the concept of biodiversity: conservation and management, rules and acts.

#### **DSE Paper II: Bioinformatics (Theory)/ tSo lwpuk foKku (IS)kafrd) (Group B)**

On Successful completion of this course, the students will be able to :

- Will know the use of Bioinformatics tools and their applications.
- Develop an understanding of basic theory of these computation tools.
- Gain working knowledge of these computational tools and methods.

## **Bioinformatics (Practical)/ tSo lwpuk foKku (izk;ksfxd)**

On successful completion of this course, the students will be able to:

- Will know the use of Bioinformatics tools and their applications.
- Develop an understanding of basic theory of these computation tools.
- Gain working knowledge of these computational tools and methods.
- Critically analyse and interpret results of their study.

## **(ii) Department of Botany**

### **Programme Specific Outcomes**

- ❖ The aim of this course is to ensure that you can achieve an up to date level of understanding of plant science.
- ❖ The study of Botany dealing with the structure, function, classification and evolution of plants has inspired many great minds.
- ❖ It is fascinating to study the wide spectrum of reproduction process in algae, fungi, lichens, bryophytes, petridophytes, gymnosperm and flowering plants.
- ❖ A student of Botany has been learning there aspects together with taxonomy, anatomy, plant pathology, plant breeding, microbiology, plant physiology, biochemistry, ecology, genetics, molecular biology and plant biotechnology.

## **Course Outcomes**

### **Class -B.Sc. I Year**

#### **Major I: Applied Botany**

- Understood the significance and role of Botany.
- Learnt the basic aspects of applied botany.
- Gained knowledge about employment opportunities in field of botany.
- Gained knowledge about start-up opportunities in the field of botany.
- Learnt about opportunities of social services.
- Gain knowledge about best health practices.

#### **Major I Lab: Applied Botany Practical**

- By the end of this course the student should have knowledge of practical skill related with ethnobotany, tissue culture, application of bioinformatics software and tools of recombinant DNA technology.

#### **Major II/Minor/Elective: Basic Botany**

- To understand the diversity of plants and evolutionary process in plant kingdoms.
- It gives an accounts of plant adaptations from aquatic condition to colonize terrestrial habitat.
- The changes in morphological, anatomical and reproductive structures that proper plant evolution can be investigated.
- The economic importance and significance of plants in nature will be understood.
- They will be acquainted with locally prevalent microbial diseases of plants and humans.

#### **Major II/Minor/Elective Lab: Basic Botany Practical**

- Students will learn to carry out practical work in the laboratory.

- Interpreting plant morphology and anatomy of various groups of lower and higher plants.
- Students will be able to identify the major groups of microorganisms.

## **Class -B.Sc. II Year**

### **Major 1 Plant Anatomy & Embryology (Theory)**

#### **Course Learning Outcome**

- Learn the internal structure of plants. It will enhance the basic understanding of organization of plant body by cells and tissues.
- Students will understand the dynamic mechanism of plant pollination, fertilization and development.
- They will have hands on training on section cutting, preparation of slides, study of pollen and ovules.

### **Plant Anatomy & Embryology (Practical)**

#### **Course Learning Outcomes (CLO)**

- To Understand the scope and importance of morphology and anatomy of root shoot and leaf.
- Study of different embryo and endospore.
- Study of flower morphology and inflorescence

### **Major II/Minor/Elective Industrial Botany (Theory)**

#### **Course Learning Outcomes (CLO)**

- This course will provide knowledge on plants and their parts used in various industries.
- Students will get an idea to establish plant based natural product industry.
- This course will make the students self-reliant.

### **Industrial Botany (Practical)**

#### **Course Learning Outcomes (CLO)**

- Students will be able to recognize different parts of plants used in plant-based Industries.
- This course will provide practical knowledge to establish small or large scale plant based industries.

## **Class -B.Sc. III Year**

### **DSE Paper I : Plant physiology and Metabolism (Theory)/ lykaV fQft;ksyKWth vkSj eVkckWfyTe (IS)kafrd (Group A)**

On successful completion of this course, the students will be able to:

- This course provides learning opportunities in the field of plant physiology, metabolism and biochemical aspects.
- It gives knowledge about significance of vegetation for sustaining life on earth by learning interesting physiological functions of plants.
- Students can know the valuable contribution of plants for mankind and society with the help of this course.
- The practical application of different aspects will be possible for entrepreneurship development.

### **DSE Paper I: Plant physiology and Metabolism (Practical) / lykaV fQft;ksyKWth vkSj eVkckWfyTe (izk;ksfxd) (Group A)**

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

- Analyse the metabolic functions of plants
- Determine the Rf value of pigments. Photosynthetic rate of plants
- Estimate the quantity of products in the plants.

## **DSE Paper II: Ecology and Forestry (Theory)/ ikfjLFfrdh vkSj okfudh (IS)kafrd) (Group A)**

The course objective is to develop the skills related to plant ecology and forestry:

- Observing the forested landscape
- Analyzing data
- Critiquing
- Synthesizing
- Communicating
- Identification of forest types
- Role and importance of forests in human life

## **DSE Paper II: Ecology and Forestry (Practical)/ ikfjLFfrdh vkSj okfudh (izk;ksfxd) (Group A)**

After completion of the course student will-

- Perform qualitative test
- Differentiate the Hydrophyte and Xerophyte characters
- Recognize forests and plants

## **Minor / Elective**

### **Ethnobotany (Theory)/ ,FukscksVuh (IS)kafrd)**

On Successful completion of this course, the students will be able to:

- Understand the importance of plants and their relationship with Human being.
- Explain how plants are a part of culture and traditions
- How traditional medicine can cure various diseases

### **Ethnobotany (Practical)/ ,FukscksVuh (izk;ksfxd)**

On successful completion of this course, the students will be able to:

- Able to recall the botanical names of crops
- Develop the ability to prepare herbarium
- Survey and inspect the plants growing around
- Interpret the data available in traditional knowledge
- Develop the habit of conservation

## **(iii) Department of Microbiology**

### **Programme Specific Outcomes**

Upon completion of B.Sc. Microbiology programme, the students will be able to

- ❖ Use the aseptic techniques to control the microorganism and conduct the process of sterilization.
- ❖ Perform the basic techniques related to screening, isolation and cultivation of microorganisms from various sources.
- ❖ Study the microorganism with regard to morphology, cultural and biochemical characters. It will help to classify the microbes to certain extent.
- ❖ Understand microorganisms and their relationship with the environment.
- ❖ Produce and analyze the microbial products at laboratory level.
- ❖ Conduct the basic research with these microorganisms and perform the diagnostic procedures required in food, milk and pharmaceutical industries.

## **Course Outcomes**

## **B.Sc. I Year**

### **Major I: General Microbiology and Cell Structure**

- Indian traditional knowledge and historical background of Microbiology.
- Structure and transmission of viruses.
- Structure and cell organization of bacteria.
- Different kinds of unicellular prokaryotic and eukaryotic microorganisms based on specific characteristics.
- General characteristics of important Eubacteria.

### **Major I Lab: Study of Microorganisms**

- Isolate various types of bacteria and Yeasts.
- Microscopically examine various types of bacteria, fungi and protozoa.
- Understand structure of important animal, plant and bacterial viruses using electron micrographs.

### **Major II: Microbial Techniques**

- Recall the basic lab glassware to be used in the laboratory.
- Summarize different methods of sterilization and isolation of pure cultures
- Understand the working of different kinds of instruments and microscopes.
- Apply serial dilution technique to isolate the bacteria.
- Practice different methods to culture bacteria in the laboratory.
- Illustrate a method to differentiate between Gram positive and gram negative bacteria.

### **Major II Lab: Microbial Tools and Techniques**

- Basic knowledge of glassware, microscopes and different kinds of instruments used in the microbiology laboratory.
- Basic media preparation technique, autoclaving, cleaning and sterilization of glassware.
- Preparation of liquid and solid culture media.
- Isolation of microorganisms by different plating methods.

## **B.Sc. II Year**

### **Major I Microbial Physiology and Metabolism (Theory)**

- Role of various biomolecules.
- Structure and metabolism of Carbohydrates.
- Structure and metabolism of Amino acids and Proteins.
- Mechanism of enzyme action.
- Structure and metabolism of lipids.
- Structure, types and roles of Nucleic Acids.

### **Major I Lab: Microbial Biochemistry & Metabolism**

- Understand the concept of qualitative & quantitative Analysis
- Understand the properties of biomolecule
- Knowledge about Structure of protein, DNA & RNA

### **Major II Microbial Diversity and Growth (Theory)**

- Classify bacteria into groups and their salient characteristics.
- Describe the nutritional requirements of bacteria for growth.
- Understand viruses and viral diseases.
- Know about diversities in Fungi and Algae.
- Develop a basic idea about Protozoa.

### **Major II Isolation and Growth Study of Microorganisms (Practical )**

- Define the nutritional requirements of bacteria for growth.
- Understand virus and viral diseases.
- Know about diversities in habitats of fungi and algae.
- Develop a basic idea about Protozoa.

### **B.Sc. III Year**

#### **DSE Paper I: Microbial Genetics and Molecular Biology (Theory)/ $\int_{\text{etSfod vkuqoaf'kdh ,oa vkf.od}}$ tho foKku (IS)kafrd) Group A**

On successful completion of this course the students will be able to:

- Develop basic understanding of genetic material present in cells.
- Integrate knowledge of general principles of replication, transcription and translation.
- Employ Knowledge about mutations and their repair mechanisms.
- Differentiate between genetic recombination and gene regulation in prokaryotes and eukaryotes.

#### **DSE Paper I: Microbial Genetics and Molecular Biology (Practical) / $\int_{\text{etSfod vkuqoaf'kdh ,oa vkf.od}}$ tho foKku (izk;ksfxd)**

On successful completion of this course, the students will be able to:

- Differentiate between DNA and RNA and principles of DNA replication.
- Get to know the concept of mutations and effect of mutagens on bacteria.
- Employ methods of isolation of DNA, electrophoresis and estimation of DNA and RNA.

#### **DSE Paper II: Food Microbiology (Theory)/ [kk] $\int_{\text{e tho foKku (IS)kafrd}}$ Group A**

After completing this course, a student shall be able to:

- Apply Fundamental principles and methods of food preservation.
- Employ Internal and external factors that significantly affect the growth and survival of microbes in food.
- Identify the types of microorganisms present in various foods and their role in preservation, and causing spoilage of fresh produce and processed food products.
- Associate Micro-organisms responsible for food borne illnesses and their preventive measures.

#### **DSE Paper II: Techniques of Food Microbiology (Practical) / [kk] $\int_{\text{e tho foKku (izk;ksfxd)}}$**

On completion of this course, learners will be able to:

- Prepare and sterilize culture medium for growing microbes and study their growth cycles.
- Analyse external factors responsible of food spoilage.
- Evaluate the microbial quality of food products like milk, butter, oil, fruits, eggs fish, meat etc.
- Apply Preservation techniques on foods by application of low and high temperature.
- Implement the techniques of mushroom and single cell proteins.
- Acquaint with role of microbiologist in food processing/ manufacturing units/ food preservation industries in maintaining quality and safety.

### **Minor / Elective**

### **Environmental Microbiology (Theory)/ i;kZoj.k lw{e tho foKku (IS)kafrd)**

On successful completion of this course, the student will be able to:

- Have knowledge on interrelationship of microbes and environment.
- Get an idea on role of microbes in bioremediation.
- Have knowledge of applications of microbes in solving environmental pollution related issues and quality control of water.
- Acquire knowledge on vital role of microbes in environmental management through production of sustainable energy and bio fuels from waste materials.
- Get an idea on working of pollution sensing devices based on biosensors.

### **Environmental Microbiology (Practical)/ i;kZoj.k lw{e tho foKku (izk;ksfxd)**

On successful completion of this course, the student will be able to:

- Assess interrelationship of microbes and environment.
- Interpret role of microbes in bioremediation.
- Apply microbes in solving environmental pollution
- Process quality control of water.
- Solve exercise related to vital role of microbes in environmental management
- Design exercise related to production of sustainable energy and bio fuels from waste materials.
- Get to know the working of pollution sensing devices based on biosensors

## **(iv) Department of Zoology**

### **Programme Specific Outcomes**

- ❖ Students able to understand the basic concepts of taxonomy of animals, cell biology, anatomy, physiology, genetics, ecology, developmental biology and applied Zoology.
- ❖ Identify and list out common invertebrates and vertebrates.
- ❖ Understand the applications of biological sciences in Apiculture, Sericulture, lac culture Aquaculture, Agriculture, medicine and daily life.
- ❖ Gains knowledge about research methodologies.
- ❖ Understand various genetic abnormalities.
- ❖ Perform procedures as per laboratory standards in the areas of Taxonomy, Physiology, Ecology, Cell biology, Genetics, Applied Zoology, Clinical science, tools and techniques of Zoology, Toxicology, Entomology, Nematology Sericulture, Biochemistry, Fish biology, Animal biotechnology, Immunology and research methodology etc.
- ❖ Contributes the knowledge for Nation building.

### **Course Outcomes**

**Class: B.Sc. I year**

**Major I: Animal Diversity: Non-Chordata**

- Learn about the importance of systemic, taxonomy and phylogeny to get a concrete idea of evolution of non-chordate phyla.
- Understand the various morphological, anatomical structures and functions of animals of different phyla.
- Get the knowledge about economic, ecological and medical significance of various animals in human welfare.
- Understand the important parasites and their control measures.

**Major I Lab: Invertebrate**



- Identify invertebrate animals of different phyla and their histology through study of museum specimens and slides.
- Learn their different systems through dissections.
- Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.

#### **Major II / Elective/Minor: Cell biology, Reproductive biology and Developmental Biology**

- Develop deeper understanding of what life is and how it functions at cellular level
- Understand the nature and basic concepts of Cell biology, Reproductive and Developmental biology
- Understand structure and functions of cell membrane and cellular organelles
- Understand the importance of latest reproductive trends, reproductive techniques to be applied for human welfare.
- Understand the general patterns and sequential developmental stages during embryogenesis; and understand how the developmental processes lead to establishment of body plan of multi-cellular organisms.
- Understand about the evolutionary development of various animals

#### **Major II / Elective/Minor Lab: Cytology, Reproductive biology and Embryology**

- The different stages of mitotic and meiotic cell division and special types of chromosomes
- Different stages of embryology.
- Through squash preparations understand the stages of cell division and structure of polytene chromosome.
- Enhance collaborative learning and communication skills through practical sessions, team work, group discussion, assignment and project

#### **Class: B.Sc. II year**

#### **Major I Diversity of Chordates and Comparative Anatomy (Theory)**

##### **Course Learning Outcome**

After completion of the course students will able to:

- Understand Chordate diversity of animals and their taxonomic position.
- Identify the morphological and anatomical features and basis of chordate classification.
- Know economic importance and present status that will develop positive towards conservation of biodiversity.
- Differentiate the organism belonging to different taxa by studying comparative anatomy.
- The project, assignment will give them a flavor of research in studying biodiversity, taxonomy besides improving their writing skills and lay foundation of career of Zoology.

#### **Major II/Minor/Elective Physiology and Biochemistry (Theory)**

##### **Course learning Outcome**

Upon completion of the course students will able to:

- Understand how organs functions at different levels i.e. from cellular to system levels.
- Examine internal harmony of different body systems by learning inherent disorders and deficiencies, which is needed to maintain good health.
- Understand functions of biomolecules & their role in metabolism by studying biochemistry.
- Develop a strong foundation for research & employability skills.
- Improve the student's perspective of health biology through deep study of physiology.

#### **Major I Chordate Zoology Lab (Practical)**

##### **Course Learning Outcome**

On completion of this course, learners will be able to:

- Identify diversity of Chordates, basics of systematics and hierarchy of different categories.

- Learn characteristics of different classes of vertebrates, through studying examples (preserved specimens)
- Gain training experience in anatomy by learning dissection and mounting.
- Get knowledge how vertebrates organs differ from class to class by comparative study of osteology and histology.
- Develop flow of research and skills of writing by submitting project report and assignment.

