

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 programme—**Political Science, History, English Literature, Hindi Literature, Sociology, Economics, Home-Science, Psychology and Music. Foundation Course (English Language, Hindi, Entrepreneurship Development and Environmental Studies)** 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

Course Code – C028

Paper I Micro Economics

- The module includes in this course deal with the concepts of consumer behavior, Production cost analysis, market & factor pricing.

Paper II Indian Economy

- To equip the students with the theoretical, empirical and policy issues relating to the society, policy and economy of India.

Class – B.A. II Year

Course Code - 31

Paper I Macro Economics

- To make the students aware of the theoretical aspects of Macro Economics to acquaint the student with the working of banks & reforms in banking sectors and monetary phenomenon .

Paper II Public finance & International Economics

- To understand the role of state in fostering the economics activities via budget and fiscal policies and various issues between central and State Government.
- To understand the theories of International trade and to examine the impact of the trade policies on the dynamic gains.

Class – B.A. III Year

Course Code – 31

Paper I Development & Environmental Economics

- To enable the students to understand the theories and strategies of growth and development.
- To understand the issues relating to sustainable development environment, protection and pollution control measures.

Paper II Quantitative Techniques

- Understanding in quantitative techniques with in economics.
- Role of statistics in Economics
- The objective of this course is to equip the students with primary statistical tools for analyzing economic problems.

(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 behavioural 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

Course Code-- UA-02

Paper I –Poetry

- Recognize poetry from various literary periods and understand and appreciate poetry as a literary art form.

- Analyze the various elements of poetry, such as diction, tone, form, genre, imagery, figures of speech, symbolism, theme, rhythm, rhyme etc.
- Identify variety of forms of poetry such as satire, epic, lyric and different schools of poetry as Romantic and Metaphysical and study works of the authors associated with these literary forms.
- Develop creativity and critical thinking among the students and enhance their writing skills.

Paper II –Prose

- Recognise different forms of prose and identify the essayists of the different ages .
- Familiarise with the writing styles of the various writers and comprehend their style.
- Identify the importance of brevity in writing and differentiate the diction of the various ages.
- Evaluate the growth of prose writing in English and analyse the stylistic use of language.

Class – B.A II Year

Course Code-- 9

Paper I – Drama

- Interpret literary texts in English by nurturing and utilizing their ability to understand drama in a skilled, knowledgeable, and ethical manner.
- Conceptualize various types of drama viz. Tragedy, Comedy, Farce, Melodrama,
- Gain knowledge in the development of English drama from 16th Century to 21st century i.e. Shakespearean drama, Romantic Comedy, Shavian plays and One-act plays .
- Understand the structure of a play and learn the dramatic devices used in writing a play and become well acquainted with the rhetorical aspect of Drama, historical contexts and psycho-social aspects.

Paper II – Fiction

- Conceptualize the Genre of Novel and its types viz. Allegorical, Gothic, Historical, Picaresque, and Psychological.
- Learn the elements of fiction – Narrative Technique, Setting, Point of view, Style and Detective fiction.
- Become well acquainted with the literary genre of Novel and Short Story and literary devices like allegory, metaphor, satire, and stream of consciousness technique .
- Understand the social, historical and political backgrounds of the novelists and short story writers through the elaborate and allegorical descriptions in the prescribed novels.
- Get a wide exposure of eminent writers like George Orwell, Jane Austen and Charles Dickens etc., their unique styles of writing and imagination help to enhance their creative writing skills.

Class – B.A.III Year

Course Code -- 9

Paper I - Contemporary Literature

- Broadens the origin of English education during British Empire in India and highlights the glory of Indian Writings in English through the works of J. L. Nehru, Mahatma Gandhi, Amartya Sen, R.K. Narayan , Jhumpa Lahiri etc.
- Ignites the minds to compare the glory of Indian writings with other writings through the study of American,British poets ,dramatists , Indian poets and dramatists and other modern poets viz. Philip Larkin,Sylvia Plath,T.S. Eliot,Asif Currimbhoy,Ruskin Bond etc.
- Inculcate interests to focus on contemporary literature and deepens the knowledge of contemporary world culture.

Paper II -Indian Writings in English

- Enhances aesthetic sense – admiring the beauty of life and literature.
- Inculcate the essence of the other regional literature of India in English translation and Indian Literature in English through the works of R. N.Tagore, Girish Karnad, Khushwant Singh, M.R.Anand,Sarojini Naidu,Sri Aurobindo etc.
- Enhance Reading skills and understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of language.

(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 a 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

Course code UA01

Paper I - Pracheen avam Madhyakaleen Kavya.

- Understanding the role played by the poets of Bhakti cult in literature and society.
- Describing the progressive nature of Sant Kabir and his writings.
- Describing the Krishna Leela poetry of Surdas by relating it with his philosophy of his life.

- Describing the Rama Bhakti poetry of Tulsidas along with the philosophy of Bhakti cult.
- Describing the content and the skill of writing Jayasi Vidhyapati in context of the socio cultural conditions of his period.
- Understanding the division of Mira in context of her Krishna Bhakti poetry.

Paper II - Hindi Katha Sahitya

- Understanding the vision of Premchand about middle class and his concern for strengthening the freedom movement in India through Gaban novel.
- Understanding the change in content and style of expression in stories in different periods through the stories of Prasad, Premchand, Jainendra, Renu, Bhishma Sahni, Amarkant, Doodhnath Singh Mridula Sinha.
- Describing the philosophy of life as well stories of Aadhunik writers.
- Understanding the importance of environment culture and social life.

Class -B. A. II year

Course Code-05

Paper - I Arvachin Hindi Kavya

- Describing the philosophy of life as well as poem of **Chayavadi** writers Prasad, Nirala, Mahadevi.
- Describing the contribution of different authors to Hindi literature.
- Understanding the literary trends of Adhunik Kal.
- Describing the poem of Agey in context with his experience of life.

Paper-II Hindi Bhasha Aur Sahitya ka Itihas aur Kavyang Vivechan

- Analysing the development of khari boli Hindi.
- Understanding the concept of Bhasha sahitya.
- Identifying the dialects of Hindi language family.
- Understanding the origin of Hindi language and its literature.
- Understanding the relation between society and literature by Hindi literature in past and present.

Class -B.A. III Year

Course Code 05

Paper I - Prayojan Moolak Hindi

- Understanding the meaning concept and importance of functional Hindi.
- Understanding various forms and functional Hindi according to its area of application.
- Understanding the official language act of 1963,1968, and 1976
- Understanding the importance of translations media writing.

Paper II - Hindi Natak, Nibandh, Tatha Sphut Gadhya Vidhayen Evam Malvi Bhasha.

- Understanding the origin of malvi Bhasha and it's literature.
- Understanding the history of development and Hindi drama and ekankee.
- Understanding the drama Dhruvswamini written by Prasad in context of struggle for independence of women in patriarchal society.
- Understanding the spirit of nationalism of Bhartendu Harishchandra

**(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 trasultural, circulations of ideas, people, and material goods, One or more national histories and regional comparisons etc.

Course Outcomes

Class - B . A . I Year

Course Code UA04

Paper –I History of India.& Form earliest times to 1200 A.D.

- Students of History Can achieve knowledge regarding geographical background and source with approach to Ancient Indian History
- They will learn about the historical facts in puranas. Pre history's age and stone age Palaeolithic Mesolithic Culture.
- They will also know about - Vedic period Buddhism, Jainism, Mauryan Empire, Gupta Empire – Important dynasties of South India, Arab invasion. Turkish invasion, Mahmud Ghaznavi and Muhammad Ghori.
- Gupta Empire History of Kashmir. Karkotak- Lohar dynasty.
- Student can gather knowledge regarding Cholas, Pandyas, Sangam age, Arab. Invasion, Muhammad bin Qasim, Muhammad Ghori.

Paper-II- Western world (Mid 15th Century to 1870)

- The Students of history will be able to learn about significant – events to mid 15th Century to 1870 such as Renaissance. Feudalism. Mercantilism and Commercial Revolution.
- They will also know about Industrial Revolution, Industrial revolution in England causes and Impact on society Glorious Revolution of 1688 A.D.
- American Revolution causes. and Effects. French Revolution – Nature, Causes And Effects.
- The Age of Napoleon Bonaparte – Rise and Fall. Vienna Congress.
- 1848 Revolution and their impact over Europe. Unification of Germany and Italy.

Class -B.A. II Year

Course Code -25

Paper – I History of India. 1200 to 1739 ad

- The Student will acquire knowledge of the services of medieval Indian history Delhi Sultanate The khilji Revolution, Alauddin, khilji,
- The student of history Learn about some Delhi sultanate Vijaynagas Bahamani Kinddoms. Rana sanga in Indian History.
- Akbar Mughal empire his Religions Rajput Police, Rise of Marathas. The decline of the Mughal Empire.
- They also learn the Sant tradition in India during Sultanate period. & Economic & administrative System.
- Student can gather knowledge regarding mughal administration. Mansabdari System Mughal period role of Rani Durgawati.

