BSc. AGRICULTURE-PROGRAM AND COURSE OUTCOMES- 2021-2022

Programme Outcome:

PO.1: To impart firsthand knowledge on agriculture and allied sciences

PO.2: To impart in-depth practical knowledge in agriculture and allied sciences

PO.3: To provide extensive knowledge on agri-allied sectors like livestock, Poultry

PO.4: To disseminate different technologies through various extension activities

PO.5: To identify and overcome the problems encountered in day-to-day agriculture

PO.6: To provide knowledge on commercial agricultural production practices

PO.7: To make students competitive in pursuing higher studies

Course Outcome

SEMESTER I		
Course Code	**Course Name**	**Course Outcomes**
AG-101	**Fundamentals of Agronomy**	**CO.1:** In modern terminology however the word has come to mean and denote a branch of science dealing with all aspects of crop cultivation and production. **CO.2:** A study of agronomy often involves a summoning of resources from related disciplines such as Botany, Soil Science, Irrigation, and plant protection, Plant Genetics and Breeding, Agro-meteorology etc. **CO.3:** In a more fundamental sense it can be categorized as an applied Science, the object of which is crop cultivation and management for the purpose of producing food for humans, feed for animals as well as raw materials for the industry. **CO.4:** Knowledge about Indian Agriculture and importance, present status, scope and future prospect. **CO.5:** Cropping seasons of India. Soil formation, classification, physical, chemical properties. Identification of important crops and crop seeds.
AG-102	**Fundamentals of Genetics**	**CO.1:** Comprehensive, detailed understanding of the chemical basis of heredity especially in crop plants to improve and develop the new varieties of plants. **CO.2:** Understanding of how genetic concepts affect broad societal issues including health and disease, food and natural resources, environmental sustainability, etc. **CO.3:** The knowledge required to to design, execute, and analyze the results of genetic experimentation in plant systems.

		CO.4: Insight into the mathematical, statistical, and computational basis of genetic analyses that use genome-scale data sets in systems biology settings. **CO.5:** Understanding the role of genetic technologies in industries related to biotechnology, pharmaceuticals, energy, and other fields.
AG-103	**Fundamentals of Soil Science**	**CO.1**: To be able about physical and chemical properties of soil and their effect on plant's health. **CO.2:** To aware the students about causes, effects and remedies to prevention and mitigation of soil pollution. **CO.3:** Knowledge about soil forming rocks and minerals, their weathering and soil forming processes and climatic factors affect them.
AG-104	**Fundamentals of Horticulture**	**CO.1:** Students will be able to identify plant vegetative structure **CO.2:** Students will understand basic principles, processes and plant propagation methods. **CO.3**: Students will understand how to propagate plant, manage and harvest a variety of plant. **CO.4**: students will learn how horticulture relates to the economy and environments, both currently and in the future.
AG-105	**Rural Sociology & Educational Psychology**	**CO.1:** Understand concept of rural sociology, its importance in agricultural extension, characteristics of Indian rural society. **CO.2:** Understand social groups, social stratification, culture, social values, social control and attitudes, leadership and training. **CO.3:** Understand concept of educational psychology, intelligence, personality, perceptions, emotions, frustration, motivation, teaching and learning **CO.4:** Acquaint with characteristics of rural society, village institutions and social organizations. Select lay leaders and train them. **CO.5:** Assess personality types, leadership types and emotions of human beings Create a training situation under village conditions.
AG-106	**Introduction to Forestry**	**CO.1:** Students will understand recognize various harvesting, transportation, and processing systems used in the management of forest resources and production of forest products **CO.2:** Students will understand develop and evaluate management plans with multiple objectives and constraints. **CO.3:** Students will learn how to develop and apply silvicultural prescriptions appropriate to management objectives.
AG-107	**Introductory**	**CO.1:** Animal management (nutrition, reproduction, health, behavior,