## **Major II System Physiology and Biochemistry Lab (Practical)**

### **Course Learning Outcome**

Upon completion of this course, students will be able to understand:

- The effect of temperature and pH on enzyme activity.
- Qualitative estimation of biomolecules and gain knowledge of their role in our body.
- Various parameters of hematology and know its importance for our healthy life.
- The principle and working of instruments required for performing exercises in laboratory.
- Collaborative learning and communication skills through practical sessions in laboratory.
- Assignment and project writing process which will give them a flow of research.

## **B.Sc. III Year**

### **DSE Paper I-Aquaculture (Theory)/ ty lao/kZu (IS)kafrd) (Group- A)**

#### **Course Learning Outcome**

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

- Identify Aquaculture and its scope in India.
- Recognize the different economically important fishes and other culturable fauna.
- Identify the details of different steps involved in Aquaculture.
- Identify the profitability of the culture and identify the fields of Aquaculture which generate self employment.

### **DSE Paper I-Applied Aquaculture (Practical)**

On completion of this course, learners will be able to:

- Identify and Study the fresh and marine water economically important fauna.
- Identify the water quality parameters by different experiments.
- Learn the required things in the set up of an aquarium and its maintenance.
- Identify and learn the Rearing Method of aquarium fishes.
- Know the method of preparation of slide of Zoo Plankton and Preservation method of Phyto Plankton.
- Identify harmful aquatic insects for Aquaculture.
- Enhance Collaborative Learning and Communication Skills through Practical Work, Team Work, Group Discussion, Assignment and Project.

### **DSE Paper II-Wild Life Conservation and Management (Theory)/ oU; thou dk egRo xzqi & v (IS)kafrd) (Group- A)**

Upon completion of the course, students will:

- Identify and realize the values of wild animals, forests and the rare, threatened and endangered species of wildlife.
- Gain knowledge of conservation of forest and wild animals (Ex situ and In situ)
- Identify the role of local and tribal communities in protected areas.
- Know the opportunities of employment in the field of wild life.
- Develop an understanding for wise use and management of natural resources.

### **DSE Paper II-Importance of Wildlife (Practical)**

Upon completion of the course, students will-

- Acquire visual knowledge of wild animals.

- Gain information of conservation methods of wild Animals and Forest (tree and shrubs)
- Have knowledge of equipment used in the field work of wild life.
- Become acquainted with wild animals and their behavior.
- Learn to visually recognize and estimate the population of wild life.

### Minor/Elective:

#### Genetics (Theory)

On Successful completion of this course, the students will be able to:

- Gain knowledge of basic principles of inheritance and variations, DNA, RNA and their function.
- yDeeper understanding of linkage, Sex determination, Chromosomes, Mutations and mutagens.
- Gain knowledge of human karyotype, Genome project, Inheritance of blood group and genetic diseases in human.
- Demonstrate gene therapy, PCR, DNA fingerprinting techniques and their application.
- Find Job Opportunities in Hospitals, Pharmaceutical Companies and other health services, Forensic Science Research Associates, Genetic Counselor, Clinical Research Associate, Animal Breeder, Genetic Laboratory Technician

#### Experimental Genetics (Practical)

Upon completion of the course students will be able to

- Gain knowledge of basic principles of inheritance, Inheritance and variations, DNA, RNA and their function.
- Gain knowledge of Sex-linked inheritance, Inheritance of blood group and genetic diseases in human.
- Learn about Mendelian genetics.
- Learn pedigree analysis of human traits
- Identify gene therapy, PCR, DNA fingerprinting techniques and their application.
- Find Job Opportunities in Hospitals, Pharmaceutical Companies and other health services, Forensic Science Research Associates, Genetic Counselor, Clinical Research Associate, Animal Breeder, Genetic Laboratory Technician

## Foundation Course

### Course Outcomes

#### Subject : Foundation Course

Class : B.A. / BCA/ B.Com./B.Sc. I Year

#### Foundation Course I -A: Bhasha aur Sanskriti

- To develop interest in the study classic literary texts
- To develop cultural consciousness and national spirit.
- Knowledge of language.
- To develop an understanding of language and culture through the study of general vocabulary and specialized vocabulary.
- Develop the level of understanding by introducing specific vocabulary.
- Prepare for competitive Exams.

#### Foundation Course I -B: English Language and Indian Culture

- Prepare for various competitive exams by developing their English language competence.
- Promote their comprehension skills by being exposed to a variety of texts and their interpretations.
- Build and enhance their vocabulary.

- Develop their communication skills by strengthening grammar and usages.
- Inculcate values which make them aware of national heritage and environmental issues, making them responsible citizens.

### **Foundation Course II -A: Environmental Education**

- To understand various aspects of life forms, ecological processes, and the impacts on them by the human during Anthropocene era.
- To build capabilities to identify relevant environmental issues, analyze the various underlying causes, evaluate the practices and policies and develop framework to make informed decisions.
- To develop empathy for all life forms, awareness and responsibility towards environmental protection and nature preservation.
- To develop the critical thinking for shaping strategies such as; Scientific, Social, economic, administrative & legal, environmental protection, conservation of biodiversity, environmental equity and sustainable development.
- To prepare for the competitive exams.

### **Foundation Course II -B: Yoga**

**After studying this course student will be able to-**

- Develop their own physical, mental, emotional, social and spiritual health.

**Class : BA / BCA/ B.Com/B.Sc II Year**

### **Paper I -A: Hindi Bhasha Aur Naitik Mulya**

- The verbal and non-verbal skills of communication are developed.
- Make accurate use of Hindi language in their respective fields.
- Understand the basic forms of story and poetry.

### **Paper I- B: English Language and foundation**

Through this course the students will be able to:

- Strengthen their Grammar and Vocabulary,
- Acquire and develop LSRW (Listening, Speaking, Reading and Writing) skills
- Learn to think creatively and critically

After the completion of the course, students are expected to gain competency and proficiency in English language to perform at professional and personal level as well as to face competitive examinations at State and National level.

## **FC II**

### **Paper A : Entrepreneurship Development**

This course Introduces the students to the basics of entrepreneurship and small business management. Students gain an understanding of how to establish and manage a small business.

- Helps in building the skills, framework and knowledge of entrepreneurship and new venture creation.
- Helps the students in understand the importance of the planning process and learn how to develop, write and present an effective business plans for a new venture.

### **Paper B : Women Empowerment**

After going through this course, students will be able to understand the following:

1. Understand the history, concept and various dimensions of women empowerment in India.
2. Will be able to understand the constitutional provisions, laws and policies related to women empowerment.

3. Get knowledge of various issues, challenges and agencies supporting women empowerment. With this, you will be able to get acquainted with the glory story of the powerful women leadership of India.

Present study related to women empowerment will provide employment, opportunities to the students in government, private and non-government organizations.

**Class: BA / BCA/ B.Com/B.Sc III Year**

**Paper I-A : Hindi Bhasha Aur Naitik Mulya**

- To understand fundamental human values.
- To improve communication and soft skills.
- To make all round personality development.
- To develop their social and moral sense in life.

**Paper I-B: English Language and Communication Skills**

Through this course the students will be able to:

- Prepare for various competitive exams by developing their competence in English language.
- Promote their comprehension and communicative skills by being exposed to a variety of texts and their interpretations.
- Build and enhance their language competence through regular practice.
- Develop their knowledge of English Grammar and usages in a practical manner.
- Compete in national and state level examination for various competitions after the completion of the course.
- Seek a good job and to settle down in self-employment or their own business or profession.

**Paper II-A: Personality Development and Character Building**

- Students will acquire the conceptual knowledge of Personality Development.
- Students will develop insight into character building.
- Students will be able to become global visionary citizens.
- Students will be able to understand Indian knowledge tradition.
- Students will be able to understand the difference between nature, culture and distortion.
- This course will help in character building and overall development of personality of the students.

**Paper II-B: Digital Awareness - Cyber Security**

On successful completion of this course, the students will be able to:

- Make optimum use of web browsers, search engines and Chatbots.
- Creating e-mail account, sending, receiving and managing emails.
- Describe reporting procedure of phishing emails.
- Identify email phishing attack and preventive measures.
- Configure security settings in Mobile Wallets and UPIs.
- Practice safe, legal and ethical means of using Information Technology.
- Practice and use the various online financial and government services of day-to-day use.
- Understand the basic concepts related to E-Commerce and digital payments.
- Discuss cyber security aspects, RBI guidelines and preventive measures against digital payment frauds.
- Explore and learn the online available courses of her interest.

- Use the Digilocker and Academic Bank of Credit.
- Describe the concept of Cyber security and issues and challenges associated with it.
- Explain the process of reporting cyber crime at Cyber crime Police Station/ at online platform.
- Appreciate various privacy and security concerns on online Social media.
- Guide through the reporting procedure of inappropriate content.
- Perform privacy and security settings for popular Social media platforms.

## Open Elective Courses (NEP) For UG First Year

### Paper : Introduction to Sociology

- This course will enhance the conceptual learning and understanding of the basic concepts used in Sociology.
- The paper will contribute in enriching the vocabulary and scientific temperament of the students about human society.
- In this course student will get information about employment opportunities related to the discipline of Sociology.
- The course will provide knowledge about socio-cultural processes.

### Paper : Communicative English

- The study of this course will enable the students to acquire the knowledge of:
- Phonology and Morphology\_
- Syntax and Structure
- Vocabulary and Discourse.
- The students will be able to converse in real-life situations with effective language skills. The course will also help them to acquire literary sense, use idiomatic and lexical language.

### Matrices, Geometry and Vector algebra

The students will be able to

- Student will be able to use the Matrices, Determinants, Geometry and vector approach in different areas of business and science like budgeting, Sales projection cost estimation analysing the results of an experiment etc.

### Mathematics Logic and Sets

The students will be able to

- Using the principles of logic to distinguish between sound and unsound reasoning in discourse of everybody.
- Construct truth tables for logical expression: test statements for logical equivalence and represent mathematical statements in the language of predicate language.
- Using the appropriate set theoretic concepts. Thinking process tool and techniques in the solutions to various conceptual or real-world problems.

### M.S. Office

On the completion of this course student will be able-

- To Create and manage professional documents using word.
- Analyze, manage and present data using excel.
- Create and manage presentation using power point.
- To insert a table, picture, or drawing into the document.
- To Prepare the document to be sent as a circular letter.

## Open Elective Courses (NEP) For UG Second Year

### Paper : Human Rights

- The students will be able to explain the meaning, history and evolution of human rights.
- The students will be able to examine human rights issues in different social, political and cultural contexts
- The students will be able to relate human rights with other rights of individuals.
- Communicate effectively across the globe.

### Paper : Sociology of Tourism

After studying this course, students will be aware of the concepts of sociology of tourism.

- Able to analyze the National Global impact of tourism.
- Students will be able to understand the importance of tourism culture of the country.
- Students will get a chance to understand the social and cultural image of India.
- This course will give an opportunity to the students to understand the intercultural values.
- Students will learn about Indian heritage and will also realize the need of conservation.

### Paper : Translation Studies

The course is based on the needs and merits required in translation. The study of this paper will enable the students to:

- Understand the concept of translation studies in the theoretical field.
- Familiarize with approaches to translation, thereby contextualizing the discipline in general terms,
- Understand the process of translation demonstrate and apply enhanced knowledge of English as related to translation practices,
- Achieve effective communication with people from different corners of the world,
- Protect cultural heritage and benefit from transmission of knowledge,
- Understand structural differences between the two languages, and
- Expand the knowledge of the vocabulary and collocational aspects of the target language.

### Paper : Experiments with Translation

The course is based on the needs and merits required in translation. The study of this paper will enable the students to:

- Develop in understanding and appreciation of translation tactics.
- Critically approach the process of translation with cultural and semantic concerns as focal points.
- Interpret cross-genre translational elements,
- Prepare themselves for employability in the field in the of translation,
- Achieve effective communication with people from different corners of the world,
- Protect cultural heritage and benefit from transmission of knowledge,
- Understand structural differences between the two languages, and expand the knowledge of the vocabulary and collocational aspects of the target language

### Paper : Mass Media and Communication Skills (Theory)

The course is based on the needs and merits required in mass media. The study of this paper will enable the students to:

- Develop practical and creative skills of mass communication and media,
- Stimulate critical thinking,
- Identify avenues for a career in print and electronic media,



- Keep themselves abreast to the outer world.
- Identify ways to give voice to the voiceless,
- Spread their art and culture among different sections of society,
- Attain managerial efficiency; and develop leadership qualities

### **Paper : Experiments with Mass Media and Communication Skills (Practical)**

The course is based on the needs and merits required in mass media. The study of this paper will enable the students to:

- Learn the skills required in creating advertisements and visualizations for advertising agencies of both the public and private sector,
- Develop the aptitude of vigilance towards language as well as current events in order to work for news agencies
- Understand the technicalities of social media presence
- Spread their art and culture among different sections of society
- Attain managerial efficiency, and
- Develop leadership qualities.

### **Computer Maintenance & Troubleshooting**

On the completion of this course student will be able to -

- Identify and understand the hardware components in the computer system.
- Install, configure and update operating systems, device drivers and softwares.
- Install, configure and maintain various components in computer system and peripheral devices.
- Diagnose faults, repair and maintain computer system and its peripherals.
- Do preventive maintenance of computer system and its peripherals.

### **Fundamentals of Management**

At the of the course, students should be able to:

- Understand the nature of management and describe the functions of management.
- Develop understanding of different approaches to designing organizational structures.
- Understand the role of personality, learning and emotions at work.
- Discover and understand the concept of motivation, leadership, power and conflict.
- Understand the foundations of group behavior and the framework for organizational change and development.

### **Trigonometry, Calculus and Differential Equations**

The course will enable the students to:

- Understand the trigonometrical functions.
- Find out Maxima and minima of various functions.
- Solve simple problems related to real-life-situations.
- Use of differential equations approach in different areas of business and science.
- Formulate the differential equations of first order and first degree for various mathematical problems.

### **History of Indian Mathematics & Vedic Mathematics**

The course will enable the students to:

- Developing the understanding of scopes and features of Vedic mathematics.
- Enhance computational skills.
- Develop analytical thinking through Vedic mathematics.
- Understand the meaning of mathematical sutras in Sanskrit.
- Solve the multiplication by using Vedic sutras.

- Distinguish between modern and Vedic squaring methods and make to simplify algebraic squaring.
- Identify cube and cube roots and understand the concept of division by using straight division.
- Develop the interest of the research in the field of Indian mathematics.

## **Open Elective Courses (NEP) For UG Third Year**

### **Paper : Business English (Theory)**

On successful completion of this course, the students will be able to:

- Define and depict the basics of Business Communication in English
- Acquire Communicative Competence in the field of business.
- Increase their knowledge of key business concepts worldwide.
- Write and read basic business reports, faxes and memos.
- Expand vocabulary related to general business situations.
- Develop confidence to deal with people and basic issues in the business world.

### **Paper : Practicing Business English (Practical)**

On successful completion of this course, the students will be able to:

- Define and depict the basics of Business Communication in English
- Acquire Communicative Competence in the field of business.
- Increase their knowledge of key business concepts worldwide.
- Write and read basic business reports, faxes and memos.
- Expand vocabulary related to general business situations.
- Develop confidence to deal with people and basic issues in the business world.

### **Paper : Teaching Methods, Techniques and Strategies (Theory)**

On successful completion of this course, the students will be able to:

- Interpret the core concepts of classroom teaching.
- Develop teaching competency and communication.
- Employ the prescribed teaching techniques and strategies for effective teaching,
- Develop academic literacy required for undergraduate learning, further studies and research.
- Differentiate between the content and pedagogy of teaching subjects.

### **Paper : Practicing Teaching Methods, Techniques and Strategies (Practical)**

On successful completion of this course, the students will be able to:

- Interpret the core concepts of classroom teaching.
- Develop teaching competency and communication
- Employ the prescribed teaching techniques and strategies for effective teaching
- Develop academic literacy, required for undergraduate learning, further studies and research
- Differentiate between the content and pedagogy of teaching subjects

### **Paper : Disaster Management**

On successful completion of this course, the students will be able to:

- A conceptual understanding of Disaster, their types and their management.
- Learning about the Disaster Management Statute and its application during the pandemic.
- Attaining knowledge about institutional arrangement for response to disaster at national and state level (with special reference to Madhya Pradesh).
- Developing skills of preparing and responding in disaster situations.