Paper – II Main currents of world history from 1871 to 2001 A.D.

- Students will Learn about Third Republic of France Kaiser William I Kaiser William II
- Scramble for Africa Eastern Question Russo Turkish war. Russian Revolution of 1905
- They will also Knowledge about First world war causes- & Resells. Russian Revolution 1917 Treaty of Versailles League of Nations.
- Imperialism & Colonialism in china and Japan first and second opium wars Taiping Rebellion, Home &. Foreign Policy of rifle. Causes and Result of the world war II.
- The Chinese Revolution of 1949. UNO and Global dispute cold war End of the cold war.

Class- B. A. III Year

Course Code -25

Paper-I- Histroy Of India From 1740 To 1857

- Advent of Europeans in India Anglo – French conflict in Karnataka. Thirt battle of Paripal. Expansion and consolidation of British Rule In India.
- Establishment of East India Company rule in India. Battle of Plassey.
- Anglo Maratha relation. Anglo Afghan Relation Lord Wellesley and his subsidiary alliences.
- Indian Renaissance socio Religious Movement Raja Ram Mohan Ray. Lord willam Bertirck Growth of western Education Modernization of India.The Permanent Settlement Commercial Uzation of agriculture Drain of wealth Decline of College Industries. Economic transtermalion of India. Telegraph &. Postal Services and Railways.

Paper II - History of INDIA From 1858 to 1950 A.D.

- Act of 1858 Indian Corneal Act.
National Congress Indian Council Act. 1892
- Partition of Bengal Swedish Movement Moderates extremists and Revolutionary movement Government of India Act of 1919.
- Khiafah and Non Cooperah'on Movement Swarajists. Simon Commission. Government of India. Act of 1935 Role of women the Indian National Movement.
- Cripps nission, Simla Conference, Cabinet mission communal politics and the partition of Indian, Rise of Modern History expansion of trade. Development of Education Growth of Indian press.

(v)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

Course code UA-09

Paper I Family Resource Management

- The Students will be aware with the concepts of management of family resources like time, money, energy etc.
- Students will be equipped with the elements of art and principles of design and their application in home decoration.
- Students will have knowledge about various types of flower arrangements and floor decoration.
- Students will be aware of time, space and energy saving modules of family kitchen.

Paper II Human Development

- Students will be educated about development throughout life span, from parental stage till old age.
- Students will have knowledge about early childhood development, care and education. They will have a thorough knowledge about various aspects of childhood development.
- Students will be acquainted with the adolescent growth and problems as well as the importance of family relationships.
- Students will have knowledge about the characteristics, problems of young and middle and geriatric problems and care.

Class B.A. II Year 2018-19

Course code 29

Paper I Textile and Clothing

- Students will acquire knowledge about various type of textile fibres and their yarn production.
- Students will get exposure to weaving process, finishes, dyeing and printing process.
- Students will be equipped with the knowledge of disposal of fullness in garments through darts pleats seams etc.
- Students will be enabled for selection and care of appropriate garments.

Paper II Personal Empowerment

- Students will be aware of the need competence and skills to be developed for self empowerment and will get motivated for self improvement.
- Students will equipped with the interdisciplinary aspect of Home Science education and its potential for personal and professional growth.
- Students will gain knowledge about elimination of discrimination and all forms of violence against women.

- Students will have knowledge about constitutional and legal provision and safeguard rights of women.

Class :B.A. III Year

Course code 29

Paper –I Food and Nutrition

- Students will gain the basic knowledge of various food groups and balanced diet.
- Students will learn to plan balanced meals for whole family.
- Students will have knowledge about the home scale methods of food preservation.
- Students will know about the causes and symptoms of malnutrition and it's treatment.

Paper - II Extension and Communication

- Students will have understanding of the process of communication for community education.
- Students will become enabled in the use of different channels of communication for extension work.
- Students will develop good communicative skills and problem solving aptitude for extension work.
- Students will learn to explore different methods of community approach to work at grass root level.

Practical outcomes

- Students will learn the practical aspect of theory and will be able to apply it. Expertise in any aspect will be a help in obtaining employment.
- Students will learn the elements of art and principles of design involved in home furnishing and interior decoration like preparation of art object, flower arrangement and floor decoration.
- Students will be aware of various types of ideal kitchen models.
- Students will get a detailed exposure of functioning of an Anganwadi and the health care system.
- Students will be able to tackle and care for people in the geriatric phase of life.
- Students will learn home-Scale dyeing and printing.
- Students will be aware of their legal rights.
- Students will develop good communication skills required for extension work.
- Students will apply the facts of nutrition in family meal management.

(vi)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

course code- UA06

Paper I -Hindustani Vocal Music

- Classical music is the base of all kinds of Hindustani Indian music .It is a huge part of our syllabus .so a students can get thorough knowledge of swaras and its applications from this course.
- Music is a subject which is called “Gurumukhi Vidhya”. So it makes a relation more than a teacher students relationship.
- Our course provides a basic knowledge of swar, taal , rhythm,sargam,lakshan geet,. It helps them to establish themselves as one of the specialized artists.
- We believe a good artist must be a good human being. Only a good human being can make a good society full of positive and constructive culture.

Paper II-Hindustani Vocal Music

- The student understand the basic terminologies of Indian music.
- learns to write the practical compositions of the Notation system.
- The students gains knowledge about the Taal ,Raga ,Jati,Sargam and multi dimensional values of Indian music .
- Life sketch and contribution of the musician of Hindustani music.

Class-B.A.II Year

course code- UA06

Paper 1st -Hindustani Music Vocal

- Classical music makes more productive so a students can get thorough knowledge of Aalaap ,Swar , Raag and its applications from this course.
- Our course provides a gain mastery over switching Ragas.
- Knowledge and brief history about the music scholars of the past.
- Learn about vocal culture techniques with major and minor notes.

Paper II -Hindustani Music Vocal

- Our course provide a basic knowledge of Taal ,Lay ,Matra and Principals of Hindustani music system. It helps them to write the practical composition according to the notation system.

- Our course provide a basic knowledge how to control your voice , Good tone , clear envenliation vocal support , suitable volume , musical phrasing ,know your range .
- Life sketch and contribution of the composers of Hindustani music .

B.A. III Year

course code 23

Paper I History of Indian Music

- Our course provide a basic knowledge of Hindustani Indian music .It is a huge part of our syallabus . so a student can get thorough knowledge of swaras and its applications from this course.
- The students learn how to write and give practical of Dhrupad , Bada Khyaal compositions.
- Learn about vocal culture techniques with Taal and major minor swar.

Paper II Bhartiya Sangeet Ke Siddhant

- The student understand the basic terminogies of Indian music .
- Western music acquires an important part of our course .student get knowledge of scales ,piches ,chords ,intervals , staff notations from this section .This knowledge is necessary for growing good musical sense.
- Our course caters a brief introductory knowkedge in Aesthetics . This knowledge helps the students to understand music as an art form with a sense of justification towards the subject.
- Our course provide a knowledge of instruments.
- Music is a subject which is called “Gurumukhi Vidhya”. It is a huge part of our syallabus .so a students can get thorough knowledge of gharana , gamak ,swar and its applications from this course.

Practical Outcomes

- Students will give a practical demonstration of Raag for a period of at least half an hour.
- Student will understand the concept of Thaata and how they generate Raag.
- Develop a basic knowledge of Taal.
- Develop the ability like a performer because music as an art form.

(vii)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

course code UA-03

Paper I- Basic Principles of Political Science

- Develop the ability to make logical interference about political Issues on the basis of historical and comparative knowledge

Paper II- Indian Government & Politics

- Introducing the Indian Constitution with a focus on the role of the Constituent Assembly

Class – B.A. IInd Year

course code 26

Paper I- Representative Political Thinkers

- Tracing the evolution of Indian political thought from ancient India to modern India.

Paper II- Constitution of Major Countries

- Encouraging a comprehensive, comparative understanding of specific world constitutions such as UK, USA, China, Switzerland, Pakistan ,Afghanistan, Bhutan ,Nepal.

Class – B.A. III Year

course code 26

Paper I - Indian Foreign Policy

- Explaining scope and subject matter of International Relations as an autonomous academic discipline.

Paper II Public Administration

course code 26

Explaining the nature, scope and evolution of Public Administrat

(viii)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

Course code - UA07

Paper- I Basic Psychological Processes

- To know about the history and various schools of psychology
- To understand the concept and nature of sensation, perception and attention.
- To get acquainted with the intelligence cognition and learning theories.

Paper- II Psychopathology

- To classify the mental illness and describe the symptoms and prevention of mental illness.
- To differentiate between normality and abnormality.
- To learn about various mental disorders.
- Learn to cope with stress and to explain the ways to increase happiness.

B.A. II Year

Course code - 28

Paper -I Psychology of Human Development

- To utilise knowledge of variables that influence development throughout the lifespan and apply the knowledge to become more effective parents, professionals and citizens of the Global community.
- To relate the scientific knowledge of development from conception to death including the biological, emotional, cognitive and psychosocial influences in order to make effective personal and professional decision.
- To utilise knowledge of prenatal and child development, cognitive foundations of Intelligence and emotional development throughout the lifespan to evaluate and improve human potential.