	Animal Husbandry	housing) **CO.2:** Animal husbandry & veterinary practices and tools. **CO.3:** Characteristics of species/breeds of domestic animals. **CO.4:** Laws and regulations governing animal care and use. **CO.5:** Animal biotechnology.
AG-108	**Comprehensive and Communication Skills**	**CO.1:** Students will analyze basic communication skills. **CO.2:** Students will analyze intercultural communication skills. **CO.3:** Students will analyze interpersonal communication skills. **CO.4:** Students will analyze public speaking communication skills.
AG-109	**Agricultural Heritage**	**CO.1**: Ancient Agricultural Practices & Its relevant to modern agriculture practices. **CO.2:** Traditional Technical Knowledge. **CO.3:** Our Journey (Developments) in Agriculture and Vision for the Future.
AG-110	**Introductory Biology**	**CO.1:** The student will be able to read, understand, and critically interpret the primary biological literature in his/her area of interest. **CO.2**: The student will be able to design, conduct, analyze, and communicate (in writing and orally) biological research. **CO.3:** The student will recognize and be able to apply basic ethical principles to basic and applied biological/biomedical practice and will understand the role of biological/biomedical science, scientists, and practitioners in society. **CO.4**: The student will be able to explain the process of organic evolution and its underlying principles and mechanisms. **CO.5:** The student will be able to explain the fundamental biological processes of metabolism, homeostasis, reproduction, development, and genetics, and the relationships between form and function of biological structures at the molecular, cellular, population, and ecosystem levels of the biological hierarchy. **CO.6:** The student will be able to explain the importance of biodiversity at the genetic, community, and global scales.
AG-111	**Elementary Mathematics**	**CO.1:** Demonstrate competency in the areas that comprise the core of the mathematics major **CO.2**: Demonstrate the ability to understand and write mathematical proofs **CO.3**: Be able to use appropriate technologies to solve mathematical problems

		CO.4: Be able to construct appropriate mathematical models to solve a variety of practical problems **CO.5**: Obtain a full-time position in a related field or placement
AG-112	**NSS/NCC/Physical Education and Yoga**	**CO.1:** Student will learn different yoga practices to get excellence in physical and mental health value. **CO.2**: Students will do social work to the society like "Swach bharat", "Blood donation", Clean India campaign. **CO.3:**.Student will play different games to maintain physical health.

SEMESTER II		
Course Code	**Course Name**	**Course Outcomes**
AG-201	**Fundamentals of Crop Physiology**	**CO.1:** Role of crop physiology in crop health. **CO.2:** Identification of deficiency symptoms of nutrients. **CO.3:** To understand the metabolic and synthetic pathway of biomolecules. **CO.4:** To know the difference between C3, C4 and CAM plant. **CO.5:** Importance of growth Harmon in Agriculture.
AG-202	**Fundamentals of Plant Biochemistry and Biotechnology**	**CO.1:** Role of cell organelles and their functions **CO.2:** Functions of biomolecules and their utility in cell **CO.3:** Identify the deficiency symptoms of biomolecules **CO.4:** Synthesis pathways of biomolecules and regulations **CO.5:** Identification of biomolecules in given sample **CO.6:** Application of plant tissue culture in crop improvement **CO.7:** Tackled the problems in convention breeding **CO.8:** Plant tissue culture is a area of entrepreneurship
AG-203	**Fundamentals of Entomology-I**	**CO .1:** To be able to identify morphological characteristics, feeding habit and habitat of agriculturally important insect-pest. **CO.2:** To be able to apply concepts and analytical approaches in evolutionary biology, genetics and other areas of insect biology of the student's choice. **CO .3:** To be able to categorize insects based on basic ecological,

		behavioural, morphological, physiological, or developmental attributes. **CO.4:** To be able to examine insects deeply within a biological level of analysis and make strategies for successful pest management strategy. **CO.5:** To be able to understand about different families and orders of class Insecta which cause economic losses for human beings
AG-204	**Fundamentals of Agricultural Economics**	**CO-1:** Identify elements of business success in agriculture and food-processing as well as elements that determine economic role of agriculture in national economy. **CO-2:** Propose methods of micro- and macroeconomic decision making in agriculture in different agro-ecological and agro-economic circumstances. **CO.3**: Describe and explain models of production, supply and demand of agricultural and food products on national and international markets **CO.4:** Undrer stand the concepts of consumer choice and how it affect the farm / ranch level agriculture firm. **CO.5:** understand the macroeconomics aspects of the economy as they affect the agricultural sector. **CO.6:** apply economics principles to understand the conduct and performance of the agricultural industry.
AG-205	**Principles of Organic Farming**	**CO.1:** Initiative from Government for organic produce. **CO.2:** Role of NGOs in producing organic products. **CO.3:** Selection of crops and varieties for organic produce **CO.4:** Certification of organic produce.
AG-206	**Fundamentals of Plant Pathology**	**CO.1:** Student will acquaint about concepts of plant pathogens, major disease causing organisms and their etiology **CO.2:** To provide specific knowledge about host pathogen interactions. **CO.3:** Recognition of plant disease is the first step in doing something about them. **CO.4:** To give specific knowledge about environment and disease development.
AG-207	**Production Technology for Vegetables and**	**CO.1:** Students will understand practical knowledge on specialized production techniques of vegetables and spices.