**Paper : Local Self Government**

On successful completion of this course, the students will be able to:

- The importance and need of local self-government will evolve.
- Need for Local Self-Government in Governance
- Development of Local Self-Government in India and Madhya Pradesh
- Objective, functions and sources of income for local self-government in rural areas.

**Computer Network Management**

On successful completion of this course, the students will be able to:

- Create different types of design formats
- Using different fonts, grids and layouts for creating designs in Canva
- Build Single Page Applications using AngularJS
- Integrate forms with AngularJS
- Organize code using modules and configuring routes
- Define business logic using controllers
- Provide new behaviors to HTML using AngularJS directives
- Extend AngularJS with custom directives, filters and services
- Enhance the UI using animations and Bootstrap

## Vocational Courses (NEP)

- Web Designing
- Web Development using PHP & MySQL
- Web Designing Techniques
- Nutrition and Dietetics
- Management of Nutrition in life cycle
- Medicinal Plants
- Retail Management
- Supply Chain Management
- Consumer Affairs and Customer Care
- Personality Development
- Clinical Nutrition and Dietetics

### UG I Year: Web Designing

#### Course Outcomes

After studying this Course, the student will be able to –

- Code a handful of useful HTML & CSS examples
- Build semantic, HTML & CSS webpage
- Write basic scripts
- Use Names, Objects, and Methods
- Add Interactivity to a Web Page
- Create Dynamic Web Pages using Java Script in HTML forms.

### UG II Year: Web Development using PHP & MySQL

#### Course Outcomes

After completion of course, students will be able to -

- Discover how the web works, what makes web sites work.
- Implement simple and impressive design techniques, from basics to advanced so as to focus on goal oriented and user centric designs.
- Use Server Side Scripting.
- Implement concept of data persistence.
- Apply skills to program logic using PHP and handle data using MySQL.
- Develop dynamic websites using PHP & MySQL.

### UG III Year: Web Designing Techniques

#### Course Outcome:

On successful completion of this course, the students will be able to:

- Create different types of design formats
- Using different fonts, grids and layouts for creating designs in Canva
- Build Single Page Applications using AngularJS
- Integrate forms with AngularJS
- Organize code using modules and configuring routes
- Define business logic using controllers

- Provide new behaviors to HTML using AngularJS directives
- Extend AngularJS with custom directives, filters and services
- Enhance the UI using animations and Bootstrap

## **UG I Year :Nutrition and Dietetics**

### **Course Outcomes**

After studying this Course, the student will be able to-

- . Understand the relationship between food, nutrition & health.
- Understand various function of food & food groups.
- Understand digestion, absorption & functions of various nutrients & their sources

## **UG II Year : Management of Nutrition in life cycle**

### **Course Learning Outcomes: -**

After completion of course,students will be able to

- Plan diets for early childhood.
- Plan diets for school going children.
- Plan diets for adolescent
- Plan diets for adults
- Plan a diet for pregnancy and lactation.
- Plan a diet for old age.

## **UG III Year: Clinical Nutrition -Health Care System**

### **Course Learning Outcomes (CLO)**

Students will (learn the) understand the application of Public Health Nutrition Sciences for mulating strategies and actions for preventing and solving serious problems.

After completing this course, the students will be able to:-

- Gain insight into national nutritional problems in the community.
- Understand the contribution of National Agencies working towards nutrition improvement.
- Develop skill in planning and evaluation of public nutrition programs.
- Acquaint with various approaches to public health and nutrition programs.
- Aware and prevention of Communicable diseases.

## **UG I Year Medicinal Plants**

### **Course Outcomes**

After Studying this course, the students will be able to understand

- The utility of plants as medicines.
- The preparation of basic herbal medicinal products.
- The idea of cultivation practices.
- The storage, packaging and marketing of herbal medicines.
- To work with individual plant and plant products

## **UG II Year : Plants Used In Therapy**

### **Course Learning Outcomes (CLO)**

After completion of course, students will be able to:

- Know about different therapies of treatments.
- Identify plant species used in Ayurvedic, Homeopathic, Allopathic, Unani and Ethno medicines.
- Prepare different Asavas, Arishtas, Dermal oils, Mother Tincture, ointments and many other cosmetics.
- Understand importance of Ethnomedicines.
- Prepare cosmetic Ethnomedicines.
- Learn about the utility of plant products for treatments to use them as business.

### **UG III Year: Indian Ethno-medicinal Plants**

#### **Course Learning Outcomes (CLO)**

After studying this course will know about:

- Basics of identification of ethno-medicinal plants.
- Nutrient rich food for better health.
- Bio-fertilizers and bio-pesticides.
- Cultivation process of ethno-medicinal plants.
- Important plants related with common diseases.
- Employment opportunities in area of ethno-medicine.

### **UG I Year: Retail Management**

#### **Course Outcomes**

Course Learning Outcomes: -

- Understand the Fundamental Concept of Retail Management.
- Understand the Shopper's behavior
- Understand Visual Merchandising.
- Understand E-Retailing system.
- Understand E- Payment system

### **UG II Year: Supply Chain and Retail Management**

Course Learning Outcomes: -

- Understand the Fundamental Concept of Supply Chain Management.
- Understand the importance of Supply Chain Management
- Understand the fundamental concept of Logistics System
- Understand the Understand the fundamental concept of Warehousing
- Understand the working procedure of Warehousing & Logistics System
- Discover the aspects of Retail Market Strategy

### **UG I Year: Personality Development**

#### **Course Outcomes**

After studying this course, the students will be able to

- To cultivate skills for successful life and learn to handle failures.
- To learn the process of goal setting and SWOT analysis.

- To understand the importance of time and stress management.
- To develop core skills for employability.
- To develop effective communication skills.
- To realize the role of technology in personality development.

## **UG II Year: Personality Development**

### **Course Outcomes**

After studying this course,

- Students will gain knowledge about the basics of Personality Dynamics.
- Students will learn to implement techniques of Personality Development.
- Students will develop Skills of self-resilience and assertiveness in their personality.
- Students will learn Interview skills.
- Students will be able to understand about the importance of life skills needed for personality development.

## **UG III Year: Personality Development**

### **Course Outcomes**

After studying this course, Students will be able to

- Students will acquire the knowledge of different skills of personality development.
- Students will gain insight about the Importance of attitude in personality development. .
- Students will be capable of assessing the personality
- Students will be able to develop the ability for use of projective tests and personality inventories
- Students will be aware about the psychological tests and their use in personality evaluation.

## **UG III Year: Clinical Nutrition and Dietetics**

### **Course Outcomes**

Student will understand the application of public Health Nutrition Sciences for formulating strategies and actions for preventing and solving the series problems

After completing this course students will be able to-

- Gain insight into National Nutrition problems in the community.
- Understand the Contribution of National Agencies working towards Nutrition improvement
- Development skill in planning & evaluation of public nutrition programs.
- Acquaint with various approaches to public health and nutrition programs.
- Aware and Prevention of Communicable Diseases.



# Department of Education

## PROGRAMME OUTCOMES

At the end of the Programme the student-teacher will be able to:

- Empowered in content and pedagogy of teaching subjects.
- Develop teaching competency and communication skills through internship programme.
- Understand the teaching as a profession and understanding of various approaches of teaching.
- Develop an awareness in the student-teacher about population and environment.
- To develop competency to solve the educational problems through action research.
- Understand the concept of knowledge and relationship between Philosophy and Education.
- Understand the role of education in promoting national & international values.
- Understand the psychology of learners and theories' of learning & motivation.
- Understand the characteristic features, strengths and weaknesses of ancient, medieval, British and contemporary system of education in India.
- Understand the administration of education at different levels and also understand the role of Headmaster in school management.

## PROGRAMME SPECIFIC OUTCOMES OF B.Ed.

After successful completion of the two-year B.Ed. programme, student-teachers will be able to develop-

- ❖ Pedagogical skills
- ❖ Teaching competency
- ❖ Effective communication
- ❖ Professional ethics
- ❖ Scientific temperament
- ❖ Psychological attitude towards students
- ❖ Management & Team work abilities
- ❖ Ability of problem solving
- ❖ Critical thinking
- Action research
- ❖ Positive approach

## COURSE OUTCOMES

**Class : B.Ed. SEM-1**

**Paper -1 Child hood and Growing up**

- Understand the conceptions about child and childhood (specifically with reference to the Indian Social context).
- Develop a critical understanding of the different Social, Education and Cultural Contexts at the core of the exploration of childhood.
- Develop an understanding of the different aspects of a child with diverse abilities in the Social, Cultural and Political context of India.

- Acquaint with respect to the role of different agencies in the healthy development of children.

### **Paper-2 Education in India – Status, Problems and Issues**

- Develop understanding of the concepts, meaning and aims of education.
- Understand inter-relation of education and philosophy.
- Compare and contrast the thoughts of Indian and Western thinkers of education.
- Explore the implications of the concepts involved in educational practices.
- Develop reflective thinking among students.

### **Paper-3 Language Across the Curriculum**

- Understand the nature and structure of language.
- Appreciate the relationship between language, mind and society.
- Explore the process of language acquisition and learning.
- Develop understanding of different language skills and development of the same.
- Generate sensitivity and competency towards catering to a multilingual audience in Schools.

### **Paper -4 Curriculum Development and School**

- Understand the meaning of the term Knowledge and Curriculum.
- Sensitize towards the conceptual linkages and distinctions between Educational aims, Curriculum framework, Curriculum development, curriculum transaction, curriculum evaluation and Pedagogy.

### **Paper -5 Reading and Reflecting on Texts**

- Read and respond to a variety of texts in different ways.
- Learn to think critically together and appreciate that depending on the text and the purpose of reading.
- Develop meta-cognitive awareness to become conscious of their own thinking processes as they engage with diverse texts.

## **Class : B.Ed. SEM-2**

### **Paper-1 Learning and Teaching**

- Examine range of cognitive capacities and creative processes in human learners.
- Acquaint with the different contexts of learning and situate schools as a special environment for learning.
- Reflect on their own implicit understanding of the nature and kinds of learning,
- Develop an understanding of different theoretical perspectives of learning with a focus on cognitive views of learning.

### **Paper -2 Pedagogy of a School Subject –Part -1**

#### **Teaching of Mathematics**

- Understand the nature of Mathematics.
- Critically explore the historical developments leading to concepts in modern Mathematics.
- Analyze learning theories and their application in Mathematics Education.
- Improve the competencies in secondary level Mathematics.

#### **Teaching of Biology**

- Acquire a conceptual understanding of the Pedagogy of Biology.
- Acquire and learn specific laboratory skills to conduct practical work in Biology.
- Develop and use the techniques of CCE for assessment of students performance.

- Evolve as a reflective practitioner through use of innovative practices in the teaching of Biology.

### **Teaching of Hindi**

- Understand the importance of language in education.
- Explore different methodology of teaching Hindi.
- Develop proper skills of language learning.
- Attain efficiency and effectiveness in teaching and learning Hindi Language.

### **Teaching of Sanskrit**

- Understand the role of Sanskrit in India and its place in the school curriculum.
- Become committed, inspired and interested in teaching Sanskrit.
- Facilitate the effective use of learning resources.
- Develop strategies in order to meet the learning difficulties in teaching Sanskrit.

### **Teaching of English**

- Understand the need and importance of English Language.
- Develop proficiency in the language.
- Familiar with the psycholinguistics and sociolinguistics aspects of language.
- Able to use technology to enrich language teaching.
- Aware of the pedagogical practices required for teaching English on second language.

### **Teaching of Urdu**

- Understand the need and importance of Urdu Language.
- Develop proficiency in the language.
- Familiar with the psycholinguistics and sociolinguistics aspects of language.
- Able to use technology to enrich language teaching.
- Aware of the pedagogical practices required for teaching Urdu on Third language.

## **Paper -3 Pedagogy of School Subject (Part –II)**

### **Teaching of Physical Science**

- Understand the nature, scope and importance of Physical science with special reference to secondary school content.
- Understand the aims and objectives of teaching Physical Science.
- Understand and make use of different approaches & methods of teaching science.
- Understand and employ several teaching techniques helpful to develop attitude and scientific method.
- Understand the importance of principles of curriculum construction organization of Physical science contact.

### **Teaching of Social Science**

- Develop understanding about the basic differences between Social Studies and Social Sciences.
- Explore the need for teaching Social Sciences as an integrated discipline
- Develop critical understanding to justify the relevance of social Sciences in terms of Contemporary events.
- Gain knowledge about the different approaches associated with the discipline.

### **Teaching of Commerce**

- Introduce student teachers with the methodology of teaching used in teaching of Commerce in

schools.

- Make students teachers aware of the values of Commerce and the relationship of Commerce with other subjects.
- Encourage student teachers to use a wider range of teaching techniques in order to enable them to plan their lessons in teaching of commerce.
- Acquaint student teachers with the role of teaching aids, textbook, homework, libraries in commerce.
- Equip student teachers with the curriculum.

#### **Paper -4 Language across the Curriculum**

- Understand the nature and structure of language.
- Appreciate the relationship between language, mind and society.
- Explore the process of language acquisition and leaning.
- Develop understanding of different language skills and development of the same.
- Generate sensitivity and competency towards catering to a multilingual audience in Schools.

#### **Paper -5 Drama and Art in Education**

- Develop basic understanding for different Art forms- impact of Art forms on the human mind.
- Enhance artistic and aesthetic sensibility.
- Enable to respond to the beauty in different Art forms, through genuine exploration, experience and free expression.
- Develop skills for integrating different Art forms across school curriculum at secondary level.

### **Class : B.Ed. SEM-3**

#### **Paper -1 Pedagogy of a School Subject**

- Enable connect theory of practice.
- Acquire a perspective regarding the aims of education within which their previously acquired knowledge and practice can practices can be systematized and structured
- Explore meaningful experience as a practitioner.

#### **Paper -2 School Internship**

- Understand children and the teaching learning process in a systematic manner.
- Learn to relate to and communicate with children.
- Learn the nuances of the practice of teaching in a school using appropriate methods materials and skills.
- Evaluate school textbooks and other resource material critically in the context of Children's development and pedagogic approach used.

#### **Paper-3 Educational Psychology Practical**

- Psychology Tests are standard measures for assessing behavior objectively.
- Understanding more about themselves.
- Helping people for making decision about their lives.
- Assessing severity of disorder in Human being.
- Helpful in diagnosis of Student's problems
- In assessing level of functioning or disability.
- Helps in treatment outcome.

## **Class : B.Ed. SEM-4**

### **Paper -1 Gender, School and Society**

- Develop understanding of some key concepts and terms and relate them with their context in understanding the power relations with respect of Educating and Education.
- Develop an understanding of the paradigm shift from Women studies to Gender studies based on the historical backdrop.
- Reflect on different theories of Gender and Education and relate it to power relations.
- Analyze the institutions involved in Socialization processes and see how socialization practices impact power relations and identity formation.

### **Paper -2 Educational Technology and ICT**

- Understand the computer peripherals and its Organization in computer system.
- Develop skills in handling computer and using word documents.
- Develop skill in computation, analysis and interpretation of data by using Excel spread sheets.
- Understand the Educational implications of Power Point Presentation and its use in classroom context
- Understand the applications of Information Technology in the fields of teacher education programme and training.

### **Paper -3 Creating an Inclusive School**

- Identify and address the diverse needs of all learners.
- Acquaint with the trends and issues in Inclusive Education.
- Develop capacity of student- teachers for creating an inclusive School.
- Appreciate various inclusive practices to promote Inclusion in the classroom.

### **Paper -4 Optional Course (Any one of the subject mentioned below )**

#### **a) Value Education**

- Understand the concept and types of values.
- Understand the meaning and basic-theories of axiology.
- Get an insight into the strategies of inculcation of values among children.
- Develop awareness about the different agencies working in the sphere of value education.
- Develop skills and techniques needed to teach value education.
- Understand the role of the teacher in value-education.