Paper -II Counselling Psychology

- To understand the counselling profession including its historical development and its current status.
- To gain an understanding of the counsellors roles with evolving practice environments across the spectrum of the field of counselling psychology.
- To be aware of the code of ethics as they pertains to the practice of counselling psychology.

B.A. III Year

Course code – 28

Paper –I Psychological Research and Statistics

- To understand the meaning and types of psychological researches.
- To collect the data and present them in proper graphical representation.
- To solve the statistical problems related to research process.
- To be able to describe and construct a good psychological test.

Paper - II Counselling Psychology

- Students will acquaint themselves with an understanding of the counsellor's role.
- To demonstrate an understanding of the ethical and legal implications of counselling process.

Practical Outcomes

- The student will get to understand the practical aspect of psychology and will also be able to measure the psychological traits by using standardised tools with minimum errors.
- Students will follow the steps of scientific methods for research work .
- Students will control the variables used in psychological problem.
- Students will use experimental methods to find the cause and effect relationship of psychological problems.
- Students will understand how control groups play an essential role in psychological experiments.
- Students will learn to compare their results with manual or standard results.

(ix)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

Course Code-C028

Paper I : Basic concept of sociology

- To understand all aspects of human social behavior including the behavior of individuals as well as the social dynamics of small group, large organization, communities, institutions and entire societies.

Paper II : Indian society

- Basic social Institution to describe Indian society and culture of different periods from pre-history to modern era. It also provides knowledge about various social processes that play significant role in bringing about changes in Indian society.

B.A II Year

Course Code-027

Paper I: Social processes and change

- Learn and understand theoretical knowledge on social change and development. It will enable the students to understand the processes of change and development on society.
- To recognize the significances of social change.

Paper II: Rural, Urban and Tribal society

- Aims to draw attention mainly to the problems, policies and programmes taken for the upliftment of the backward sections of Indian society and causes of their backwardness.
- Know the problem faced by the tribes and policies and programmes taken by the government for the upliftment of tribes.

B.A III Year

Course Code-027

Paper I : Sociological Thinkers

- Sociological thinkers to student are to enable them to apply theory to their own everyday life experiences.
- Application of theories and concepts from classical sociological theories to develop intellectual openness and curiosity.

Paper I : Methods of social Research

- To understand how research is actually done.
- Importance of research design in social research and how to formulate it.
- How to collect, analyze data and how to write a field report.

(B)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

Course Code – BUSc04

Paper I Fundamentals of Computers

After studying this subject, student will be acquainted with –

- Terms and concepts of fundamentals of computers & information technology as regards the basic hardware, software, its basic working .
- Names and types of programming languages and types of Softwares.
- Knowledge of communication process, types, channels, network types, devices, and topologies

Paper II English Language Communication

After studying this subject, student will be acquainted with –

- Knowledge of the English language grammar constructs in order to write legible sentences independently.
- Acquired skill to handle written and verbal business communication required for workplace
- Learnt business etiquettes and mannerisms.
- Proficiency in oral communication skills.

Paper III Office Automation Packages And Tools

After studying this subject, student will be acquainted with –

- Operate a variety of advanced spreadsheet, operating system and word processing functions.
- Work effectively with a range of Office suites for documentation, calculation, presentation and database handling.
- Apply office automation in practical and demonstrate professionalism

Paper IV Problem Solving And Programming Through C

After studying this subject, student will be acquainted with –

- Define a problem and outline its solution through algorithm writing.
- Write programs using C language constructs, using algorithms for the problem solution.
- Use of features like functions, pointers, structures, files in programming.
- Compile, debug and execute C language programs.

Paper V Business Mathematics

After studying this subject, student will be acquainted with –

- Apply trigonometric identities, and ratios to determine height/distance.
- Establish theory of indices and process statistical data to derive results.
- Solve problems using matrices and determinants.
- To solve problems involving commonly used calculations in business environment.
- To apply techniques for finding derivative or integral of given function.

Paper VI Digital Computer Organization

After studying this subject, student will be acquainted with –

- Design combinational circuits
- Perform computer arithmetic operations
- Write basic machine pseudocode as per the different types of CPU structure and functions of the Control Unit
- Conceptualize the various modes of data transfer.

Paper VII Accounting and Financial Management

After studying this subject, student will be acquainted with –

- Prepare financial statements in accordance with Generally Accepted Accounting Principles.
- Apply cost accounting methods to evaluate and project business performance.
- Employ critical thinking skills to analyze financial data.
- Apply appropriate judgment derived from knowledge of accounting theory, for financial analysis and decision making.

Class – BCA II Year

Course Code –C030

Paper I Programming With C++ and Data Structures

After studying this subject, student will be acquainted with –

- How C++ improves C with object-oriented features.
- How to apply the major object-oriented concepts to implement object oriented programs in C++ along with encapsulation, inheritance and polymorphism.
- Advanced features of C++ specifically stream I/O, templates and operator overloading.

Paper II Computer Based Numerical and Statistical Techniques

After studying this subject, student will be acquainted with –

- Apply appropriate algorithms to solve selected problems, both manually and by writing computer programs.
- Compare different algorithms with respect to accuracy and efficiency of solutions.
- Use appropriate numerical methods, determine the solutions to given Algebraic & transcendental equations, determine approximate solutions to systems of linear equations and ordinary differential equations.
- Demonstrate the use of interpolation methods to find intermediate values in given tabulated data.

Paper III Operating System

After studying this subject, student will be acquainted with –

- Working of an OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS.
- Understand the process management policies and scheduling of processes by CPU.
- Mutual exclusion, Deadlock detection in Distributed operating system.
- Various resource management techniques, process management and scheduling techniques.
- To understand the concepts and implementation Memory management policies and virtual memory.
- Commands of UNIX/Linux OS.

Paper IV Web Technology and Application Development using .Net & C#

After studying this subject, student will be acquainted with –

- Usage of ASP.NET controls in web applications
- Basics of debugging and deployment of ASP.NET web applications
- Knowledge to design web applications using ASP.NET & c#
- Skills to create database driven ASP.NET web applications and web services

Paper V RDBMS Concepts & Oracle

After studying this subject, student will be acquainted with –

- Describe data models and schemas in DBMS
- Use SQL- the standard language of relational databases.
- Understand the functional dependencies and design of the database.
- Understand the concept of Transaction and Query processing.
- Design and Normalize a database

Paper VI Software Engineering

After studying this subject, student will be acquainted with –

- Apply software engineering principles and techniques to software system development process..

- Contribute to the development, maintenance and evaluation of large-scale software systems.
- Produce efficient, reliable, robust and cost-effective software solutions.
- Work as an effective member or leader of software engineering teams.
- Develop good quality software.

Paper VII Organizational Behavior

After studying this subject, student will be acquainted with –

- Know about organizational behavior and its relation with other disciplines.
- Analyze individual behavior under different conditions.
- Assess group behavior and intrapersonal influence.
- Evaluate organizational system and process.
- Know about & differentiate between organizational design, changes and innovations.

Course Outcomes

Class – BCA III Year

Course Code – C030

Paper I Computer Networks, Internet Tech. & Security

After studying this subject, students will be able to –

- Grasp basics of computer network technology.
- Understand Data Communications System and its components.
- Identify the different types of network topologies and protocols.
- Differentiate the layers of the OSI model and TCP/IP.
- Use the different types of network devices and implement their functions.
- Apply the mechanism of subnetting and routing mechanisms.
- Understand the security threats and protection policies.

Paper II Core Java

After studying this subject, students will be able to–

- Implement Object Oriented programming concepts 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 a finding the solution to specific problem
- Demonstrate how to achieve reusability using inheritance, interfaces and packages and describes faster application development can be achieved.

Paper III Management Information Systems

After studying this subject, students will be able to –

- Relate the basic concepts and technologies used in the field of management information systems;
- Compare the processes of developing and implementing information systems.
- Understand the role of the ethical, social, and security issues of information systems.
- Demonstrate the role of information systems in organizations.

Paper IV Python Programming

After studying this subject, students will be able to –

- 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.

Paper V E-Governance

After studying this subject, students will be acquainted with –

- The concept of e-government technology, importance and its impact.
- Understanding of difference between the models of development of e-government services, and choosing the best according to situation.
- Skills to Identify the main challenges in storing huge online government data storage and retrieval.
- Recognition of various laws, principles and policies to protect e-government services to avoid possible threats that may hinder the developments of online services.
- The case studies of running projects of India and neighbouring countries, to develop effective and efficient e-government projects.

Paper VI Principles and Practices of Management

After studying this subject, students will be able to –

- Recognize the importance of marketing in an organization, how marketing relates to other business functions, and the role of marketing in society at large.
- Do basic secondary research relative to marketing in an organization (e.g., by using Internet search engines, such as Yahoo, Google, etc.)
- Select, analyze and define a target market for a selected product or service.
- Develop a marketing plan or strategy for a product or service (e.g., company objectives, marketing objectives, target market(s), advertising, pricing, distribution, product/ service development, evaluation of competitors, contingency plans, budget, etc.)
- Evaluate/analyze the marketing strategy for an existing product and/or services. Know the basic marketing concepts and theories.