	Spices	**CO.2:** Students understand will Importance of vegetables & spices in human nutrition improved and national economy. **CO.3:** Students will knowledge about quality requirement and production and techniques **CO.4:** Managing skill for solving field problems.
AG-208	**Fundamentals of Agricultural Extension Education**	**CO.1:** Education; Extension Programme planning Meaning, Process, Principles and Steps in Programme Development. **CO.2:** Extension systems in India: Extension efforts in Pre-independence era. **CO.3:** New trends in agriculture extension: privatization extension. **CO.4:** Monitoring and evaluation – concept and definition, monitoring, and evaluation of Extension programmes, Transfer of Technology- Concept and models.
AG-209	**Food processing and Safety issues**	**CO1**: Preservation of food and processing of fruits and vegetables which will enable students to start agro based processing units. **CO2:** Students will get to know about different processing techniques of agricultural products such as parboiling, oil extraction etc.
AG-210	**Human Value and Ethics**	**CO.1:** Understand the significance of value inputs in a classroom and start applying them in their life and profession. **CO.2:** Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc. **CO.3:** Understand the value of harmonious relationship based on trust and respect in their life and profession. **CO.4:** Understand the role of a human being in ensuring harmony in society and nature. **CO.5:** Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

Learning Outcomes of B.com 2nd year

#COST ACCOUNTS

1:Identify the different techniques of inventory control

2:Prepare the store ledger account under the different methods of pricing material issues

3:Compare the different methods for calculating labour turnover

4:List the different time rate systems for wage payment

5:Illustrate how factory overheads are absorbed under different methods

#INCOME TAX

1:To familiar with the computation of capital gain

2:- To familiar with the computation of income from other sources

3:- To know about the aggregation of income and deduction u/s 80C to 80U

4- To know about the assessment of individuals

5- To aware about the income tax authorities and their powers and duties.

#PUBLIC FINANCE

1:Demonstrate a good understanding of the fiscal framework for taxing and spending and of fiscal policy principles

2: Analyse critically tax reforms and policy choices in developed and developing countries

3: Research, and examine key issues and challenges in fiscal policy in a particular development or country context.

4: Present in depth written analysis of key issues and challenges in fiscal policy in a particular development or country context.

5:Fiscal federalism and decentralisation including tax allocation and revenue sharing between governments

#PRINCIPLES OF MANAGEMENT

1:Evaluate the global context for taking managerial actions of planning, organizing and controlling.

2:Assess global situation, including opportunities and threats that will impact management of an organization.

3:Integrate management principles into management practices.

4:Assess managerial practices and choices relative to ethical principles and standards.

5:Specify how the managerial tasks of planning, organizing, and controlling can be executed in a variety of circumstances

#MONEY &FINANCI FINANCIAL SYSTEM

1:Help students to understand the specific role of financial markets and intermediaries in the financial system

2:Introduce students to the functions and operations of modern financial intermediaries and the consequences of these operations to the wider economy.

3:Students will be able to link the theory to real world problems and evaluate the events associated with financial crises experienced in recent years

4:Students will be able to use simple t-accounts to explain the basic operations of financial intermediaries

5:Students will be able to appreciate financial intermediaries¿ vulnerability to default and the role of regulatory framework

#FINANCIAL ACCOUNTING

1:List major assumptions and principles in financial reporting.

2:Explain the accounting information system and demonstrate how it is used to record and report common business transactions.

3:Prepare a classified balance sheet, calculate and compare liquidity and solvency ratios using financial reports of public companies.

4:Prepare an income statement, calculate and compare profitability and efficiency ratios using financial reports of public companies.

5:Illustrate how to record and report cash, receivables, long-lived assets, liabilities, and stockholders' equity items and identify related potential unethical accounting practices.

#STATISTICS

1:Describe a data set including both categorical and quantitative variables to support or refute a statement,

2:Apply laws of probability to concrete problems,

3:Perform statistical inference in several circumstances and interpret the results in an applied context,

4:Use mathematical tools, including calculus and linear algebra, to study probability and mathematical statistics and in the description and development of statistical procedures,

5:Use a statistical software package for computations with data , Communicate concepts in probability and statistics using both technical and non-technical language.

Learning Outcomes of B.com 3rd year

#PRINCIPLES OF MARKETING

1:Identify evidence of marketing in everyday life

2:Demonstrate a clear understanding of the marketing concept

3:Describe the role of marketing in building and managing customer relationships

4:Describe how different types of organizations, such as nonprofits, consumer product (B2C) firms and business-to-business (B2B) organizations, use marketing

5:Explain how marketing creates value for the consumer, the company, and society

#INTERNATIONAL MARKETING

1:The student should be able to segment markets and develop the profile of a target international market

2:The student should be able to develop product strategies and discuss how services and nonprofit "products" differ from traditional ones

3:The student should be able to develop distribution, promotion, and international pricing strategies

4The student should be able to explain the importance of Internet marketing, customer relationship marketing, and one-to-one marketing

5:The factors involved in consumer decision making in international contest.