#### **b) Futurology in Education**

- To acquaint students with the significance of the study of Futures in general and Futurology in particular.
- To develop the knowledge and skills of students for Forecasting Futures of Education through

methods and techniques.

- To develop critical thinking of students about the problem and prospects of school education in future.

### **c) Health and Physical Education**

- Understand the significance of Health Education for the all-round development.
- Maintain and promote good health.
- Develop the understanding of physical education and its related fields.
- Acquire the knowledge about the teaching methods of physical education and its activities.
- Know about the effective organization of physical education activities.

### **d) Guidance and Counseling in School**

- Understand the principles, scope and need of guidance and counseling in schools.
- Acquaint himself with nature of different problems faced by children in context of learning and development.
- Understand the acquisition and process of learning in children with special needs.
- Acquaint himself with learning disabilities of children and its remedies.
- Take up minimum guidance programme at school level.

### **e) Environmental Education**

- To understand various aspects of life forms, ecological processes, and the impacts on them by the human during Anthropocene era.
- To build capabilities to identify relevant environmental issues, analyze the various underlying causes, evaluate the practices and policies and develop framework to make informed decisions.
- To develop empathy for all life forms, awareness and responsibility towards environmental protection and nature preservation.
- To develop the critical thinking for shaping strategies such as; Scientific, Social, economic, administrative & legal, environmental protection, conservation of biodiversity, environmental equity and sustainable development.
- To prepare for the competitive exams.

### **f) Action Research**

- Acquires the knowledge of concept of research and educational research.
- Understand the concept of basic, applied and action research and their differences.
- Understand the meaning, significance and scope of action research.
- Become aware of action research problems in different areas in schools.
- Acquire the knowledge of steps involved and tools used in action research.
- Acquires the skills of conducting action research and to develop the skills of interpreting and reporting the finding of action research.

### **• Paper -5 Understanding the self**

- Develop life skills to understand self.
- Enhance capacity for sensitivity, sound communication and ways to establish peace and harmony.
- **Develop ability for personal growth and social skills in their own students**
- Recall and reflect on their own educational journey.

- Conscious of factors that have shaped their aspiration and expectations.

## **Paper -6 Understanding of ICT**

- Apply effectively different ICT tools, software applications and digital resources.
- Develop understanding and skills of integration of ICT in teaching learning. Evaluation and management of an institution.
- Acquire the skill of organizing and creating her/his own digital resources.
- Sensitise toward practice safe, ethical and legal ways of using ICT.

## **Program- Postgraduate Courses**

### **Program Outcomes:**

- Provide students with the critical faculties necessary in an academic environment and on the job in an increasingly complex interdependent world.
- Students will be able to apply critical and theoretical approaches to the reading and analysis of particular subjects.
- Students will also develop insight for research and also study research methodology which will help them to present their ideas in a structured manner.
- Students will develop a thorough knowledge of theories, concepts and research methods in the field and apply them in research design and data analysis.
- Students will gain confidence to become entrepreneur as well in the areas of their interest.

### **Program Specific Outcomes:**

#### **(A) Faculty of Arts**

##### **(I) MA(Master of Arts)**

The Faculty of Arts in the college offers **PG in Political Science, English and Hindi.**

- ❖ Students will develop critical faculties necessary in an academic environment and on the job in an increasingly complex interdependent world.
- ❖ Students will be familiar with representative literary and cultural texts within a significant number of historical, geographical, and cultural contexts.
- ❖ Students will be able to apply critical and theoretical approaches to the reading and analysis of literary and cultural texts in multiple genres.
- ❖ Students will also develop insight for research and study of research methodology will help them to present their ideas in a structured manner.
- ❖ Students will develop a thorough knowledge of theories, concepts and research methods in the field and apply them in research design and data analysis.

#### **(i) Department of English**

##### **Program Specific Outcomes**

The programme aims to develop the ability of students to critically examine and restate their understanding of literary texts employing individual linguistic skills, engendering application of

literary concepts and critical approaches to arrive at the core and essence of narratives. The learning process would also lead to a larger comprehension of global and national social issues thereby facilitating the students to address them proactively. On completion of the Programme the students will be able to:

- ❖ Interpret and demonstrate their understanding of form, structure, narrative techniques, devices and style.
- ❖ Analyse and apply various literary concepts and critical approaches.
- ❖ Organize and integrate the acquired knowledge towards individualistic compositions.
- ❖ Will be able to present, appraise and defend arguments with conviction and confidence.
- ❖ Familiarise with the conventions of diverse textual genres including fiction, non-fiction, poetry, autobiography, biography, Journal, film, plays, editorials etc.

## **Course Outcomes**

### **Class – M.A.( English Literature) I Sem**

#### **Paper I Poetry**

- The paper is designed to equip students with the knowledge and skills to read and comprehend texts in British Literature.
- The students will be able to display a working knowledge of historical and cultural context of British Literature from Age of Chaucer to Augustan Age.
- Effectively understand and communicate ideas related to the literary works during class and group activities.
- Identify and describe distinct literary characteristics of British Literature from the beginning to the 18th century.
- Analyze literary works for the structure and meaning

#### **Paper II Drama**

- Students are trained to be skilled, knowledgeable, and ethical interpreters of literary texts in English by nurturing their ability to understand drama.
- Students learn historical contexts, psycho-social aspects and discern the various cultural and moral values associated with the texts and they become well acquainted with the literary genre of Drama.
- The rhetorical aspects of drama help them understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.

#### **Paper III Fiction**

- Students will interpret texts with attention to ambiguity, complexity, and aesthetic value.
- Students will read diverse texts within their historical and cultural contexts, developing a critical understanding of how literature can both uphold and resist existing structures of power.
- Students will deploy ideas from works of criticism and theory in their own reading and writing.
- Students will identify topics and formulate questions, identify appropriate methods and sources for research, and engage ethically with sources.
- Students will participate in critical conversations and prepare, organize, and deliver oral presentations on the text of the novels read.



#### **Paper IV Prose**

- Students will gain understanding of the various aspects of the Essay – its elements, kinds, structure and the nuances of language.
- The students will be encouraged to become active readers and to appreciate ambiguity and complexity in prose and articulate their own interpretations.
- The students will gain knowledge of the major traditions of prose written in English.
- The students will be encouraged to write effectively for a variety of professional and social settings and will develop an awareness and confidence in their own voice as a writer.
- The students will be exposed to acquaint heterogeneous customs of English culture and different writing styles of literary figures as the essays are selected from various socio- cultural backgrounds.

#### **Class – M.A.(English Literature) Sem II**

##### **Paper I Poetry**

- The students will be able to focus on formal, cultural contexts related to contemporary and modern theories in various genres of different ages.
- Familiarize themselves with social and political changes and highlight change in historical scenario of women's entry into writings and helps to read well known literary works in a novel and exciting manner.
- Equip themselves with artistic and moral views, trigger their imagination and aesthetics of various genres. Nurture and develop spiritual affinities with nature and instill a sense of compassionate aesthetics that promote social conscience and universality.
- The students will be able to display a working knowledge of historical and cultural context of British Literature from Romantic Age to the Post-modern Age.

##### **Paper II Drama**

- The rhetorical aspect of drama help the students to understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.
- They will learn the structure of a full length play and one act play, the dramatic devices and analyze the effect it creates in the audience.
- They will learn to raise significant questions, reach well-reasoned conclusions, weigh alternative systems of thought, and enhance their creative expression.
- Students also obtain a value orientation by means of poetic justice in tragedy or comedy and comprehend human actions and their consequences in life.

##### **Paper III Fiction**

- The student will develop the ability and interest to read literary prose and fiction on their own.
- The student will be able to understand how society and culture played a significant role in the lives and career of the writers of the age.
- The students will analyze and appreciate the narrative styles of the writers and the innovative novelistic techniques employed by them.
- They will be exposed to different cultures, myths, and histories of various nations through fiction.
- The student will receive creative acumen and will be nourished by the scintillating stories and a sense of inclination towards literary sensibility.

#### **Paper IV Prose**

- The students will be able to write analytically in a variety of formats, including essays, research papers, reflective writings, and critical reviews of secondary sources.
- Students would also be able to ethically gather, understand, evaluate and synthesize information from a variety of written and electronic resources.
- The students will be trained to write well-constructed essays and also enhance their vocabulary.
- The students will be able to demonstrate through discussion, writing tasks and end exams the ability to interpret and appreciate the literary nuances of prose writings.
- The students will take cognizance of the historical, social and cultural contexts of each work and thereby make connections between literature and society.
- The students will be able to understand the nuances of language, structure and composition of ideas in English Prose.
- Understand the values of life through various styles of reflection on life.
- Get acquainted with the habit of reasoning and analysis through prose reading pros.

#### **Class – M.A. (English Literature) III Sem**

##### **Paper I Critical Theory**

- The course gives an introduction to various forms of literary theory and criticism, which is the most essential aspect of literary appreciation.
- The students will be able to Understand the seminal theories of modern literary criticism and develop a critical outlook towards literature.
- Apply critical theories for literary interpretation and analyse and interpret literary texts from critical point of view.
- Evaluate literary texts based on critical concepts.

##### **Paper II English Language**

- This paper will enable the students to understand the origin, the growth and development of English language, its structural, grammatical and functional aspects.
- To trace out the history of English Language and varied components of linguistic structures of the language and understand the regional and social variations of English.
- It also gives an overview of phonetics and helps the students to appreciate the relationship of language, society, culture and literature.
- The students will be able to understand the nuances of English language and to apply and analyse the theories and the concepts in speech sounds .
- The students will grasp the complexity of language as a communication system shaped by cognitive, cultural and social factors Comprehend the features of speech sounds in English and their respective RP phonetic symbols.
- The learners will know the working of the speech organs and attain a practical knowledge of the articulation of the English speech sounds, acquiring, especially, the following skills.

##### **Paper III Indian Writings in English**

- This paper introduces students to Indian Writing in English, through the study of various literary genres such as Poetry, Prose, Drama, Fiction and Critical Theories.

- It will help the students to appreciate the literature written in English by Indians. This paper is designed to equip students with the knowledge and skills to read and understand texts in Indian Writing in English.
- The students will be able to understand the nuances of Indian Writing in English.
- Interpret and demonstrate their understanding of various facets of Literature and analyse literary forms of the text and to appreciate Literature.
- Effectively understand and communicate ideas related to the Indian Writing in English with its background and settings.
- To critically appreciate and analyze the works of Indian writers writing in English.

#### **Paper IV American Literature**

- The course will a glimpse of American history and enable the students to review and analyse literary texts from America in their socio-political context..
- The student will be able to understand the American spirit and analyse various literary innovations and their culture by studying the works of writers from America.
- Analyse and infer the philosophic principles from the works, assess the speech, life and dreams of America as reflected in the literary works .
- Identify the varied responses that are earned through reading the creative works Analyse the wide variety of experiences and attitudes in contemporary American society through the works and will be able to convincingly write supportive arguments.

#### **Class – M.A. (English Literature) IV Sem**

##### **Paper I Critical Theory**

- The course will enable the students to review and recognize basic elements of literary works for better interpretation and analysis. The student will be able to formulate and integrate various aspects of principles of criticism in literary works that will lead to literary appreciation and understanding.
- To make the students understand the basic theoretical concepts underlying contemporary approaches to literature and the major difference between various schools of criticism.
- The students will be able to practically analyse any literary work by identifying different aspects of literature and interpret the text intensively distinguishing its salient features and appreciate the literary works at varied levels of comprehension.
- Demonstrate the ability to use the critical theories in the practice of literary evaluation and acquire a holistic view of criticism and new trends in criticism
- Sensitize students towards recent critical theories and co-relate literary theory with literary texts.
- Develop personal responses to literary texts and ability to conduct literary research.

##### **Paper II English Language**

- The students will be able to gain knowledge of fundamental principles of English grammar including parts of speech, sentence types, sentence analysis, simple/compound/complex sentences, subject-verb agreement, punctuation etc.
- The students will understand and integrate the acquired knowledge of the lexical, grammatical structure and the theories involved.
- The students will be able to have a thorough command of English and its linguistic structures and

can apply critical frameworks to analyze the linguistic, cultural and historical background of texts written in English.

- The students will comprehend basic grammatical and semantic categories of English.
- The students will also be given an overview of stress, syllable and intonation through the scientific /phonetic study of the sentence structures.
- The students will be able to distinguish and properly enunciate voiced and voiceless sounds and produce native-like intonation, rhythm and stress in sentences and also utilize phonetic dictionary symbols to continue to improve pronunciation.

### **Paper III Indian Writings in English**

- The students will learn the literary, societal, cultural, biographical and historical background of the greatest English writings penned by Indian Authors.
- The students will also have an overview of Indian Literature in English Translation through the study of the eminent works of Girish Karnad, R.N Tagore etc.
- It helps the students to appreciate the literature written in English by Indians. This paper is designed to equip students with the knowledge and skills to read and understand texts in Indian Writing in English.
- It will help the students to develop personal responses to literary texts and ability to conduct literary research in Indian Writings in English.

### **Paper IV American Literature**

- It will help the students to obtain adequate information on colonization and post-war consequences through the literary, societal, cultural, biographical and historical background of American Literature.
- The students will be familiar with the conventions of diverse textual genres including fiction, non-fiction, poetry, autobiography, plays, editorials etc. related to American literature.
- The student will be able to comprehend literary, societal, cultural, biographical and historical background of the greatest writings that constitute the literature of America.

## **(ii) Department of Hindi**

### **Program specific outcomes**

After completion of the course, the student will develop ability.

- ❖ To prepare for the examinations like NET/ SLET/ Ph.D
- ❖ To make use of Hindi language for getting employment.
- ❖ To prepare for competitive examinations.
- ❖ To appreciate Hindi literature.
- ❖ To inculcate moral values in order to strengthen the society.
- ❖ To prepare for journalism.
- ❖ To prepare for work on computer in Hindi.
- ❖ To prepare for post of Hindi Adhikari in Government and banks.

### **Course Outcomes**

### **M.A. (Hindi) I Sem**

**Paper I Prachin evam Madhyakaleen Kavya tatha Uska Itihas**

- Describing the progressive nature of Sant Kabir and his writings.
- Describing the content and the skill of writing Jayasi, Vidhyapati in context of the socio cultural condition of his period.
- Understanding the vision of Raidas, Dadu Dayal, Ameer Khusro

**Paper II Adhunik Hindi Gadhya Aur Uska Itihas**

- Develop interest in Novel.
- Understand Novel forms and their types.
- Get information about the modern Hindi literature.
- Know the concept of Drama.
- Know the concept and process of dramatics.
- Increase vision regarding literary value.
- Learn the origin of drama as dramatic art.

**Paper III Bhartiya avam Paschatya Kavya Shastra**

- Know Indian poetry structure in Ancient and modern era.
- Know the importance of criticism.
- Increase vision regarding literary value.
- Get information about Alankar in Hindi literature.

**Paper IV Prayojanmulak Hindi.**

- Understanding the official language act of 1963 1968 and 1976.
- Understanding the concept of proof reading.
- To prepare for journalism.
- How to prepare for work on computer in Hindi.

**Class - M.A. (Hindi) II Sem****Paper I Pracheen evam Madhyakaleen Kavya tatha Uska Itihas**

- Understanding the vision of Mira in context of her Krishna bhakti poetry.
- Describing the Krishna Leela poetry of Soordas by relating it with his philosophy of his life.
- Describing the Rama Bhakti poetry of Tulsidas along with a philosophy of Bhakti cult.

**Paper II Adhunik Hindi Gadhya Aur Uska Itihas**

- Develop the story reading skills.
- Develop knowledge of literary forms in Hindi story.
- Obtained information about the history of modern Hindi literature.
- Obtained information about literary theory.
- Develop relations between stories and society.
- Understanding the social consciousness of Premchand, Nirmal Verma, Amritlal Nagar, Manu Bhandari through their short stories.
- Understanding the change in content and style of expression in short stories in different periods through the stories Jai Shankar Prasad, Premchand.
- Develop the essay writing and auto Biography.