Paper VII Project - Application Development using PHP & MySQL
Practical Outcomes

Upon successful completion students should be able to:

- Installation of LAMP/XAMPP/WAMP module according to requirement of platform.
- Write PHP code to produce outcomes and solve problems.
- Display, insert, update and delete data using PHP and MySQL.
- Handle images and files in MySQL uploaded via PHP.
- Test, debug, and deploy web applications containing PHP and MySQL.

(C) 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

Course code- UCO1

Accounting Group

Paper-I Financial Accounting

- The students become well equipped to prepare the various accounts like trading and profit and loss a/c, branch a/c, royalty a/c etc.

- This paper enables the students to get job in institutions where professionals with accounting skills and knowledge are required.

Paper-II Business Mathematics

- After the successful completion of the course the students will be able to demonstrate basic knowledge & skill in business mathematics & elementary statistics by accurately performing common business computations, statistical data presentation & analysis.
- Develop the student's ability to deal with numerical and quantitative issues in business.

Management Group

Paper-I Business Law

- To provide knowledge about business laws related to real life.
- To enable students to understand the practical applicability of the subject.

Paper-II Business Organization and Communication

- Students will learn about ethics, communication skills, social responsibility of business.
- They will be able to understand the functioning of business sector and it will help them in their professional life.

Applied Economics Group

Paper-I Micro Economics

- The students will become aware about the concept of demand, supply, pricing and production function.
- They get to know the phenomenon which regulates the overall functioning of the economy.

Paper-II Macro Economics

- The outcomes of this paper is to provide an understanding of basic economic principles which can help them to judge or analyze the economic policies.
- They become aware of the concepts of National Income, GDP, domestic income which are important aggregates of an economy.

B.Com II Year

Course Code-C032

Accounting Group

Paper-I Corporate accounting

- Students will learn about new provisions of the company act 2013 for the maintenance of company accounts.
- After completion of the course student will be able to apply the theories when they will be in relevant job.

Paper-II Cost accounting

- Student will understand the difference between cost accounting and financial accounting.
- The outcomes of this paper is to provide preparation of cost sheet and statement.

Management Group

Paper-I Principles of Statistics

- The outcomes of this paper is to provide an understanding for graduate student on measures of central tendency, measures of dispersion and Time series,.
- The students will also learn correlation, regression, index number, diagrammatic and graphic presentation.

Paper-II Principles of Management

- On successful completion of this course, students will learn management principles.
- They will be aware of the skills competencies, techniques and knowledge needed to successfully manage an organization

Applied Economics Group.

Paper-I Indian Company Act

- By studying this paper the students obtained knowledge of Indian company act 2013 and its amendments.
- After the completion of the course students will be able to understand the use of the memorandum of association and article of association and prospectus in a company.

Paper-II Banking and Insurance

- Banking and insurance paper make the student to develop the practical knowledge and skill related to banking functions.

B.Com. III Year

Course Code-C032

Accounting Group

Paper-I Income Tax Law & Practice

- 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.

Paper – II Goods and Service tax & Custom Duty

- Providing exposure of basics of Goods and Service tax & Custom Duty .
- The students become aware about the custom duty, G.S.T.

Management Group

Paper-I Auditing

- The students will be well equipped with various auditing techniques such as vouching, verification of assets etc.
- The students will be in a position to apply the knowledge in practical auditing work of various business organizations.

Paper-II Management Accounting

- Introduction of management accounting compare difference between cost accounting and management accounting.
- Students will understand the meaning of ratio, their importance and limitations.

Applied Economics Group(B)

Paper-I Principles of Marketing

- Students will also learn about marketing strategy preparation and selling skills of sales personnel.
- Students will be able to deal with the day to day affairs of business, marketing, advertising etc.
- Sell products to various customer markets, as well as learn various ways to promote a company's products and services.

Paper-II International Marketing

- It gives the fundamental understanding of marketing concepts and marketing policies across the world.
- It helps in acquiring comprehensive theoretical practical competencies in international marketing.
- It develops the understanding of the challenges of business environment.
- After the successful completion of the course the student should have a complete knowledge on Indian Banking System.

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 – MCom / MCM/MSW/ CA/ MBA/PGDCA.

Course Outcomes

Class – B.Com I Year

Course Code – UC01

Paper : I Fundamentals of Computer and PC Software

After studying this subject, student will be acquainted with –

- Identify input and output devices of Computers, their working and understand the hardware, software terminologies.
- Use system functionalities proficiently, and solve basic information systems problems using office packages.
- Effectively communicate strategic alternatives to facilitate decision making.
- Understand legal and ethical issues related to E-Commerce

Paper : II Desktop Publishing and Multimedia

After studying this subject student will be able to -

- Demonstrate critical thinking, creativity and innovation when identifying and responding to problems in diverse contexts within writing, editing and publishing.
- Use Adobe PageMaker to create personal/business publications such as articles, fliers, advertisements, and reports as per professional/industry standards
- Use various multimedia elements like text, graphics ,audio, animation and video.
- Identify the basic hardware and software requirements for multimedia development and playback.

Class – B.Com II Year

Course Code – 66

Paper : I Internet and E-Commerce

After studying this subject, student will be acquainted with –

- Technologies and protocols used on the Internet.
- Effective use of Internet tools technologies including current web-based applications
- Fundamental principles of e- Commerce, tools and services.
- The difference between E-marketing and Traditional marketing.
- Recognizing the risks in e-Business, importance of E-security,Digital payment and cryptography.

Paper : II Relational Database Management System

After studying this subject, student will be acquainted with –

- The fundamental elements of relational database management systems.

- Designing ER-models to represent simple database application
- Converting the ER-model to relational tables, populate relational database and formulating SQL queries on data.
- Improve the database design by normalization.
- Basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.

Class – B.Com III Year

Course Code – 66

Paper: I Web Design

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.

Practical Outcomes:

- The students will be able to effectively & efficiently produce formatted text and graphics in DTP software.
- Student will get a thorough overview of the whole print process from design to layout.
- Create, edit, save, format and print documents in MS-Word.
- Create worksheet in Microsoft Excel to perform basic calculations, insert graphs, use various functions and print .
- Create a presentation in Microsoft PowerPoint that is interactive and legible content.
- Attain a good practical understanding of the SQL
- Develop clear concepts about Relational Model.
- Examine techniques pertaining to Database design practices

- Prepare various database tables and perform various operations on them using SQL commands.
- Understand the many roles the web developers can play.
- Exploring the emerging tools offered by the internet.

(D)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

Programme Specific outcomes

The Programme 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/equipments.
- Students will be able to clearly communicate the chemistry related topics.

- Learn handling of apparatus and chemicals properly.

Course Outcomes

B.Sc. I Year

Course code – USc03

Paper- I Physical Chemistry-

The students will be able to:

- Understand the fundamental properties of atom, molecules & various state of matter.
- Mathematical concepts like Logarithm, differentiation, Integration.
- The energy & speed of chemical reaction
- Fundamentals of nuclear chemistry.

Paper- II Inorganic Chemistry

The students will be able to:

- Know essential theoretical knowledge on atomic structure, periodic properties, chemical bonding, ionic solids, ionic structures .
- Understand the chemistry of s & p- block elements.

Paper- III Organic Chemistry

The students will be able to:

- Understand various types of reaction intermediates and factor affecting their stability.
- Understand the nomenclature, Synthesis isomerism, properties of alkanes, Cycloalkanes, alkenes, Cycloalkene & dienes, alkyl halides.
- Recognize & draw constitutional isomers, Stereo isomerism including enantiomer, diastereomers, racemic mixture.

B.Sc. II year

Course code - 52

Paper- I Physical Chemistry-

The students will be able to:

- Understand the fundamentals of electrochemistry including pH calculations, buffer behavior & acid base titration.
- Explain the relationship between microscopic properties of molecules & macroscopic thermodynamic quantities / functions.
- Understand basic knowledge of surface chemistry, phase equilibria, catalysis.

Paper- II Inorganic Chemistry

The students will be able to:

- Understand the chemistry of 'd' and 'f' block elements.
- Know the nomenclature, isomerism, Werner's theory and valence bond theory and different concepts of coordination compounds.
- Explain redox potential data, acid - base concept and chemical reactions in non- aqueous solvents.

Paper- III Organic Chemistry

The students will be able to:

- Describe different classes of alcohols
- Recognise structures and properties & specific name reaction of acid halides, esters, amides, acid anhydrides, nitroalkanes & nitroarenes.
- Understand the significance of UV & IR spectra and identification of simple organic compounds.

B.Sc. III Year

Course code – 52

Paper- I Physical Chemistry-

The students will be able to:

- Explain the basic concepts of UV spectroscopy
- Understand the interactions of Electromagnetic Radiations with different matter and their applications like- Infrared Spectroscopy, Raman, UV-Visible, NMR spectroscopy.
- Understand the basic idea of Surface Chemistry.

Paper- II Inorganic Chemistry

The students will be able to:

- Classify acid & bases as hard & soft, Pearson's concept of HSAB & it's applications.
- Know about inorganic polymer and their characteristic, classification and applications.
- know the importance of essential and trace elements in biological processes..
- Understand the magnetic properties, magnetic moment and electronic spectra of complexes.

Paper- III Organic Chemistry

The students will be able to:

- Introduce the basic Chemistry of nitrogen containing compounds like- nitroalkanes, nitroarenes, Halonitroarenes.

- Develop the skills to recognize and draw particular carbohydrate structure.
- Know about the classification and structure of amino acids , nucleic acid, fats, oils and Detergents and their importance in life.
- understand the synthesis, structure and bonding in organometallic and organo sulfur compounds.

Practical Outcomes:

The students will be able to:

- Learn laboratory practices, handling glassware, equipment & reagent carefully.
- Prepare Standard solutions of different concentration.
- Learn to perform common laboratory techniques like distillation, reflux, recrystallization, TLC, Paper chromatography.
- Verification of Lambert-Beer's law, stoichiometry of complex formation by Job' & Mole ratio method using colorimeter.
- Separate the binary organic mixture and identify the components.
- Estimation of Ba and Cu ions in sample by gravimetric method.
- Identification of various ions including interfering radical present in water and mixture of salts.
- Synthesis of simple organic and inorganic compounds/complexes.

(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

Course Code – USc08

Paper I Fundamentals of Computers

After studying this subject, student will be acquainted with –

- Terms and concepts of fundamentals of computers, their components, storage and I/O devices.
- The various application areas and usage of computers.
- Features of document and work book handling using various utilities.

- Be familiar with the design of digital logic circuits and their application to computer organization.
- Computer architecture and data transfer techniques

Paper II Programming in C

After studying this subject student will be able to -

- Develop the ability to analyze problems and propose algorithms to solve them.
- 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.
- To understand the main activities of software development and their interactions, and handle some realistic problems of software development.

Class – BSc II Year

Course Code – 62

Paper I Object Oriented Programming Concepts Using C++

After studying this subject, student will be acquainted with –

- The relative merits of C++ as an object oriented programming language.
- Implementing and applying the major object-oriented concepts to programs in C++ including encapsulation, inheritance and polymorphism.

Paper II Data Structures

After studying this subject, student will be acquainted with –

- Algorithms and algorithm correctness.
- Searching and sorting techniques their implementation and usage.
- Implementation and usage of stack, queue and linked list operations.
- Concepts of trees and graphs and associated problems and solutions thereof.

Class – BSc III Year

Course Code – 62

Paper I Database Management System

After studying this subject, student will be acquainted with –

- Understanding of data models and schemas in DBMS
- Usage of SQL- the standard language of relational databases.
- Knowledge of functional dependencies and design of the database.
- Implementation of normalization on databases.

Paper II Operating System Concepts

After studying this subject, student will be acquainted with –

- Functioning of OS as a resource manager, file system manager, process manager, memory manager and I/O manager and methods used to implement the different parts of OS.
- Understanding of the process management policies and scheduling of processes by CPU.

- Idea of Mutual exclusion, Deadlock detection in Distributed operating system.
- Various techniques of resource management, process management and scheduling.
- Implementation of Memory management policies and virtual memory.
- Commands and working environment of UNIX/Linux OS.

Practical Outcomes

- Word processing program used for writing letters, memos, reports and paper presentations, Power point enables a person to create slide based presentations where as Microsoft Excel a spreadsheet program is used for calculations, making charts and recording data about all sorts of business processes.
- By having practical knowledge of C & C++ students will be able to develop logics which will help them to create programs, applications for system level programming.
- Through Data structure students will be able to develop applications using data structure algorithms.
- Visual Basic programming language enables students to create software interface and codes in an easy to use graphical environment whereas Oracle helps students to Design and develop fully functional database applications using the Oracle DBMS.
- Web designing enables students to create effective web website.

(iii) Department of Mathematics

Programme Specific outcomes

- Students are expected to acquire knowledge in areas of mathematics such as algebra , trigonometry , differential equations , vector analysis and geometry , Real analysis , Complex Analysis , 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 recognise , learn and appreciate the importance of life long learning process.

Course Outcomes

Class: B.Sc . I year

Course Code – USc04

Paper I: Algebra and Trigonometry

The students will be able to

- Define the characteristic equation of a matrices.
- Find rank and nullity of matrix
- Define hyperbolic and inverse functions.
- Describe the relation between roots and coefficients of an equation of second order..

Paper II: Calculus and Differential Equations

The students will be able to

- Find the solution of differential equations of first order and of degree higher than one, using different methods.
- Find solution of simultaneous differential equation with constant coefficients.
- Define transcendental functions, perform integration of functions using reduction formulae.
- Application of Taylor's and Maclaurin's theorem to functions of one variable.

Paper III: Vector Analysis and Geometry

The students will be able to

- Find and interpret the gradient for a function at a given point.
- Interpret and calculate line, surface and volume integral.
- Evaluate integrals using Stoke's, Gauss, Green's theorem.
- Develop and interpret the concept of three dimensional figures such as cone, cylinder, ellipsoid & paraboloid.

Class: B.Sc. II year

Course Code - 53

Paper I: Abstract Algebra

The students will be able to

- Define group, its types and their basic properties.
- Find cycles and transpositions of a given permutation.
- Prove Lagrange's Theorem, Euler's Theorem and Fermat's theorem, Cayley's Theorem.
- Define Ring, integral domain and field

Paper II: Advanced Calculus

The students will be able to

- Define different types of sequences and series.
- Verify the convergence and divergence of series using test such as comparison test, Cauchy root test, ratio test..
- Find limit and continuity of functions of two variables and apply Taylor's theorem, Maclaurin's theorem to functions of two variables.
- Find maxima and minima of functions of two variables, Double and triple integrals, Beta gamma functions.

Paper III: Differential Equations

The students will be able to

- Find series solution of differential equations, study Bessel's and Legendre function and their properties.
- Find Laplace transform and inverse Laplace transform of function and its application in finding the solution of differential equations with constant coefficients.
- Define partial differential equation of First and find its solutions by methods such as Charpit's method, Lagrange's multiplier method.

- Classify partial differential equations of second order , find solution of homogeneous and non homogeneous partial differential equations with constant coefficients..

Class: B.Sc. III Year

Course Code – 53

Paper I : Linear Algebra & Numerical Analysis

The students will be able to

- Define vector spaces , subspaces ,linear dependence and independence ,basis , Linear transformations , rank, nullity, find characteristic equations, eigen values and eigen vectors.
- Define basic concepts of E, Δ, ∇ , errors and its types, Solve problems using Newton forward formula, Newton backward formula, Striling and Gauss formula
- Find solution of system of linear equations using gauss elimination method, Gauss Jordan method, L U decomposition method , iterative methods such as Jacobi method Gauss - Seidel method.
- Find solutions of differential equation by Euler’s method , Runge - Kutta Method , Milne –Simpson’s method, method based on numerical integration.

Paper II : Real & Complex Analysis

The students will be able to

- Define Riemann Integral and their properties, Mean value theorems of integral calculus..
- Define metric space , neighbourhoods , limit points , open and closed sets ,subspaces of metric space , Cauchy sequences , prove Cantors intersection theorem , contraction principle.
- Define continuity & differentiability of complex numbers, condition for a function to be analytic, define mobius transformations and conformal mappings.

Paper III : Discrete Mathematics

The student will be able to

- Boolean functions, Binary relation, partial ordered set, equivalence relations
- Define Graph , multigraph , paths and circuits , shortest path : Dijkstra’s Algorithm, trees and find matrix representation of graphs.

(iv)Department of Physics

Programme Specific outcomes

- Students are expected to aquire 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, Magnetostatics, Electrodynamics, Quantum Mechanics, Spectroscopy, Nuclear Physics, Solid State Physics and Devices.

- Students are expected to develop a written and oral communicating skill in communicating physics related topics.
- Students will realise and develop an understanding of Physics and Science on 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.
- Discover of Physics concept in other disciplines.
- Apply conceptual understanding of Physics to general real-world situations.

Course Outcomes

Class: B. Sc. I

Course code: USc07

Paper I : Mathematical Physics, Mechanics and Properties of Matter.

- Connect concept and mathematical rigor in order to enhance understanding.
- To observe concept of Physics in day-to-day life.
- Conceptual understanding and approach the problems mathematically.

Paper II Thermodynamics and Statistical Mechanics

- Be able to use thermal and statistical principles in a wide range of applications.
- Learn and understand how statistics of microscopic world can be used to explain thermal features of macroscopic world.

Class: B.Sc. II

Course code: 51

Paper I : Optics

- To develop and understanding of Principles of Optics.
- Understand the basic concept of Physical Optics and Wave Optics.
- To develop an ability to compute basic quantities in Optics.
- LASER and application, holograms.
- Observe principles of optics in daily life.