**Paper-III Bhartiya evam Pashchatya Kavya Shastra**

- Know the concept types of literature.
- Get information about Siddhant and Vad.
- Get detail information about criticism in Hindi literature.
- Know the concept and process of literature.
- Know Western poetry structure in Ancient and Modern era.

**Paper IV Prayojanmulak Hindi.**

- Understanding the meaning concept and importance of functional Hindi.
- Understanding various forms and functional Hindi according to its area of applications.
- Understanding the importance of translation junior and senior in government and private.
- Understanding various forms of writing in media.
- To prepare for Hindi officer in different books.
- PRO in public sectors.

**Class - M.A (Hindi) III Sem****Paper I Adhunik Hindi Kavya Aur Uska Itihas**

- Developed Creativity.
- Love for poetry.
- Familiarizing the literary Contribution of as well as work of famous poet like Maithlisharan Gupta and Jaishankar Prasad.
- To introduce in the poets of modern Hindi poetry and its function.
- Development of poetic tendency, moral values sensation and thinking tendency.

**Paper II Bhasha Vigyan Evam Hindi Bhasha**

- To develop love towards mother language.
- To understand the importance of language.
- Knowledge of language behaviour and its proper use.
- Knowledge of grammer rules.
- Development of sentence structure and accuracy of writing.

**Paper III Hindi Sahitya Ka Itihas**

- Understanding the concept of history of literature.
- Understanding the basis of classification of Hindi literature.
- Understanding the features of Aadikal, Bhaktikal, Ritikal in the context of socio cultural and political condition of that period.
- Understanding the importance and basis of the names given to each period of Hindi literature.
- Describing the Ram and Krishna Kavya Kavi and his poetry.

**Paper IV Optional (Surdas)**

**We will get information about Surdas the leading poet of Bhakti period.**

- Will be familiar with the importance of Surdas famous book.
- Will get information from old age period.
- Will understand the importance of golden age.
- Will gain knowledge of literary role of prominent poets, kumbhan Das, Krishna Das, Parmanand Das.
- Will be familiar with the Vatsalya Ras.

**Class - M.A.( Hindi) IV Sem**

**Paper I Adhunik Hindi Kavya Aur Uske Itihas**

- The significance of poetry and tendency to write poetry will develop.
- There will be knowledge of prominent poet like Sumitranandan Pant, Suryakant Tripathi Nirala poets of modern poetry.
- Will have sense of all characteristics of modern Hindi poetry and it's major poet.
- Intellectual ability will develop.
- Interest in creation will arise.
- Students will understand the importance of poetry.

**Paper II Bhasha Vigyan Evam Hindi Bhasha**

- There will be knowledge of historical background of Hindi and students will get proper knowledge of their language.
- Will understand the nature of Hindi like noun pronoun verb etc.
- Milan the language and the use of prefix suffix.
- Vocabulary will develop.
- Developing the translation process.

**Paper III Hindi Sahitya Ka Itihas**

- Understanding the reason of emergency of Aadhunik Kal in Hindi literature.
- Understanding the features of Aadhunik Kal in the context of social cultural and political condition of that period.
- Understanding the literary trends of Adhunik Kal.
- Understanding the history of development of Hindi drama, short stories and novels.

**Paper-IV Optional (Surdas)**

- Will understand the history of Bhakti and will get information about many poetic stream.
- Emotions will develop.
- Will gain detailed knowledge of personality as well as work of devotional poet such as Raskhan, Meera, Nandas etc.
- Will understand the characteristics of important epics like Sursagar.
- Learning and writing skills will develop.

**(iii) Department Of Political Science**

**Program Specific Outcomes**

- ❖ Develop the ability to use critical, analytical, and reflective thinking and reasoning

- ❖ Reflect on social and ethical responsibilities in his/her professional life.
- ❖ Gain experience and confidence in the dissemination of project/research outputs
- ❖ Work responsibly and creatively as an individual or as a member or leader of a team in multidisciplinary environments.
- ❖ Develop the ability to use critical, analytical, and reflective thinking and reasoning
- ❖ reflect on social and ethical responsibilities in his/her professional life.
- ❖ Gain experience and confidence in the dissemination of project/research outputs
- ❖ Work responsibly and creatively as an individual or as a member or leader of a team and in multidisciplinary environments.
- ❖ Communicate effectively by oral, written, graphical and technological means and have competency in English.
- ❖ Independently reach and acquire information, and develop appreciation of the need for continuously learning and updating.
- ❖ Common Outcomes of Master of Arts Programs in Social Sciences:
- ❖ Develop a thorough knowledge of theories, concepts, and research methods in the field and apply them in research design and data analysis.
- ❖ Assess the impact of the economic, social, and political environment from a global, national and regional level.
- ❖ Know how to access written and visual, primary and secondary sources of information, interpret concepts and data from a variety of sources in developing disciplinary and interdisciplinary analyses.

## **Course Outcomes**

### **Class – M.A. I Sem**

#### **Paper I - Modern Indian Political Thought**

- Tracing the evolution of Indian political thought from ancient India to modern India
- To demonstrate knowledge of key thinkers and concepts
- To understand the nature, methods and significance of political Thought.

#### **Paper II - Comparative Politics**

- Tracing the evolution of Comparative Politics as a discipline.
- To understand the forms of government in various countries and their working pattern.
- To compare with procedure of various social institutions and government institutions.
- To analyze the meaning of organs of government and theory of separation of power.

#### **Paper III - International Politics & Contemporary Political Issues**

- To analyze the history of international relational through the causes and phases of Colonialism.
- To know the impact of first world war and second world war and its causes and consequences.
- To criticize the various ideologies which lead to the destruction of world.

#### **Paper IV – Major ideas and issues in Public Administration**

- Students will be able to lead and manage in public governance.
- Students will participate in and contribute to the policy process.
- Students will be able to analyze, synthesize, think critically, solve problems, and make decisions.



## **Class – M.A. II Sem**

### **Paper I – Western Political Thought**

- The course is rich in so far as understanding such crucial issues and concepts as rights, equality, liberty, freedom, constitutionalism, community rights, multiculturalism, democracy, social justice, identities, hegemony and dominance, importance of civil society etc.
- The course equips the students with the most current understanding of thought processes.

### **Paper II – Politics of South Asian Countries “Pakistan, Bangladesh, Sri Lanka and Nepal”**

- The course is designed to make students to know the South Asian region in a greater detail.
- The future of one's own destiny is intertwined with the future of others in the region. Scope for research in the area is bright as a number of foundations are coming forward to finance the students in the region.

### **Paper III – International Organization**

- Its aim is to enable the students gain their own theoretical perspectives in approaching world politics.
- The course helps Indian as well as foreign students in understanding International Relations as part of Political Science from a global.

### **Paper IV — Research Methodology**

- The theoretical aspects of the course will comprise an exploration of various theories, concepts and terms that are part of the Research Methodology.
- The empirical aspects will provide a broad understanding of various research methods and techniques, besides dealing with the practical realm of research.

## **Class – M.A. III Semester**

### **Paper I – Indian Government and Politics**

- To know the salient features in making of Indian constitution.
- To appreciate the socio-economic political factors which lead to the freedom struggle.
- To understand the constitutional orderings and institutional arrangement.

### **Paper II – State Politics in India**

- To understand the forms of government in various countries and their working pattern.
- To compare with procedure of various social institutions and government institutions.

### **Paper III – International Law**

- Understand the basic doctrines and concepts of international Law.
- Critically discuss the limitations and potentials of International Law.

### **Paper IV – Indian Foreign Policy**

- To appreciate the post war developments through the emergence of third world.
- To understand the concept of power, national, regional, global and peace security.

## **Class – M.A. IV Sem**

### **Paper I – Federalism in India and Local Self Government**

- It provides to the students rich understanding on the different dynamics of the local self-government formations and shaping of governance in the state currently.
- The major problem that challenges Panchayati Raj System in India is substantive devolution of powers in the country.

### **Paper II – Government and Politics of Madhya Pradesh**

- It provides to the students rich understanding on the different dynamics of the state formations and shaping of governance in the state currently.
- To under the concept of local self government.
- To understand the emerging trends in politics of Madhya Pradesh.

### **Paper III – Advance Political Theory**

- This is reflected in a framework generally known as Modern Political Analysis.
- Students of politics are concerned about and interested in the various principles of that intellectual discipline.

### **Paper IV – Diplomacy and Human Rights**

- This course is designed to develop conceptual, theoretical and analytical skills of students regarding Peace and Conflict.
- The course may provide an opportunity to join with NGOs working on conflict resolution.

## **(B) Faculty of Commerce**

### **(II) M.Com (Master of Commerce)**

#### **Program Specific Outcomes:**

- ❖ Students will gain knowledge of business and will learn the techniques of managing the business with special focus on marketing, taxation and banking theory and day to day practices.
- ❖ To impart the knowledge of basic accounting principles and the latest application oriented corporate accounting method.
- ❖ To develop the decision-making skills through costing method and practical application of management accounting principles.
- ❖ To enhance the horizon of knowledge in various field of commerce through advertising and sales promotion, auditing and entrepreneurial development.

#### **M.Com I Sem.**

##### **Paper-I Management Concept**

- Students are able to know the leadership styles.
- Students are able to evaluate social responsibility and ethical issues of management.
- They can practice the process of management for functions like planning, organizing, staffing etc.

##### **Paper-II Business Environment**

- The students acquire the knowledge of environment of business, social and political environment and technological environment.
- After conclusion of study the students will be able to explain the economic trends and effect of government policies.

##### **Paper-III Advanced Accounting**

- The outcomes of this paper is to provide understanding for the post graduate students on voyage accounts, insurance claim, Insolvency account of individual and partners, investment account dissolution, amalgamation and sale of firm.

##### **Paper-IV Cost Analysis and Control**

- To enable the students to understand the cost accounting, budgeting, standard costing etc.
- Making students aware about importance of cost variance etc.

## **M.Com II Sem**

### **Paper-I Corporate Legal Framework**

- Students become aware about the company act, consumer protection act.
- To provide adequate knowledge of FEMA Act, MRTP Act.

### **Paper-II Organizational Behavior**

- The outcomes of this paper is to make the post graduate students aware about the organizational and group behavior leadership, personality and attitude of the employees.

### **Paper-III Advanced Statistical Analysis**

- The outcomes of this paper is to provide an understanding for the post graduate business students on statistical concepts including probability distribution, forecasting, hypothesis testing, regression, interpolation and extrapolation.

### **Paper-IV Functional Management**

- To help in knowing the functional areas of management.
- Learners will be able to select the specialized field as professional.

## **M.Com III Sem**

### **Paper-I Managerial Economics**

- The students will be in a position to integrate economic policies with management decision making.
- To understand and develop management skill in students which will increase their employability chances in various organization.

### **Paper-II Tax Planning and Management**

- After successful completion of the course, students will be able to deal with the provisions of tax planning.
- Students will learn to manage their saving in such a way so that tax liability is reduced.

### **Paper-III Entrepreneurship Skill Development**

- The outcomes of this paper is to provide an understanding to students on contemporary issues of entrepreneurship development in India.
- Knowledge of the financial institutions, project reports incentives, subsidies and managerial qualities imparted to students.

### **Paper-IV Accounting for Managerial Decisions**

- It helps to give proper idea on financial statement analysis from the practical point of view.
- It helps in building the concept of fund flow and cash flow statement and capital budgeting.
- It helps the students how to write the managerial report.

## **M.Com IV Sem**

### **Taxation Group**

#### **Paper-I Direct Taxes in India**

- By the end of the course students will be able to describe how the provisions of tax laws can be used for tax planning.
- Students will be able to explain different types of incomes and their tax liability.

- Students will be able to state the use of various deductions to reduce the taxable income.
- Students will be able to know how to file the return and the procedure of assessment, appeals and revisions.

#### **Paper-II Business Taxation**

- It helps the students to calculate various types of tax liability of various persons or assesses.
- It helps to know the tax laws for various types of persons.
- It helps to know how to calculate the taxable income of Non Resident of India, Trust and the procedure of Double Taxation System.

#### **Paper-III Custom Duty and Practice**

- Students will become aware of rules of valuation of custom goods, custom duty etc.
- Students will learn to calculate the custom duty liability of the goods, import and export of goods.

#### **Paper-IV Goods and Service Tax-law and Practice**

- Students will become aware of goods and service law and practice.
- After successful completion of the course students will learn about basic concept of GST.

### **Marketing Management Group**

#### **Paper-I Advertisement and Sales Management**

- To inculcate knowledge of advertising, effective types of advertising.
- Students become aware of the traditional and modern concept of advertising.

#### **Paper-II Consumer Behavior**

- The students will be able to understand the various factors which affect the behavior of individuals as consumers.
- They will be in a position to design effective marketing strategies and policies.

#### **Paper-III Rural and Agricultural Marketing**

- After completion of the course students will learn about rural environment.
- Students will learn to deal with rural population during marketing of urban and agriculture produce.

#### **Paper-IV International Marketing**

- It gives the fundamental understanding of marketing concepts and marketing policies across the world.
- It helps in acquiring comprehensive theoretical and practical competencies in international marketing.
- It develops an understanding of the challenges of business environment.
- Students will be able to know the requirement of documents of International Marketing.
- Students will get the exposure of International Banking also.

### **(C) Faculty of Science**

#### **(III) M.Sc. (Master of Science)**

#### **Program Specific Outcomes:**

- ❖ The Faculty of Science (Bio/Mathematical Science) offers the following subjects- Zoology, chemistry, Biotechnology, Computer Science and Mathematics.
- ❖ The students can become competent biotechnologists, chemists, mathematician and programmer employ, implement and utilize their knowledge for the existing paradigm of agriculture, industry, healthcare, IT and restoration of degraded environment to provide

sustainable environment to present society.

- ❖ The students can identify and can formulate, research literature, research proposals and analyze complex problems, reaching substantiated conclusions using the principles of biological, physical, chemical and mathematical sciences.
- ❖ The students with extraordinary scientific potentials can pursue their career as scientist.
- ❖ Awareness of ethical issues and regulatory considerations while addressing societal needs for sustainability.
- ❖ Higher studies (M.Phil, Ph.D) can be pursued in order to attain research positions. Various examinations such as CSIR-NET, UGC-NET, SET, GATE, ICMR, DBT and many other opens channels for promising careers in different fields.
- ❖ Apply the knowledge of Technology, Mathematics, Networks and computing in the core information technologies.
- ❖ Ability to interpret and apply research literature to investigate complex problems using research methodologies, techniques and tools.

#### **(i) Department of Biotechnology**

##### **Program Specific Outcomes**

- ❖ Students will be able to conduct experiments, analyze and interpret data for investigating problems in Biotechnology fields.
- ❖ Higher studies (M. Phil, Ph. D) can be pursued in order to attain research positions. Various examinations such as CSIR-NET, ARS-NET GATE, ICMR, DBT and many other opens channels for promising career in research.
- ❖ Students can get job in biotechnology in different fields like Pharmaceutical Companies, Bio fertilizer industry, Aquaculture industries, Environmental units, Crop production units, Food processing industries, National Bio-resource development firms and Banking.
- ❖ Entrepreneurship ventures such as consultancy and training centers can be opened.
- ❖ Beside industrial sector there are ample opportunities in academics as well.
- ❖ Students will be able to understand the potentials, and impact of biotechnological innovations on environment and their implementation for finding sustainable solution to issues pertaining to environment, health sector, agriculture, etc.
- ❖ Career opportunities are available for students with biotechnology background in abroad especially in countries like Germany, Australia, Canada, USA and many more where Biotechnology is a rapidly developing field.

## Course Outcomes

### Class : M.Sc (Biotechnology) I Sem

#### Paper I- Cell Biology

The objective of this course is to provide exposure to the students on cells, structural and functional units of living organisms, and morphological studies. Moreover, they will learn the functions and vital processes of various cellular compartments and organelles. It also gives the structural-functional and biochemical details of all cellular activities.

- Students will be able to understand the overall structure of prokaryotic and eukaryotic cells and their internal structures including organelles.
- Students will be able to assess the importance of various stages of cell cycle, and their regulation.
- Students should be able to enumerate the differences in cellular organization of various life forms.
- They can assess and relate the information to the context of cell biology.