Paper II: Electrostatics, Magnetostatics and Electrodynamics

- Know the vocabulary and concept of Physics as it applies to Principles of electric and magnetic field sources and to understand relationship between them.
- Learn AC Circuits and related theorems with applications.
- Be able to use electromagnetic theory and principles in wide range of application.
- Develop skill to solve numerical problems on it.

Class: B.Sc. III Year

Course code: 51

Paper I Quantum mechanics and Spectroscopy

- Learn the mathematical tools needed to solve quantum mechanics problem (Complex functions and Operators).

- To build connections between mathematical development and conceptual understanding.
- Develop and communicate analytical skills in subatomic physics and to develop an interest in this subject .

Paper II Solid State Physics and Devices

- Understand basic concept of Solid State Physics.
- Conceptual gain of crystalline structure.
- Working of Solid State Electronic Devices and to understand their uses.
- Exposure to basic knowledge of Nanotechnology

Practical Outcomes

- Students will learn to do practicals as an application of what they study in theory.
- Students will also learn how to use measuring instruments and minimize errors, compare results with standard results.
- Students will apply various methods of calculations such as graphical etc.
- Explore the important connections between theory, experiments and current applications.
- Students will develop the proficiency in acquisition of data using a variety of laboratory instruments and in the analysis and interpretation of such data.
- Develop a basis for future learning and work experience.
- Students have to perform experiments based on their some of the theory part such as mechanics, properties of matter, statistical probability, heat, optics, electricity and magnetism, crystal structure, electronics, nuclear physics etc.

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 start ups.
- 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

Programme 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 specialised 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

Course code -USc- 01

PAPER-I Cell Structure and Biology

The objective of this course is to have a firm foundation in the fundamentals of cell biology and cytogenetics as well as to enable the students to gain an insight into the metabolic processes associated with the catabolism of carbohydrates, amino acids and lipids

- Develop an understanding of the cytoskeleton and cell membrane
- Discuss the cell cycle, structure of chromosome and types of chromosomal aberrations.
- Explain the role of energy rich molecules in metabolism.
- Understand the metabolic pathways of carbohydrates, amino acids, and lipids.

PAPER-II Microbiology

The objective of this course is to make the students familiar with the microscopic diversity along with the methods of their cultivation *in vitro* and to provide a mechanistic overview of enzyme activity and regulation in cells.

- To understand the concept, principle and types of sterilization methods.
- Understand the microbial genetics and recombination in bacteria.
- Know the cultivation methods of bacteria, yeast and fungi.
- To understand the principle and working of laminar air flow.
- Plan and execute an enzyme assay.

CLASS : B.Sc. II Year

Course code-48

PAPER I- Biophysics and Biochemistry

The objective of this course for the students is to gain a basic knowledge of biophysical and biochemical concepts; along with basics of thermodynamics to understand Biological systems- Bio energetic- energy trapping and its transactions methods; biophysics of various biological activities.

- The students will develop the capability to demonstrate a multi-scale nature of biophysics by exploring macroscopic and microscopic applications.
- To understand physical basis of chemical bonding, ion conduction and the chemistry of organic molecules and apply those to biology.
- The students will understand structure, functions and roles of biomolecules in biological systems.
- The students will be able to describe role of enzyme in chemical reactions and enzyme kinetics involved in it.

Paper II- Bioinstrumentation, Biostatistics and Bioinformatics

The objective of this course is to make the students understand principles behind the various techniques available for interrogating biological macromolecules along with the application of mathematical models to understand physiological systems. It also includes an outline on the various bioinformatics and computational tools used in analyzing protein, gene and genome databases.

- The student will understand theoretical approaches can be used to model and analyze complex biological systems.
- The student should be able to understand the utility of different types of instruments used in Biotechnology.
- The student should be able to understand how biophysical methods can be used for differentiating biological macromolecule.
- The student will be able to describe different molecular biology databases and formats in which data is stored.

CLASS : B.Sc. III Year

Course code-48

Paper I : Molecular Biology and Genetic Engineering

The objective of this course is to have an insight into mechanism of gene expression and its regulation in prokaryotes and eukaryotes. **Genetic Engineering** allows the students to understand the different technology used in RD,PCR,Electrophoresis etc.Discuss the mechanisms associated with Gene expression at the level of transcription and translation.

- Discuss the regulation of gene expression in prokaryotes and eukaryotes.
- Understand the role of different cells, effector molecules and effector mechanisms in **Genetic Engineering**. Understand the principles underlying various immunotechniques.
- Students will be aware of the modern tools and techniques of genomics and isolation and identification of genes.

Paper II : 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 Plant tissue culturing, microbial cultures, sterilization methods and enzyme production.
- Students will be able to describe the tools and techniques of genetic engineering, DNA manipulation enzymes and vectors, genome and manipulation tools, gene expression regulation, production and characterization of recombinant proteins.
- 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.

Practical Outcomes

- Students will demonstrate proper and safe laboratory practice, proper use of equipment and the ability to use basic Techniques in several areas and advanced Techniques in at least one area.
- Students will demonstrate the ability to perform appropriate qualitative analysis of experimental data and draw valid conclusions from their analysis.
- Students will demonstrate the ability to work effectively with computational, mathematical and statistical approaches to acquire, analyse and model experimental datasets.
- Students will demonstrate the ability to effectively use electronic media to access biological information.
- Students will demonstrate the ability to orally communicate the findings of their experiments or the work of others.

(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

Course Code: USc06

Paper I : Diversity of Lower Plants

- To understand diversity & economic importance of Mycoplasma, Cyanobacteria and Actinomycetes.
- To understand diversity & economic importance of Algae.
- To understand biodiversity & economic importance of Fungi.
- To study the characters and classification of Bryophyta.
- To understand the morphological diversity of pteridophytes.

Paper II: Diversity of Higher Plants

- To study the characters and classification of Gymnosperm.
- Understand life cycles of Gymnosperms, Cycas, Pinus and Ephedra.
 - To understand the importance, morphology and anatomy of root.
 - To understand the importance, morphology and anatomy of stem.
 - To understand origin, development, importance, morphology and anatomy of leaf.

Class -B.Sc. II Year

Course Code: 58

Paper I: Taxonomy & Embryology of Angiosperms

- Study the Angiospermic Plants.
- Understand the comparative account among the families of angiosperm
- Know the economic importance of Angiospermic families.
- To understand structure and development of microsporangium and mega sporangium.
- To understand embryology of Angiospermic plants.

Paper II: Plant ecology, Biodiversity & Phytogeography

- To know the structure and functions of ecosystem.
- Understand ecological adaptations in plants.
- Learn about conservation of Biodiversity, Biosphere reserves, sanctuaries and National Park of M.P.
- Understand the global warming and climate change.
- Discover botanical regions of India and vegetation types of M.P.

Class -B.Sc. III Year

Course Code: 58

Paper I : Plant Physiology & Biochemistry

- Learn and understand water absorption, osmosis, transpiration and ascent of sap.
- Learn and understand mineral nutrition in plants, translocation & structure of Biomolecules.
- Understand the process and importance of photosynthesis.
- Understand the structure of mitochondria & process of respiration.
- Understand the structure & classification of enzymes & plant growth regulators.

Paper II : Cell biology, genetics and Biotechnology

- Understand the structure of cell & cell organelles.
- Understand structural organization, variation in chromosome and DNA structure.
- Understand Mendel's laws of inheritance, cytoplasmic inheritance & mutation.

- Understand the structure of gene, protein synthesis & gene regulation in prokaryotes and eukaryotes.
- Understand the fundamentals of Biotechnology, RDT and Plant Tissue Culture Techniques.

Practical Outcomes

After completion of these experiments students will be able to:

- Learn Preparation of slides and staining of different plant materials.
- Learn diversity in Algae, Fungi, Bryophyta, Pteridophyta and Gymnosperm.
- Learn identification of local plants belonging to different families of angiosperms, their systematic position, morphological characters, floral formula and floral diagram.
- Learn identification of local plant diseases their causal organisms, symptoms and control measures.
- Learn Morphology and anatomy of root, shoot & leaf and their identification.
- Learn more about community ecology by different methods.
- Learn morphological and anatomical adaptation in locally available hydrophytes & Xerophytes.
- Learn different physiological experiments related to Photosynthesis, Respiration & Osmosis
- To understand the plants & plant cell in relation to water.
- Learn cell division in root tips & flower buds.

(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

Course code- USc05

Paper- I General microbiology and cell biology

The exposure to this course will enable students to:

- Understand the basic microbial structure and functions of various physiological groups of prokaryotes and eukaryotes.

- Know various Culture media and their applications and understand various physical and chemical means of sterilization.
- Comprehend the various methods for identification of unknown microorganisms.
- Understand the architecture of bacteria, Cyanobacteria, Actinomycetes, Mycoplasma, Rickettsia, Chlamydia, viruses, fungi and their classification.