#### PAPER II - Structure, Function and Metabolism of Biomolecules

The objective of this course is to give students an idea on different biological molecules, their origin, biological role and its degradation according to the needs and demand of the system under various conditions. Also, the interrelation of each of these metabolic pathways and their contribution in various metabolic disorders are also explained in detail.

- Students will be able to understand the importance of chemical foundation in living organisms.
- Students should be able to analyze the various types of bonds and interactions between the biomolecules and water.
- The students will be able to interpret molecular structure and interactions present in proteins, nucleic acids, carbohydrates and lipids.
- The students will be able to correlate how the large biomolecules such as proteins, carbohydrates, lipids, nucleic acids are made from the simple precursors.

#### PAPER III - General and Applied Microbiology

The objective of this course is to give students an introduction about the microbial world- their distribution- morphology and reproduction and about the role of microorganism in various fields of science.

- Student will understand the diversified branches of microbiology.
- Student will know the theoretical and practical aspects of microbial growth and physiology
- Students will learn about the morphology and physiological characteristics of different groups of microorganisms.
- Students will be able to understand virus cultivation, phages and bacterial/yeast genetics.

#### PAPER IV – Bioinstrumentation

The objective of this course is to make students understand the physical principles behind the various techniques available for interrogating biological macromolecules. Also, they will be able to interpret the results obtained from such studies.

- Students will be able to understand, design, develop and analyze instrumentation of various microscopic, spectroscopic, electrophoresis and chromatographic techniques.
- Students will be able to describe the basis of biological signal generation and measurements.
- Students will be able to apply and evaluate safety concepts for bioinstrumentation and laboratory implementation.

- Students will be able to analyze and interpret data from bio instruments.

### **Class : M.Sc. (Biotechnology) II Sem**

#### **Paper I- Molecular genetics**

Students will learn the basic principles of inheritance at the molecular Organismal levels. They will understand causal relationships between molecule / cell level phenomenon (modern genetics) and organism level patterns of heredity (classical genetics).

- The students will be able to describe the fundamental molecular principles of genetics.
- The students will be able to understand the genetic basis of cancer – Module coordinator.
- The students will be able to describes the basic of genetic Mapping.
- The students will be able to understand the relationship between genotype in human genetic traits.

#### **Paper II- Basic Enzymology and enzyme technology**

The objective of the course is to provide a deeper insight into the fundamentals of enzyme structure and function and kinetics of soluble and immobilized enzymes. Also, it deals with current applications and future potential of enzymes.

- The student will be able to describe structure, functions and the mechanisms of action of enzymes.
- The student will learn kinetics of enzyme catalyzed reactions and enzyme inhibitory and regulatory process.
- The student will be able to perform immobilization of enzymes.
- The student will get exposure of wide applications of enzymes and their future potential.

#### **PAPER III- Molecular Biology**

- Students will learn DNA replication, recombination and repair, transcription and translation.
- Students will be able to describe how gene expression is regulated at the transcriptional and post-transcriptional level.
- Students will be aware of the modern tools and techniques of genomics and isolation and identification of genes.
- Students will understand the biology and application of antisense technologies and biology of cancer.

#### **PAPER IV- Immunology and Animal Cell Culture**

- Students will understand the basic concept of innate and acquired immunity.
- Students will gain knowledge about immunoglobulin structures and diversity of antibodies, morphology and functions of various immune cells such as dendritic cells, macrophages, neutrophils and their association with MHC molecules will be studied.
- This study will make the students to understand the basic mechanisms of hypersensitivity responses and their associations with different diseases.
- Students will be able to understand immunological techniques and concept of vaccine and their targets.

### **Class: M.Sc. (Biotechnology) III Sem**

#### **Paper I- Genetic Engineering**

- Students will be able to describe the tools and techniques of genetic engineering, DNA manipulation enzymes, genome and transcriptome analysis and manipulation tools, gene expression regulation, production and characterization of recombinant proteins.
- Students will be able to apply the knowledge of genetic engineering in biological research.
- Students will be able to perform basic genetic engineering experiments at the end of course.

- Students will acquire knowledge of advances in biotechnology healthcare, agriculture and environment cleanup via recombinant DNA technology.

#### **PAPER II- Biostatistics and Bioinformatics**

- Students will understand and apply statistical methods for the design of biomedical research and analysis of biomedical research data.
- Students will be able to utilize mathematical and statistical theory and application of biostatistical methods; use & interpret results from specialized computer software for the management and statistical analysis of research data.
- Students will be able to understand and describe and use the biological databases, perform structured query and analyze and discuss the results in biologically significant way.
- Students will be able to conduct basic bioinformatics research through bioinformatics tools and software and thus develop platform for molecular biology experiments.

#### **PAPER III- Plant Biotechnology**

- The student will be able to explain fundamental cellular events during the process of plant cell culture development.
- The student will be able to determine the factors influencing plant cell differentiation and there by execute proper techniques procedures for the maintenance of sterile condition and proper plant growth.
- The student will be able to translate the learned concepts in future studies and debate on the issue related to GMOS and evaluate its significance.
- The student will be able to differentiate various types of intellectual property rights and report measures for conservation of Biodiversity.

#### **PAPER IV- Bioprocess and Biochemical Engineering**

- Students will be able to describe relevance of microorganisms from industrial context and carry out stoichiometric calculations and specify models of their growth.
- Students will be able to give an account of design and operations of various fermenters.
- Students will be able to present unit operations together with the fundamental principles for basic methods in production technique for bio-based products.
- Students will be able to analyze any bioprocess from an economics/market point of view and give an account of important microbial/enzymatic industrial p processes in food and fuel industry.

#### **PAPER V- Applied Biotechnology**

- The student will be able to evaluate the potential of biodegradation of organic pollutants, taking microbial and physical/chemical environments, as well as the chemical structure of the compound itself, into consideration.
- Students will gain basic information of microbial cultures, sterilization methods and enzyme production



- Students will be able to explain the industrial aspects of Biotechnology for the production of various of industrial products of biological origin.
- Students will learn about the bio-safety guidelines.

### **CLASS : M.Sc(Biotechnology) IV Sem**

#### **Paper I - Advance in Fermentation and Food Biotechnology**

- This course provides theory about micro-organisms used in fermentation processes and about application of these microbes in food fermentation processes. Theoretical background of functional micro-organisms (lactic acid bacteria, yeasts and moulds), their behavior as fermentation starters, process engineering aspects of the formation of biomass and products, and of modern biotechnology in food fermentation will be dealt with.
- Students can understand the role of fermentation microorganisms in major food fermentations.
- understand the (bio)chemical activities and conversions that take place during fermentations, and their impact on quality and safety;
- understand and carry out simple calculations on stoichiometry, microbial growth & transfer processes during food fermentations;
- carry out food fermentation processes and monitor their progress by measurements and analyses.

#### **Paper II – Applied Immunology and Immunodiagnosics**

- Be able to explain immune function and dysfunction at the cellular and molecular level.
- Be able to explain the pathology of the immune System.
- Be able to explain with examples how principles of immunology have been applied to development of new drugs , vaccines and diagnostic techniques.
- Be able to integrate information from a range of published data relating to research in immunology.
- Students can able to evaluate the relevance of currently available immunological Techniques capable of being applied in modern b w medical science.

#### **Paper III- Principles of Drug Designing**

- This course provides knowledge of the basics of microbiology, the pharmacology and principles of antimicrobial use and the use of synthetic chemistry to alter the properties of drugs.
- The course follows the evolution of drugs through time covering the principles of drug discovery in the areas of pharmacognosy and natural products; synthetic medicinal chemistry and the development of medicinal substances; the development of modern and innovative therapeutic substances including biopharmaceuticals; and future trends in drug discovery.
- The course will focus on chemistry and in particular how the chemical structure of a drug relates to its biological activity. Structure-activity relationships of drug families will include the discovery, development and design of antibiotics.
- An introduction to pharmacogenomics and bioinformatics is included in relation to the development of new drug development. Key concepts in globalisation and cultural aspects of pharmacy are integrated into this course in the areas of traditional medicine and Complementary and Alternative Medicines.
- The course builds on existing knowledge in pharmaceutics to look at chemical kinetics and the stability of pharmaceuticals.

**One month training**

**OR**

**Four months Dissertation**

### **Course Outcomes**

- M. Sc. Dissertation is designed in a way to teach and train the students with practical knowledge in the different areas of Biotechnology in order to become efficient researchers to start their carrier in research through Ph.D. and R & D programmes.
- Students would gain train in the research areas selected from different fields of biotechnology like animal biotechnology, microbiology, environmental biotechnology, genetic engineering, plant biotechnology, parasitology, virology, nanotechnology and identification and validation of novel proteins.
- Students can develop understanding about the literature and dissertation writing required to carry out a good research during their Ph.D. Find the different resources needed to perform the research. Statistical analysis, presentation and documentation of research findings.
- Theoretical and practical knowledge in the different area of biotechnology to start their carrier in research through Ph.D. and other R & D programmes.

### **PRACTICAL OUTCOMES**

- Conduct independent work in laboratory.
- Read Scientific articles and gain a critical understanding of their contents.
- Give a spoken and written presentation of scientific Topics and Research results.
- Present hypothesis is and select, adapt and conduct molecular and cell based experiments to either confirm or reject hypothesis.
- Skill development for the observation of blood cells and blood grouping and haemoglobin.
- Students able to detect the presence of protein carbohydrate, fats and Nitrogenous products in given samples.
- Estimation the techniques based for RNA and DNA and Demonstration of chromosome polymorphism.
- Understood the enzyme reaction and influence of temperature on enzyme action.
- Analyzed water quality like dissolved oxygen, hardness, pH, turbidity etc.

### **(ii) Department of Chemistry**

#### **Programme Specific Outcomes:**

On successful completion of this Programme, students will have the ability to:

- ❖ Think critically and analyze chemical problems.
- ❖ Present scientific and technical information resulting from laboratory experimentation in both written and oral formats.
- ❖ Work effectively and safely in a laboratory environment.
- ❖ Work in teams as well as independently.
- ❖ apply modern methods of analysis to chemical systems in a laboratory setting
- ❖ Can create an awareness of the impact of chemistry on the society and development outside the scientific community.
- ❖ Become professionally trained in the area of handling sophisticated instruments.

## Course Outcomes

### M.Sc (Chemistry) I Sem

#### Paper I Inorganic Chemistry:

Students will be able to –

- Explain stereochemistry and bonding in simple covalent compounds.
- Illustrate an understanding of the principles of theories of metal-ligand bond.
- Interpret the stability of complexes.
- Understand the substitution reactions in transition metal complexes.
- Classify acid and base as hard & soft, Pearson HSAB concept & its applications.

#### Paper II Organic Chemistry:

Students will be able to

- Acquire the skills for correct stereochemical assignment and explain the stereochemistry of the compounds containing N, S & P. Learn conformational analysis and linear free energy relationship.
- Understand the nature of bonding in organic molecules, concept of aromaticity & host – guest chemistry.
- Learn about isotope effects, thermodynamic and kinetic control of different types of reactions.
- Know the concept and mechanism of aliphatic nucleophilic substitution reactions.

#### Paper III Physical Chemistry:

Students will be able to-

- Understand postulates and various model systems based on Schrodinger equation.
- Learn quantum mechanical aspect of angular and spin momentum
- Understand chemical and statistical thermodynamics and its applications.
- Learn the thermodynamic aspects of various processes and reactions.
- Learn basics of approximate methods of quantum chemistry and its applications.

#### Paper IV Group Theory and Spectroscopy:

Students will be able to-

- Understand idea of space groups and to learn the theory of molecular symmetry.
- Gain skills to apply group theory to vibrational and electronic spectroscopy.
- Study the origin, instrumentation and basic concepts of microwave, IR, Raman techniques.
- Basic principle of different techniques employed in molecular spectroscopy.

#### Paper V [A] Biology for Chemists:

Students will be able to-

- Summarize structure, functions of different organelles of cells.
- Overview of metabolic processes..
- Explain structure and biological functions of carbohydrates and lipids.
- Acquire basic knowledge of amino acids, peptides, proteins and nucleic acids.

#### Paper V [B] Mathematics for Chemists

Students will be able to-

- Understand basic concepts of vectors and matrix algebra.
- Application of differential calculation including maxima and minima and examples related to chemistry.
- Applications of differential equations to chemical kinetics, quantum chemistry etc.
- Learn basic rules of Integration and its applications.
- Understand permutation and probability.

## **M.Sc (Chemistry) II Sem**

### **Paper I - Inorganic Chemistry:**

Students will be able to-

- Understand electronic spectral studies of transition metal complexes.
- Explain magnetic properties of transition metal complexes.
- Know the preparation and properties of transition metal carbonyls, metal nitrosyls, dinitrogen and dioxygen complexes.
- Understand the structure and bonding in higher boranes, carboranes, metallocarboranes & metal-metal multiple bonding.
- Understand O.R.D. & C.D. & their applications.

### **Paper II Organic Chemistry:**

Students will be able to-

- Learn the theoretical concept of pericyclic reaction
- Familiarize the various types of aromatic electrophilic and nucleophilic substitution reaction and their mechanism.
- Understand the mechanistic and stereochemical aspects of addition reaction in multiple bonded molecules.
- Learn about the mechanism of addition of carbon- hetero atom multiple bond.
- Learn about the concept & mechanism of free radicals reactions & elimination reactions in aliphatic & aromatic substrates.

### **Paper III Physical Chemistry:**

Students will be able to-

- Understand chemical dynamics, different theories and factors affecting the reaction rates.
- Learn Chemistry of surfaces and different types of surface phenomenon.
- Learn about thermodynamics of non equilibrium states.
- Explain macromolecules, classification, characterization and mechanism of polymerization.
- Acquire knowledge about various electrochemical phenomenon.

### **Paper IV Spectroscopy II and Diffraction Methods:**

Students will be able to-

- Understand the Nuclear magnetic spectroscopy, Nuclear Quadrupole Resonance, Electron Spin Resonance spectroscopies and their applications.
- Learn different techniques applied for structure determination like X-Ray Diffraction, Electron Diffraction, Neutron diffraction techniques.

**Paper V Computers for Chemists:**

Students will be able to-

- Understand the basics of computers and computing.
- Learn elements of computer languages and programming in Chemistry.
- Develop Computer codes involving formula in Chemistry.
- Applications of Computer and Internet in Chemistry.

**M.Sc. (Chemistry) III Sem****Paper I Applications of Spectroscopy I:**

Students will be able to-

- Understand the electronic spectra of d1 to d9 systems in different complexes.
- Understand the NMR spectroscopy.
- Simplification techniques of complex NMR spectrum.
- Learn the basics of Mossbauer spectroscopy and its application.

**Paper II Photochemistry:**

Students will be able to-

- Explain the fate of excited molecules, quantum yield & actinometry.
- Outlines the mechanistic aspects for photochemical transformations in alkenes, carbonyl and aromatic compounds
- Familiarizes with a broad variety of photochemical systems and their applications in environment and eye-vision.

**Paper III Environmental Chemistry:**

Students will be able to-

- Understand atmosphere, atmospheric chemistry, tropospheric chemistry.
- Know about air pollution, acid rain, green house effect, urban air pollution and stratospheric ozone depletion.
- Know about aqueous Chemistry, water pollution, waste and sewage treatment, techniques of purification and disinfection, analysis of BOD, COD and DO.
- Understand environmental toxicology, toxic heavy metals, toxic organic compounds, polychlorinated biphenyls and polynuclear aromatic hydrocarbons.
- Know about soil pollution and environmental industrial disasters.

**Paper IV Polymer:**

Students will be able to-

- Understand some of the basic terminology in polymers & characterization.
- Learn about the different mechanism involved in polymerization, polymerization condition and polymer reaction.
- Learn analysis & testing of polymers.
- Know about Inorganic polymers, their structure and applications.

**Paper V Heavy Chemicals and Metals:**

Students will be able to-

- Learn the importance of chemical industry & their adverse effects on environment.
- Learn scientific disposal of untreated industrial effluents.
- Students will be skilled in critical training and analytical reasoning in reactions of heavy chemical and metals.

### **Course Outcomes**

#### **M.Sc. (Chemistry) IV Sem**

#### **Paper I Applications of Spectroscopy -II:**

Students will be able to-

- Understand the 2D NMR Spectroscopy.
- Basics of Mass Spectroscopy and its applications.
- Structural elucidation of simple organic molecules using UV-Vis, IR, NMR and Mass Spectroscopy techniques.

#### **Paper II Solid State Chemistry:**

Students will be able to-

- Understand the principles of solid state reactions.
- Identify defects in crystal structure and thermodynamics behind the defects.
- Understand band theory and classification of materials on the basis of magnetic properties.
- Basics of organic solids and new superconductors.
- Learn different types of crystals and their applications.

#### **Paper III Biochemistry:**

Students will be able to-

- Learn the basic of transport properties and electrochemical phenomenon.
- Know about the various metal ions present in our body.
- Learn about the different enzymes participating in the chemical reactions inside the body
- Their functions and biotechnological applications of enzymes.
- Study about the different oxygen carriers present in the body with their structure and stereochemistry.

#### **Paper IV Analytical Chemistry:**

Students will be able to-

- Estimate kinds of errors in chemical analysis & Calibration techniques.
- Theoretical understanding of analysis of adulterants present in food.
- Learn fundamental principle of water analysis .
- Understand the basics of clinical chemistry and drug analysis.
- Learn basic techniques of chemical analysis use in soil, fuel, body fluid & drugs..

#### **Paper V Medicinal Chemistry**

Students will be able to-

- Understand the concept of structure and reactivity in drug discovery
- Gain knowledge in drug designing & drug metabolism.

- Know synthesis and efficacy of antibiotic ,antifungal & non steroidal anti- inflammatory drugs.
- Gain knowledge in the mode of action and uses of drugs.

### **Practical Outcomes**

#### **(i) Inorganic chemistry Practical**

The students will be able to-

- Estimate quantitatively two and three metal ions by gravimetric and volumetric analysis from mixture.
- Prepare a various inorganic complexes and their spectral study.
- Qualitative analysis of inorganic mixture containing eight radicals including insoluble.
- Understand the chromatographic techniques paper, thin layer, ion exchange and column chromatography for separation of cations and anions.
- Spectrophotometric determination of some metal ions, fluoride, nitrite & phosphate.
- Flame photometric determination of Na, K.

#### **(ii) Organic Chemistry practical:**

The students will be able to-

- Separate and analyze the different component of mixtures of simple organic compounds.
- Independently perform two or more step organic synthesis.
- Separation and identification of organic compounds using chromatography.
- Extract, identify and characterize the compounds isolated from natural products
- Quantitative estimation of elements, functional groups and simple organic compound.
- Analyse the organic compounds by their spectral data.

#### **(iii) Physical Chemistry Practical:**

The students will be able to

- Learn calibration and find error in different volumetric apparatus.
- Determine the rate constant of first order reaction , energy of activation and factors- affecting rate of reaction viz concentration, catalyst, volume etc.
- Determine solubility product of sparingly soluble salts using conductometer.
- Learn acid base titrations using instruments like Conductometer, pH meter/ potentiometer.
- Determine the rate constant for inversion of sugar using polarimeter.
- Determine physical properties like pKa of an indicator, stoichiometry and stability constant using Spectroscopic techniques.
- Determine partial molar volume of different solute (NaCl, KCl, HCl) in a binary mixture.

### **(iii) Department of Computer Science Program Specific Outcomes**

#### **M.Sc. (Computer Science)**

#### **Program Specific Outcomes**

At the end of the Program M.Sc. CS pass outs will have successful careers based on their understanding of formal andpractical methods of Application Development using the concepts of computer programming, software and design principles.

- ❖ They will demonstrate analytical and design skills including the ability to generate creative solutions and exhibit team-oriented, professionalism through effective communication in their careers.
- ❖ They will be able to exhibit effective work ethics and be able to adapt to the challenges of a dynamic job environment.
- ❖ They will be able to appreciate the importance of goal setting and to recognize the need for life-long learning.
- ❖ Job roles include Web Development, Software/ Application development, Software Engineer, Software Tester, System Analyst , Mobile computing, Business Analyst, Network Manager , Database Administrator, Technical Consultant, Digital Marketing expert to name a few.
- ❖ After completion of the course candidates can even opt for M.Phil or P.hD.

## **Course Outcomes**

**Class – M.Sc. (CS) I Sem**

**Paper I Discrete Mathematics Structures**

**After studying this subject student would be able to:**

- Identify and apply basic concepts of set theory, arithmetic, logic, proof techniques, binary relations, and graphs.
- Produce convincing arguments, conceive and/or analyze basic mathematical proofs and discriminate between valid and unreliable arguments.
- Apply the knowledge and skills obtained to investigate and solve a variety of discrete mathematical problems and make effective use of appropriate technology.

**Paper II Programming Skills with C ++**

**After studying this subject student would be able to:**

- Develop a thorough understanding of object-oriented programming by designing programs using OOP techniques
- Develop a good documentation style in all of the programs written in this course.
- Develop a thorough understanding of stream input/output for both console and files.
- Develop the ability to analyze problems and propose algorithms to solve them.
- Develop a menu-driven solution for a real world problem, capable of taking input from user, storing them permanently and open in the format required by the user applying exception handling wherever necessary.

**Paper III Computer Organization & Architecture**

**By the end of this course, students should be able to:**

- Understand the basics of computer hardware and how software interacts with computer hardware, understand how computers represent and manipulate data
- Assemble a simple computer with hardware design including data format, instruction format, instruction set, addressing modes, bus structure, input/output, memory, arithmetic/logic unit, control unit, and data, instruction and address flow
- Use boolean algebra as related to designing computer logic, through simple combinational and sequential logic circuits



- Analyze and evaluate computer performance.

#### **Paper IV Office Tools**

**By the end of this course, students should be able to:**

- Recognize when to use each of the Microsoft Office programs to create professional and academic documents, reports, worksheets and presentations.
- Use Microsoft Office programs to create personal, academic and business documents keeping in mind prevalent professional and/or industry standards.

#### **Class – M.Sc. (CS) II Sem**

##### **Paper I Data Structures And Algorithms**

**After finishing the course ,student should 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 the concepts learned to various domains like DBMS, compiler construction etc.

##### **Paper II Advanced Computer Networks**

**After studying this subject, students should be able to:**

- To apply the concepts of layered architecture in assessing the placement of network devices, protocols and services.
- To compare the services provided by the UDP/TCP transport layer protocols and explain the mechanisms used to provide a reliable data transport service on an unreliable IP network.
- Analyze the application of network technologies in designated scenarios and explore how these technologies can be deployed to support the Quality of Service requirements of current and future applications.

##### **Paper III Advanced RDBMS**

**After studying this subject, students should be able to:**

- Populate and query a database using SQL DML/DDDL commands.
- Declare and enforce integrity constraints on database as needed.
- Design and implement a database schema for a given problem-domain
- Normalize any database as per requirement.
- Students can develop a small back-end application having complete audit-trail, so that any intrusion can be identified.

##### **Paper IV Information Storage Management**

**Upon successful completion of the course, students should be able to:**

- Identify the need for data centers, storage needs and categorizing as per requirement.
- Apply the techniques used for data maintenance in single or networked system storage.
- Identify information security requirements and provide solutions
- Understand and articulate business continuity solutions – backup and replications, along with archive for managing fixed content.

## **Class – M.Sc. (CS) III Sem**

### **Paper I Linux & Shell Programming**

**After studying this subject, student will be acquainted with –**

- The structure of OS and basic architectural components involved in OS design.
- The various device and resource management techniques for timesharing and distributed systems.
- Mutual exclusion, Deadlock detection of distributed operating system.
- Use of Unix/Linux utilities to create and manage simple file processing operations.
- Organizing directory structures with appropriate security.
- Developing shell scripts to perform complex tasks.

### **Paper II Compiler Design**

**After studying this subject, student will be acquainted with –**

- Identifying the tokens.
- The design process of a compiler including its phases and components.
- Writing code for the lexical analysis phase .

### **Paper III Programming Skills With Java**

**After studying this subject, student will be acquainted with –**

- Implementing Object Oriented programming concepts using basic syntax of control structures, strings and functions for developing skills of logic building activity.
- Identifying classes, objects, members of a class and the relationships among them needed for finding the solution to specific problems.
- Demonstrating how to achieve reusability using inheritance, interfaces and packages and achieving faster application development.
- Understanding and use of different exception handling mechanisms and concept of multithreading for robust, faster and efficient application development.
- Developing web applications with netbeans and J2EE Technologies.

### **Paper IV Elective – I Data Warehousing & Mining**

**After studying this subject, student will be acquainted with –**

- Functionality of the various data mining and data warehousing components, strengths and limitations of the models..
- The techniques of various analyzing data.
- Different methodologies used in data mining and data ware housing.
- Applying warehousing and mining with various technologies to different types of data.

### **Paper IV Elective - II Operations Research**

**After studying this subject, student will be acquainted with –**

- Defining and formulating linear programming problems and appreciate their limitations.
- Solving linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained and translate solutions into directives for action.
- Conducting and interpreting post-optimal, sensitivity analysis and explain the primal-dual relationship.

- Developing mathematical skills to analyse and solve integer programming and network models arising from a wide range of applications.
- Effectively communicating ideas, explaining procedures and interpreting results and solutions in written and electronic forms to different audiences.

#### **Paper IV Elective III Software Engineering**

**After studying this subject, student will be acquainted with –**

- Various software application domains and different process models .
- Converting requirements model into the design model and using software and interface design and engineering principles.
- SCM and SQA and classifying different testing strategies and tactics.
- Principles of Software Project management. This will enable them to handle responsibilities of project manager.

#### **Class – M.Sc. (CS) IV Sem**

##### **Paper I Big Data Analytics**

**After studying this subject, student will be acquainted with –**

- Big data systems and the main sources of Big Data in the real world.
- Use of frameworks like Hadoop, NOSQL to efficiently store retrieve and process Big Data for Analytics.
- Implementing several Data Intensive tasks using the Map Reduce Paradigm.
- Application of several newer algorithms for clustering, classifying and finding associations in Big Data.
- Designing algorithms to analyze Big data like streams, Web Graphs and Social Media data and construct recommendation systems.
- Applying the knowledge of Big Data to fully develop a BDA.

##### **Paper II Multimedia And Computer Graphics**

**After studying this subject, student will be acquainted with –**

- The concepts of computer graphics, system and design of algorithms.
- Techniques of clipping, two and three dimensional transformations, windowing, and shading.
- Multimedia terms, hardware and basic tools needed.
- The compression techniques and their industry standards.
- The process of sampling, MIDI AND MIDI devices.

##### **Paper III PHP & MySQL**

**After studying this subject, student will be acquainted with –**

- Usage of server-side scripting
- Concept of data persistence
- Skills to program logic using PHP and handle data using MySQL
- Sound Knowledge of PHP & MySQL required to develop Dynamic Websites.

#### **Paper IV Elective – I Enterprise Resource Planning**

**After studying this subject, student will be acquainted with –**

- Classification of different processes of the organization and relationship among all processes.
- Examining systematically the planning mechanisms in an enterprise, and identify all components in an ERP system and the relationships among the components,
- Generic Model of ERP and General ERP Implementation Methodology.
- Applying the concepts of BPR, SCM and CRM.
- Knowledge of SAP and Oracle Apps.

#### **Paper IV Elective – II Cloud Computing**

**After studying this subject, student will be acquainted with –**

- Define Cloud Computing and memorize the different Cloud service and deployment models
- Describe importance of virtualization along with their technologies.
- Use and Examine different cloud computing services
- Understand Mobile Cloud Computing
- Design & develop backup strategies for cloud data based on features.

#### **Paper IV Elective – III Artificial Intelligence**

**After studying this subject, student will be acquainted with –**

- Knowledge of the building blocks of AI as presented in terms of intelligent agents.
- Problems as a state space, graph, design heuristics and select amongst different search or game based techniques to solve them.
- Developing intelligent algorithms for constraint satisfaction problems and also design intelligent systems for Game Playing.
- Representing various real life problem domains using logic based techniques and use this to perform inference or planning.
- Formulating and solving problems with uncertain information using Bayesian approaches.

#### **Practical Outcomes**

- Students will be able to use each of the Microsoft Office programs to create professional and academic documents, letters, reports, worksheets, charts, graphs and presentations.
- Students will be able to develop applications through understanding of object-oriented programming by using OOP techniques
- By implementing data structure in programs, students will be able to develop applications using data structure algorithms.
- Knowledge of Oracle software helps students to design and develop fully functional database applications using SQL and PL/SQL.
- Use of Unix/Linux utilities to create and manage simple file processing operations. Organizing directory structures with appropriate security. Developing shell scripts to perform complex tasks.
- By using Java programming skills students will be able to learn reusability, interfaces, and packages for achieving faster application development. Understanding and use of different exception handling mechanisms and concept of multithreading for robust, faster and efficient application development. Developing web applications with netbeans and J2EE Technologies.

- Acquired knowledge of Bioinformatics & Artificial Intelligence.

#### (iv) Department of Mathematics

##### Program Specific Outcomes

- ❖ Understand the fundamental principles underlying the major areas of mathematics.
- ❖ Able to apply analytical and theoretical skills to find solutions to different models representing problems in various disciplines.
- ❖ Apply knowledge of mathematics, in all fields of learning including higher research and its extension.
- ❖ To develop abstract mathematical thinking.
- ❖ Adjust and grow themselves to the demands of growing field of Mathematics.

##### Course Outcomes

##### Class - M.Sc. (Mathematics) I Sem

##### Paper I: Advanced Abstract Algebra I

The students will be able to

- Define solvable, nilpotent groups and modules.
- Find extension fields and Roots of polynomials algebraic and transcendental functions.
- Define finite field and their properties.
- Define the concept of linear transformation.

##### Paper II: Real Analysis

- Define Riemann Stieltjes integrals, its existence and properties.
- Understand concept of convergence of sequence and series.

##### Paper III: Topology I

The students will be able to

- Understand the concept of topological space, types of topologies and basic definitions involved.
- Differentiate between hereditary and topological properties of a space.
- Discuss alternate methods of defining Topology.

##### Paper IV Complex Analysis I

- Solve the problems of complex integration.
- Appreciate the concepts of Residue theorem, Cauchy Goursat Theorem, Morera's theorem.

##### Paper V Differential and integral Equations- I

- To solve linear differential equation of second order
- To find solutions of Volterra and Fredholm integral equations.
- Understand the concept of existence and uniqueness theorem of differential equations

##### Class - M.Sc. (Mathematics) II Sem

##### Paper I: Advanced Abstract Algebra II

The students will be able to

- Define modules, Noetherian & Artinian modules and rings.
- Define the concept of linear transformation.

## **Paper II: Lebesgue Measure & Integration**

The students will be able to

- Analyze measurable sets and Lebesgue measure.
- Understand concept of  $L^p$  and dual spaces.

## **Paper III: Topology II**

The students will be able to

- Define properties of countability, compactness, separability, connectedness.
- To explore the ideas of net and filters and fundamental groups.

## **Paper IV Complex Analysis II**

- Define analytic continuation, harmonic functions, canonical products
- Use of Schwartz reflection principle, Bloch Theorem. Little Picard theorem.

## **Paper V Differential and integral Equations- II**

The students will be able to

- Define Fundamental Matrix for homogeneous and non homogeneous linear systems.
- Solve partial differential equations of first order by Lagrange's and Charpits methods.

## **Class - M. Sc (Mathematics) III**

### **Paper I Functional analysis I**

The students will be able to

- Define Normed linear spaces, Banach space, Hilbert space and their basic properties.
- Define linear operators and linear functional and their properties.

### **Paper II : Advanced Graph Theory I**

The students will be able to

- Define Graph, Isomorphism of graph, sub graph, walks, path, connected graph, Hamiltonian paths and circuits.
- Define trees, properties of trees, spanning trees, cut sets, planar graph.
- Find and understand applications of graph theory in daily life.