Paper- II Tools and Techniques in Microbiology

The exposure to this course will enable students to:

- Enable students to acquire expertise in the use and application of the methods of data collection and analysis.
- Gain experience in microbiological laboratory practices and skills in the design and execution of microbiology related research.
- Stain the bacteria with differential staining techniques.
- Get familiar with various instruments.
- Develop basic skill in aseptic techniques.
- Cultivate bacteria with different cultivation technique.

B.Sc. II Year

Course code- USc05

Paper- I Biochemistry and Microbial Physiology

Upon successful completion of the course, students are expected to be able to:

- Develop fundamental knowledge about various biomolecules– carbohydrates, lipids, proteins, amino acids, nucleic acids and their classification, structure, function and significance.
- Describe the concepts of pH, buffers, Henderson-Hasselbalch equation, biological buffer systems and their importance.
- Understand the microbial physiology and know the various Physical and Chemical growth requirements of bacteria and get equipped with various methods of bacterial growth measurement.
- Conceptual knowledge of properties, structure, function of enzymes, enzyme kinetics and their regulation ,enzyme engineering.
- Understand the concept of microbial metabolism and concept of bioenergetics.

Paper- II Microbial Genetics and Molecular Biology

Upon successful completion of the course, students are expected to be able to:

- Understand the structure, properties and function of genes in living organisms at the molecular level and knowledge about DNA as a genetic material, enzymology, and replication strategies molecular mechanisms involved in transcription and translation.
- Describe the importance of genetic code and wobble hypothesis and discuss the molecular mechanisms underlying mutations, detection of mutations , DNA damage and repair mechanisms.

- Explain the concept of recombination in prokaryotes and use of virus in genetic engineering.

B.Sc. III Year

Course code- USc05

Paper- I Applied and environmental microbiology

Upon successful completion of the course, students are expected to be able to:

- Appreciate the diversity of microorganisms and learn the abundance, distribution and significance of microorganism in the environment such as bioremediation and plant microbe interactions.
- Understand the significance and activities of microorganisms in various food and role of intrinsic and extrinsic factors on microbial growth in foods leading to spoilage, and understand the principles underlying the preservation methods.
- Study the different types of microorganisms in milk and their activities.
- Appreciate how microbiology is applied in manufacture of industrial products, learn methods in discovery of new useful microorganisms and acquire knowledge of the design of fermentors and process controls.

Paper- II (Immunology and medical Microbiology)

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

- Identify common infectious agents and the diseases caused by them.
- Understand the salient features of antigen antibody reaction & its uses in diagnostics and various other studies.
- Appreciate the barriers that are used by the host to resist bacterial pathogens, the mechanisms whereby innate (natural) and adaptive (acquired) immunity provide protection against infectious agents, and the role of vaccines in protection of animal hosts from infection.
- To understand about Tumor Immunology and Learn about immunization and their preparation and its importance

Practical Outcomes

The attributes develop in a microbiology graduate after performing practicals in UG course will make them able to:

- Learn various types of media preparation.
- Learn various techniques for isolation of pure cultures.
- Learn the practical skills in microscopy handling and staining techniques.
- Comprehend the various methods for identification of unknown microorganisms.
- Develop basic skills in aseptic techniques.
- Check portability of water and microflora of air.
- Isolate and identify microorganism from laboratory sample.
- Perform MIC of antibiotics.
- ELISA test for disease diagnosis.

- Handle and independently work on lab protocols involving molecular techniques.

(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

Course Code-USc02

Paper I : Invertebrate

- Understanding of general taxonomic rules.
- Study of type specimen from each phyla.
- Describe general taxonomic rules on animal classification
- Study of classification from Phylum Protozoa to Echinodermata upto orders.
- Study the diseases caused by protozoan, nematodes and insects along with their remedies
- Study the larval forms of annelida, arthropoda ,echinodermata and their evolutionary significance.

Paper II : Cell Biology & Developmental Biology

- Students gain knowledge of basic concepts of cell biology along with internal structure of cell and functions of various cytoplasmic organelles.
- Understand the process of cell division and study of special type of chromosome.
- Gains knowledge about developmental processes of frog and chick.
- Basic concepts of developmental biology regarding gametogenesis, fertilization,cleavage mechanisms, blastulation and gastrulation.

Class : B.Sc. II year

Course Code-59

Paper I : Vertebrates and Evolution

- Knowledge of classification of protochordates and Vertebrates upto orders.
- Knowledge of comparative anatomy of different organ system of chordates.
- Imparts the knowledge about theories and nature of evolution, adaptation , speciation, mimicry and colouration etc.
- Students are able to understand Fossils, Methods of fossilisation, Determination of age of Fossils and Study of Extinct forms: Dinosaurs and Archaeopteryx.

- Gain Knowledge of Zoogeographical distribution, Evolution of Man, Geological time scale and Insular fauna.

Paper II : Animal Physiology and Biochemistry

- Students are taught the detailed concepts of digestion, respiration, excretion.
- Students able to understand the physiology of nerve impulse conduction, Structure of muscles and theory of muscle contraction and its biochemistry.
- Gains knowledge about metabolism of protein, carbohydrate and lipids.
- Students understand the Structure and functions Of different endocrine glands, hormones and endocrine mechanisms.
- Gather knowledge on types of immunity, antigen-antibodies reaction and their properties, vaccines, diseases.

B.Sc. III Year

Course Code-59

Paper I : Genetics

- Develop idea about Mendelian, non-Mendelian inheritance, genetic disorder, gene mutations, linkage ,crossing over and sex determination.
- Knowledge of molecular organization and function of DNA and RNA , types of RNA and protein synthesis.
- Imparts the knowledge about Human Karyotype ,Human Genome Project,Multiple allele and inheritance of blood group, Sex linked and different Genetic diseases in human bings.
- Develop idea about Recombinant DNA technology, DNA fingerprinting and Gene therapy.

Paper II : Ecology and Applied Zoology

- Imparts knowledge to the student regarding various factors of ecology, types of ecosystem, population and community characteristics and dynamics.
- Gains knowledge in the areas of animal behavior, wildlife, biodiversity and conservation Biology.
- Understands concepts of aquaculture, sericulture, apiculture, lac culture along with pest management techniques.
- Students are able to Maintain the Aquarium.
- Study of types of pollution : Air, water, soil, thermal and noise pollution and their preventive measures.

Practical Outcomes

- Study of Museum specimens and slides related to invertebrate and vertebrate studied in theory.
- Understood the anatomy and physiology of invertebrate and vertebrate animals by dissection.
- Understood the mechanism of cell division (mitosis and meiosis).
- Understood the mechanism of developing embryo of chick and frog.
- Students are able to prepare slides to observe Giant chromosome.
- Obtained the knowledge about direct observation of fossils and evolutionary important specimen by which evolutionary relationship of animal groups.
- Skill development for the observation of blood cells and blood grouping and haemoglobin.
- Attained knowledge of qualitative analysis of protein, carbohydrate and lipids, excretory products, blood glucose.
- Understood the enzyme reaction and influence of temperature on enzyme action.

- Studied the histological slides of different visceral organs and endocrine glands.
- Understood the working, principle and applications of different instruments.
- Attained knowledge on the observation of preserved specimens of fresh water, marine and terrestrial fauna.
- Analyzed water quality like dissolved oxygen, hardness, pH, turbidity etc.
- Studied ecosystem, wild life and life cycle of economically important insects.

Course Outcomes

Subject : Foundation Course

Class : Class- BA / BCA/ B.Com/B.Sc I Year

Course Code – 69

Paper-I Hindi Bhasha Evam Naitik Mulya

- Development reading writing and communication skills.
- Develop Hindi reading and linguistics comprehension of students.
- Develop interest in literature story and poetry.
- Inculcate moral and human values within themselves.

Paper II English Language

- To enhance language through a task-based and learner – centric syllabus
- To carry out LSRW skills and to channelize energy through soft skills and Value orientation
- To help and make them proficient English to prosper in professional and personal lives and for global competency through the text reading ,grammar exercises and comprehension.

Paper III Entrepreneurial Development

- Understanding the stages of entrepreneurial process and the resources needed for the successful development of entrepreneurial ventures.
- Understand basic concepts in the area of entrepreneurship.

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

Course Code – 69

Paper-I 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 II English Language

- To learn the correct usage of English.
- To expose the students to a range of contexts where the language is used to meet a variety of real life communication needs.

- To equip with the practical, emotional, intellectual and creative aspects of language by integrating knowledge and skills.
- To focus on readability, teach-ability and testability - to think beyond the text.
- To enhance practice in objective and subjective writing through expansion of ideas, passages etc..
- To give them a practice of Subject –Verb agreement, enhance vocabulary and develop writing skills.

Paper III Environmental Studies

Upon successful completion of this course, students are expected to be able to

- Appreciate the role of solar energy, food chains & food webs in ecosystem.
- Understand the causes, impacts & remedies for environment pollution.
- Know the importance of family welfare programmes & human health.
- Understand about various types of energy resources.
- Admire / Significance of national park, century, poaching.
- Able to cherish the wild life Biodiversity of India.
- Know about various laws for wildlife, pollution & environment conservation.
- Know about management of various disasters like flood, earthquake, cyclones & landslides.
- Able to effectively use informational technology for protecting environment health.

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

Course Code – 69

Paper-I Naitik Mulya Aur Bhasha

- 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 II English Language

- To help the students to learn good English to prosper in professional and personal lives.
- To equip with the practical, emotional, intellectual and creative aspects of language by integrating knowledge and skills.
- To make them proficient in drafting C.V., writing E-mails Report etc for their job and other career prospects.
- To expose the students to a range of contexts where the language is used to meet a variety of real life communication needs.
- To develop intellectual, personal and professional abilities through effective communicative skills; ensuring high standard of behavioural attitude through literary subjects and shaping the students socially responsible citizens.

- Students should be proficient in oral communication and writing.

Paper III Basics of Computer & Information Technology

After studying this subject, student will be acquainted with –

- Understand the basic organization of Computer System.
 - Demonstrate input and Output devices.
 - Understand capacity and speed of Different Storage devices.
 - Develop basic understanding of various Operating Systems.
 - Work on text reading and Editing Software.
 - Power point enables them to create presentations.
 - Microsoft Excel helps them in preparing sheets with calculations, charts and recording data about all sorts of business processes.
 - Knowledge of emerging tools offered by the internet.
-

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 should develop critical faculties necessary in an academic environment and on the job in an increasingly complex interdependent world.

- Students should be familiar with representative literary and cultural texts within a significant number of historical, geographical, and cultural contexts.
- Students should 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

Course Code- A-02

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

Course Code- A-02

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 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 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

Course Code- A-02

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 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.
- 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 analyse 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

Course Code- A-02

Paper I Critical Theory

- The course will enable the students to review and recognise 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

MA in Hindi - 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

Course code A01

Paper I Prachin evam Madhyakaleen Kavya

- 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

Course Code- A01

Paper I Pracheen evam Madhyakaleen Kavya

- 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, Manuu 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 Paschatya 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

(Course Code-05)

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 grammar 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

(Course Code-05)

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 its 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.
- Master 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

Course Code -A-03

Paper I - Modern Indian Political Science

- Tracing the evolution of Indian political thought from ancient India to modern India

Paper II - Comparative Politics

- Tracing the evolution of Comparative Politics as a discipline and drawing a distinction between Comparative Politics and Comparative Government.

Paper III - International Politics & Contemporary Political Issues

- Explaining scope and subject matter of International Relations as an autonomous academic discipline.

Paper IV – Major ideas and issues in Public Administration

- Tracing the Challenges in the discipline of Public Administration like New Public Administration (NPA); Comparative Public Administration (CPA) and Development Administration.

Class – M.A. II Sem

Course Code -A-03

Paper I – Western Political Thought

- Providing an insight into the dominant features of Ancient and Modern Western Political Thought

Paper II – Politics Of South Asian Countries “Pakistan, Bangladesh, Sri Lanka And Nepal

- Encouraging a comprehensive, comparative understanding of specific world politics such as Pakistan, Bangladesh, Sri Lanka, Nepal

Paper III – International Organisation

- Classifying the different types of International Organisation

Paper IV — Research Methodology

- Explaining the nature, scope and evolution of Public Administration

Class – M.A. III Semester

Course Code -A-03

Paper I – Indian Government and Politics

- Outlining the basic values and philosophy of Indian Constitution as expressed in the Preamble.

Paper II – State Politics In India

- Studying the concepts of state politics of India

Paper III – International Law

- Creating awareness among students about international Law

Paper IV – Indian Foreign Policy

- Explaining scope and subject matter of International Relations as an autonomous academic discipline.

Class – M.A. IV Sem

Course Code -A-03

Paper I – Federalism In India And Local Self Government

- Evaluating the structures of government at the National level and State level.

Paper II – Government and Politics of Madhya Pradesh

- Analysing the various dimensions of the working of the Madhya Pradesh Government

Paper III – Advance Political Theory

- Explaining nature and scope of Political Science

Paper IV – Diplomacy and Human Rights

- Studying the role of Diplomacy, Propaganda and human Right .

(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.

Course Code-C01

Paper-I Management Concept

- Students are able to know the leadership styles.
- Students are able to know to evaluate social responsibility and ethical issues of management.
- They can practice the process of managements for functions like planning, organization, 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 Advance 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

Course Code-C01

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 on the organizational and group behaviour 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 helps in knowing the functional areas of management.
- Learners will be able to select the specialized field as professional.

M.Com III Sem

Course Code-C01

Paper-I Managerial Economic

- 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 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 to write the managerial report.

M.Com IV Sem

Course Code-C01

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.
- Student will be able to state the use of various deductions to reduce the taxable income.

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.

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 behaviour 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 practical competencies in international marketing.
- It develops the understanding of the challenges of business environment.

(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

Course code - Sc 01

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 analyse and interpret data from bioinstruments.

Class : M.Sc. (Biotechnology) II Sem

Course code - Sc 01

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

Course code – C042

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 softwares 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 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

Course code - C042

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 Immunodiagnosis

- 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 pharmaceuticals 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

Course code – Sc03

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

Course code – Sc03

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, metalloboranes & metallocarboranes compounds with 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 formulae in Chemistry.
- Applications of Computer and Internet in Chemistry.

M.Sc. (Chemistry) III Sem

Course code –C044

Paper I Applications of Spectroscopy I:

Students will be able to-

- Understand the electronic spectra of d^1 to d^9 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

Course code –C044

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 Bio -chemistry:

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 environmental analytical chemistry.
- Understand the basics of clinical chemistry and drug analysis.
- Learn basic techniques of chemical analysis used 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 Ist order reaction , energy of activation and factors- effecting 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 and practical 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

Course Code – Sco5

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 In 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

Course Code – Sco5

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/DDI 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

Course Code – Sco5

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

Course Code – Sco5

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& II Sem

Course Code Sc 04

Paper I: Abstract Algebra

The students will be able to

- Define solvable , nilpotent groups and modules.
- Find extension fields and Roots of polynomials algebraic and trascendental functions.
- Define finite field and their properties.
- Define the concept of linear transformation.

Paper II: Real Analysis / Lebesgue measure and integration

The students will be able to

- Define Riemann Stieltjes integrals , its existence and properties.
- Understand concept of convergence of sequence and series.
- Analyze measurable sets and Lebesque measure.
- Understand the concept of L^p and dual spaces.

Paper III: Topology I/II

- 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.
- Define properties of countability ,compactness ,seperability ,connectedness.

Paper IV Complex Analysis I/II

- Solve the problems of complex integration.
- Study Residue theorem , Cauchy Goursat Theorem , Morera's theorem.
- Define Analytic Continuation , harmonic functions ,canonical products .
- Uses of Schwartz reflection principle ,Bloch Theorem ,Little Picard theorem.

Paper V Differential and integral Equations- I/ II

- To solve linear differential equation of second order solution of Voltera and Fredholm integral equations.
- Understand the concept of existence and uniqueness theorem of differential equations ,iterated kernel.
- 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 & IV Sem

Course Code C050

Paper I Functional analysis I/II

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.
- Study Zorn's lemma , Hahn Banach theorem , Baire's category theorem .
- Define convergence of sequence of operators and functional, study open mapping theorem , closed graph theorem , contraction theorem.

Paper II : Advanced Graph Theory I/II

The students will be able to

- Define Graph ,Isomorphsim of graph, sub graph, walks , path , connected graph , Hamiltonian paths and circuits.
- Define trees , properties of trees ,spanning trees , cut sets , planar graph.
- 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: Special Functions I/II

The students will be able to

- Define Beta Gamma Functions , Factorial function , derive Legendre duplication formula , gauss multiplication theorem

- Define hyper geometric function , generalized hyper geometric function , confluent hyper geometric function and their properties.
- Study Bessel's function ,hermits polynomials , their generating functions ,Rodrigues Formula .
- Study Laguerre polynomials and Jacobi polynomials .

Paper IV: Operations Research I/II

The students will be able to

- Understand operations Research its scope , characteristics of operations research.
- Understand the concept of Linear programming, feasible solution , obtain solution of linear programming problem using simplex method , big M method Two phase method.
- 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 I/ II

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.
- 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

Course Code-Sc02

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 archea; 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; gene duplication 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 III : 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 principals in biology

Class: M.Sc. II Sem

Course Code-Sc02

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, mechanoreception, 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

Course Code- C056

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

Course Code- C056

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: 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 IV: Pisci Culture and Economic Importance of Fishes (Ichthyology)

- To learn Inland fisheries resources ,Fresh water fish culture and management techniques
- To make Basic experimental designs useful in aquaculture and Population dynamics of fish and stock assessment models.
- Understand the process transportation and marketing of fishes.
- Gather information about types of Breeding and uses of natural & synthetic hormones in breeding.
- Types of Hatchery , Nutritional requirement of carps and supplementary feeding.
- Knowing about economic importance of fishes, fish spoilage & preservation methods.
- To learn different types of fish cultures, Integrated fish farming with agriculture and live stock. Culture of fresh water mussel for pearls.

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.