### **Paper III: Advanced Special Function I**

The students will be able to

- Define Beta and Gamma Functions, and prove its various properties.
- Define Hypergeometric functions, and generalized form and proves various results based on it.

### **Paper IV: Operations Research I**

- Understand scope of Operations Research and its characteristics.
- Understand the concept of Linear programming, feasible solution, obtain solution of linear programming problem using Simplex method, Big M method. Two phase method.

### **Paper V: Integral Transform I**

The students will be able to

- To find Laplace transform of functions, find inverse Laplace transform, application of shifting theorems and convolution theorem.

- Apply Laplace transform to find solution of differential equations integral equations, wave equations, heat equations and in electrical circuits.

#### **Class - M. Sc (Mathematics) IV**

##### **Paper I Functional analysis II**

The students will be able to

- Understand the concepts of classical theorems such as Zorn's lemma , Hahn Banach theorem , Baire's category theorem .
- Define convergence of sequence of operators and functional, and their applications in proving results & theorems.

##### **Paper II : Advanced Graph Theory II**

The students will be able to

- Find matrix representations of graph, incidence matrix , adjacency matrix , cut set matrix .
- Define Chromatic numbers , Chromatic polynomials , Four colour problem, diagraphs and Binary Relation

##### **Paper III: Advanced Special Function II**

The students will be able to

- Understand the definition and properties of Bessel's function, Hermite polynomials, their generating functions, Rodrigues Formula.
- Define and use Laguerre polynomials and Jacobi polynomials to derive some result.

##### **Paper IV: Operations Research II**

The students will be able to

- Study Transportation problem and Assignment Problem and their applications.
- Find solution of non linear programming problem, construct network and perform critical path method and PERT calculations.

##### **Paper V: Integral Transform II**

The students will be able to

- To find Fourier transform and Fourier integral.
- Apply Fourier transform to boundary value problems, define Hankel transform and Mellin transforms.

#### **(v) Department of Zoology**

##### **Program Specific Outcomes**

- ❖ Developing deeper understanding of key concepts of biology at biochemical, molecular and cellular level, physiology and reproduction at organismal level, and ecological impact on animal behavior.
- ❖ Understand about biosystematics, taxonomy and evolution of fauna.
- ❖ Strengthening of genetics and cytogenetics principle in light of advancements in understanding human genome and genomes of other model organisms.
- ❖ Understood how the chemistry and structure of the major biological macromolecules, including proteins and nucleic acids, determines their biological properties.
- ❖ Individuals with aptitude and skill in research in different branches of Zoology as well as

related disciplines.

- ❖ Persons having innovative ideas and necessary training to initiate unique start-ups in the realm of life science.
- ❖ Development of an understanding of zoological science for its application in medical, entomology, apiculture, aquaculture, agriculture and modern medicine.

## **Course Outcomes**

**Class : M.Sc. I Sem**

**Paper I : Biosystematics, Taxonomy And Evolution**

- Understanding of the universal common ancestor and tree of life, three domain concept of living kingdom
- Illustration of the molecular phylogeny, construction of phylogenetic trees using molecular data, construction of phylogenetic trees by using 16S rRNA gene sequences and concept of speciation in bacteria.
- Description of molecular divergence and molecular clocks and molecular drive, complication in inferring phylogenetic trees.
- Description of origin and diversification of bacteria and archaea; diversification of genomes, origin of genomes by horizontal gene transfer; role of plasmid, transposons, integrons and genomic islands in DNA transfer.
- Study of origin and diversification of eukaryotes, early fossilized cells, evolution of eukaryotic cell from prokaryotes- a case of symbiosis, evolution of eukaryotic genomes; geneduplication and divergence.
- Conceptualization of mode of speciation, evolution, systematics, biological classification, origination, extinction, and causes of differential rates of diversification.
- An insight to the overview of evolutionary biology, concept of organic evolution during pre- and post- Darwin era evolution and molecular biology- a new synthesis.
- A concept of – “from molecules to life”, life originated from RNA, introns as ancient component of genes

**Paper II : Structure and Function of Invertebrates**

- Understanding structure and function of different systems of invertebrates.
- Study of origin of metazoan, organization of coelom, locomotory organs and locomotion in different invertebrates.
- Understand the mechanism of digestion, excretion and respiration in metazoan, and other lower invertebrates.
- An insight to the overview of evolutionary significance of larval forms of trematoda, cestoda, crustacean, mollusca and echinodermata.
- Study the structure, affinities and life history of non coelomate and coelomate minor phyla

**Paper III : Quantitative Biology, Biodiversity And Wildlife**

- Studies descriptive statistics and applies in academic and research fields.
- Develops practical understanding of research methodology and applies in research (formulation and defining a research problem, different types of research design techniques involved).
- Get a deep knowledge about the basic types of biodiversity, biodiversity in India (features, structure and biodiversity of important Indian ecosystems).



- Become able to diagnose the causes of biodiversity depletion.
- Acquire theoretical expertise in strategies for the conservation of nature and biodiversity.
- Become well informed on international conventions & treaties for conservation of biodiversity

#### **Paper IV : Biomolecules and Structural Biology**

- Understand chemical foundation of biology i.e. pH, PK, acids, bases, buffers, acid soluble pool of living tissues.
- Study of basic concepts of metabolism, glycolysis and gluconeogenesis, citric acid cycle, oxidative phosphorylation.
- Get a deep knowledge about structure of protein. DNA, RNA, DNA replication, recombination and repair and membrane channels and pumps.
- Acquire theoretical knowledge of enzyme action, concepts of free energy and thermodynamic principles in biology

#### **Class: M.Sc. II Sem**

##### **Paper I : General and Comparative Vertebrate Physiology and Endocrinology**

- Description of internal transport and gas exchange, neural and chemical regulation of respiration,
- Perception of circulatory and respiratory responses to extreme conditions
- Understand the concept of Osmoregulation, Kidney functions and diversity, Extra-renal osmoregulatory organs, Patterns of nitrogen excretion.
- Concept of thermoregulation - Heat balance in animals, Adaptations to temperature extremes, torpor, Aestivation and hibernation.
- Description of sensing the environment- photoreception, chemoreception, mechano- reception, , chromatophores and bioluminescence.
- Description of phylogeny and ontogeny of endocrine glands.
- Understand the classification, chemical nature and mechanism of hormone action, and role of hormones and reproduction.

##### **Paper II : Population Ecology and Environmental Physiology**

- An overview of evolutionary ecology and environmental concepts and eco- physiological adaptations to fresh, marine and terrestrial environment.
- Understanding the characteristics of population and population dynamics.
- A study of life history pattern, fertility rate and age structure.
- Illustration of competition and coexistence, intra-specific and inter-specific interactions, scramble and contest competition model, mutualism and commensalism, prey-predator interactions.
- Description of nature of ecosystem, production, food webs, energy flow, environmental pollution and human health, resilience of ecosystem and ecosystem management.
- Understand the concept Meditation, yoga and their effects.

##### **Paper III : Tools and Techniques in Biology**

- Students know the computer added techniques, cryotechniques, separation techniques and microbiological techniques.
- Students learn about histological, cell culture, cytological, molecular cytological and surgical techniques etc.
- Acquires knowledge about radioactivity, radio-labelling methods.

- Learns the principles and acquires working knowledge of different laboratory equipments and techniques such as microscopes, centrifuges, colorimeter, flame photometer, Spectrophotometer, Electrophoresis, Chromatography.
- Studies basics of computer science achieve working knowledge on computers.

#### **Paper IV : Molecular Cell Biology and Genetics**

- Acquire detailed knowledge about membrane structure, membrane pumps and membrane transport.
- Develop thorough understanding on cell signalling.
- Students learn cell cycle and its regulation in detail.
- Learners acquire detailed information on chromatin structure, topology of nucleic acids, organization of the eukaryotic genome, DNA Replication, repair and recombination.
- Acquire detailed knowledge on transcription and RNA processing, translation-gene expression and gene regulation mechanisms.
- Acquires deep understanding of sex determination, cytogenetics of human chromosome, gene therapy, genetics disease and genomics.
- Learns about transgenic and knockout animals.

#### **Class : M.Sc. III Sem**

##### **Paper I : Comparative Anatomy of Vertebrate**

- Students able to understand the comparative anatomy of different systems of vertebrates i.e. digestive, respiratory, circulatory, nervous etc.
- Flight and aquatic adaptation in vertebrates.
- Origin, evolution general organization and affinities of Ostracoderms, Cyclostomes, Gnathostomes.
- Comparative account of lateral line system and electroreception.

##### **Paper II : Limnology**

- Detailed understanding of Limnology – Definition, historical development and scope of Limnology.
- Understanding of different types of freshwater habitats and their ecosystem.
- Developing skill in Morphometry – Use of various morphometric parameters and Zonation.
- Understand the importance of different physio-chemical characteristics of water.
- Study of Phytoplankton, Zooplankton and their inter-relationship and Aquatic insects, birds and their environmental significance.
- Aware regarding Causes of pollution of Aquatic Resources, their management and legislation, conservation, control, regulation.

##### **Paper III: Eco- Toxicology**

- Understand the general principles of Environmental Biology with emphasis on ecosystems, abiotic and biotic factors of ecosystems.
- Aware regarding use and misuse, alternatives of Agrochemical.
- A detailed understanding of basic concepts, Principles and various types of toxicological agents.
- Aware about Occupational Health Hazards and their Control.
- Understand the basic concepts and applications of remote sensing techniques in environmental conservation.
- Understand the cause and control methods of aquatic, radioactive, noise and vehicular pollution.

##### **Paper IV : Aquaculture**

- Learning aquaculture technology for fresh and marine fishes.
- Management of water quality requirements for aquaculture.
- Learn how to Set and manage a fresh water aquarium.
- A detailed learning of transportation of finfish and shellfish, eggs, fry, fingerlings and adults.
- Managing improvement in the Nutrition of aquatic animals by leaning feed types, manufacture and ingredients, anti- nutritional factors in fish feed ingredients.
- Understanding environmental impact of aquaculture, aquacultural wastes and future developments in waste minimization.
- Understand Common fish diseases & their control and biochemical composition and nutritional value of fish.

### **Class : M.Sc. IV Sem**

#### **Paper- I : Animal Behaviour and Neurophysiology**

- An overview of animal behavior, orientation to primary and secondary orientation; kinesis – orthokinesis, klinokinesis; taxis – different kinds of taxis.
- Devising conservation strategies for different animal species. Learning and instincts: conditioning, habituation, sensitization, reasoning.
- Developing compassion towards other animals as well as other individuals, group selection, kin selection and inclusive fitness, cooperation, and alarm call.
- Evaluating other individuals of the society and taking decisions.
- Able to understand reproductive and social behaviour of different animal groups.

#### **Paper II : Gamete Biology, Development and Differentiation in Vertebrates**

- Information about history and basic concepts of developmental biology.
- Elucidation of biochemistry of semen and pre and post fertilization events
- Study biology of sex determination and sex differentiation a comparative account.
- Explanation of germ cell determinants and germ cell migration, embryonic stem cells their applications and stem cell disorders.
- Understand hormonal regulation of ovulation, pregnancy, parturition and lactation.
- Study of multiple ovulation and embryo transfer technology.
- Gather information about teratological effects of xenobiotics on gametes

#### **Paper III A(Optional): Ichthyology (Fish) Structure and Function**

- This will provide a thorough coverage of origin, evolution and classification of fishes.
- Gather information about fish integument, locomotion, air bladder and Weberian ossicles.
- Understand the phenomenon of excretion, osmoregulation, and reproduction.
- Study various adaptation in fishes according to their habit and habitat.
- Information about Parental care and poisonous and venomous fishes.
- Biochemical composition and economic importance of fishes, Fish spoilage & preservation methods

#### **Paper III B (Optional): Wild Life Conservation and IV B Environment and Biodiversity Conservation**

- Student able to Identify different wild animals their habit and habitats.

- Get knowledge of endangered species.
- Study of local birds and their habit habitats
- Understand the functioning of different ecosystem
- Gather information about local Biodiversity.
- Distribution of wild life India.( National parks and sanctuaries)
- Soil and Water Analysis.
- Understand the Interspecific relationship of Naturalism, Symbiosis, Mutualism , Commensalism, Parasitism, Predation Competition.

### **Practical Outcomes**

- Understand animal behavior by Taxes, Reflexes, Biological clock, and social behavior.
- Understand the process developmental of chick and frog.
- Students will learn how to expose various systems of different fishes i.e. Walago, Mystus, Labeo, Torpedo by dissection.
- Students able to determine age of fishes with the help of scales.
- Attained knowledge on the observation of preserved specimens of fresh water and marine fishes and understand histology of different organs through different histological slides.
- Skilled in preparation of temporary as well as permanent mount of fish scales, ampullae of Lorenzini, otolith, striated muscles and cartilage etc.
- Identify the fresh water fishes upto species level.

### **Practical Outcomes**

- Students become familiar with specimens of various phyla.
- Understand various systems of invertebrates – Squilla, Prawn, Sepia, Loligo by major and minor dissection.
- Identification of Spots related with Adaptation. Homologics , Analogics and modification of mouth parts.
- Students skilled in preparation of Permanent mounting.
- Get knowledge of Biodiversity and wild life. (Mammals and Fishers group).
- Do Exercise on mean, mode & Median.
- Preparation of slides on Meiosis & Mitosis and different types of Chromosomes.
- Skilled in experiments on haematology, enzymology and chromatography.
- Students able to detect the presence of protein carbohydrate, fats and Nitrogenous products in given samples.
- Acquires working knowledge of different laboratory equipments and techniques such as microscopes, centrifuges, colorimeter, Spectrophotometer, Electrophoresis, Chromatography.
- Estimation the techniques based for RNA and DNA and Demonstration of chromosome polymorphism.

# Certificate Courses

## Paper :Medicinal Plants

### Course Outcomes

After Studying this course, the students will be able to understand:

- Importance of balanced diet to reduce diet to reduce risk of deficiency diseases.
- The utility of plants as medicines.
- The preparation of basic herbal medicinal products.
- The idea of cultivation practices.
- The storage, packaging and marketing of herbal medicines.
- To work with individual plant and plant products

## Paper : Data Analysis & Visualization through Spreadsheet Course Outcomes

On the completion of this course, students will be able-

- Prepare a spreadsheet file and enter data into the sheet.
- Illustrate formatting and editing capabilities on the data.
- Demonstrate basic calculations and save data.
- Import and export data into the spreadsheet.
- Demonstrate basic visualizing, analyzing, organizing and sharing techniques

## Paper : Web Designing

On the completion of this course, students will be able-

- Code a handful of useful HTML & CSS examples
- Build semantic, HTML & CSS webpage
- Write basic scripts
- Use Names, Objects and Methods
- Add interactivity to a Web page.
- Create Dynamic Web pages using Java Script in HTML forms.

## Paper : Indian Polity

- This paper help the aspirants of competitive exams like UPSC/PCS/SSC/CDS and other.
- Introducing the Indian Constitution with a focus on the role of the Constituent Assembly and examining the essence of the Preamble.
- Examining the Fundamental Rights and Duties of Indian citizens with a study of the significance and status of Directive Principles.
- Assessing the nature of Indian Federalism with focus on Union-State Relations.
- Critically analyzing the important institutions of the Indian Union: the Executive:
  - President; Prime Minister, Council of Ministers; Governor, Chief Minister and Council of Ministers;
- The legislature: Rajya Sabha, Lok Sabha, Speaker, Committee System, State Legislature.

## **Paper : Human Values and Professional Ethics**

On the completion of this course,

- Students will be able to understand and associates the holistic perception of harmony at all levels of existence.
- They are able to evaluate co-existence of the "I" with the body.
- To learn to respect others and develop civic virtue.
- To instill moral & social values and loyalty.
- The program creates an awareness amongst students about ethics and human values.

## **Paper: Public Administration (Theory and Practice)**

On the completion of this course,

- Students will participate in and contribute to the policy process.
- Students will be able to lead and manage in public governance.
- Students will be able to analyze, synthesize, think critically, solve problems, and make decisions.