#CORPORATE ACCOUNTING

1:To understand the basic concepts corporate accounting,

2:To understand the basic concepts equity share, preference share and debenture,

3:To understand the basic concepts and able to interpret goodwill valuation,

4:To understand the basic concepts and able to interpret amalgamation,

5:To understand the basic concepts and able to interpret reconstruction,

#AUDITING

1:Recognize what audit questions call for an impact audit with the objective of determining the outcome results attributable to a program or initiative

2:Explain how impact audits with a focus on outcome results are similar to and different from traditional performance audits

3:Describe the basic methodology for conducting impact audits

4:Define and apply the finding elements for impact audits

5:Cite the items of background information about the program or initiative under audit that needs to be collected in conducting an impact audit

#COMPANY LAW

1. Explain the key aspects of the body of legal rules that regulate companies and contemporary developments in relation to this body of rules.

2. Describe the theoretical assumptions that underlie the way companies are regulated in Australia and the way changes to those assumptions might result in law reform.

3. Identify and articulate complex legal issues that arise in business practice and demonstrate advanced analysis of statutory provisions and case-law; sophisticated legal reasoning; and well-developed skills in creative thinking to identify appropriate legal and practical responses to those issues

4. Interpret and critically analyse statutory provisions, including alternatives to the existing provisions.

5. Critically assess legal and policy analysis in academic journals and other secondary sources regarding the legal rules that regulate corporations

#INFORMATION TECHNOLOGY

1:Design and develop software solutions for contemporary business environments by employing appropriate problem solving strategies.

2:Configure and administer database servers to support contemporary business environments.

3:Comprehend and resolve common desktop and network issues.

4:Analyze common business functions and identify, design, and develop appropriate information technology solutions (in web, desktop, network, and/or database applications)

5:Learn future technologies through acquired foundational skills and knowledge and employ them in new business environments

B. Com. (Learning Outcomes)

B.com 1st Year

- **Business Organization**

The students should be able to:

1. Define the concept of business organization and list down forms of organization.
2. Understand the role of sole proprietorship decision-making at the level of the firm.
3. Understand the concept of Partnership firm and joint stock concerns.
4. Develop the understanding of the concepts of financial institutions like IFCI, SFC, ICICI, IDBI.
5. Understand market structure and apply it to different industries to understand the four P's of marketing structure of these industries.

- **Financial Accounting**

The students should be able to:

1. Understand and perceive the development of accounting and purpose of maintaining records.
2. Prepare financial statements of sole proprietor and explain the meaning of certain key terms.
3. Compute depreciation according to different methods of providing depreciation.
4. Explain the meaning and objective of preparing a Bank Reconciliation Statement.
5. Make appropriate accounting entries under Hire purchase and Installment payment system.

- **Business Communication**

The students should be able to:

1. Develop their ability to write and speak efficiently in the workplace.
2. Develop effective interpersonal communication skills.
3. Understand and utilize constructive negotiation and conflict management skills.
4. Use communication technology appropriately and effectively.

5. Understand how to gather and organize information for a report.presentation and style.

- **Business Statistics**

The students should be able to:

1. Understand the basic concept of statistics and its implementation in various business situations.
2. Evaluate information, both quantitative and qualitative, through sets and Venn diagrams.
3. Present statistical data through diagrams and graphs.
4. Apply and relate decision making through statistical tools and techniques.
5. Recognize problems that linear programming can handle and find optimal solutions subject to some constraints.

.#COMPUTERIZED ACCOUNTING

1:Enter entry-level training positions in companies where accounting departments may be specialized or all inclusive;

2:Apply select computerized accounting software to analyze and record transactions including general accounting transactions;

3:Demonstrate the ability to process accounts payable, accounts receivable, inventory control, and/or payroll;

4:Demonstrate an understanding of the federal tax structure as its applies to both individuals and corporations;

5:Communicate effectively in a professional accounting workplace environment;

- **Business Economics**

The students should be able to:

1. Conceptualize the scope of economics and business economics and become familiar with objectives of firm.
2. Analyze market demand and the factors governing it.
3. Identify various methods of demand analysis and demand forecasting.
4. Analyze cost and its concepts and theirclassification on different basis.
5. Decide about different market structures and the pricing decisions according to them.

Business Management

1:Select and use appropriate resources to collect business data that will ultimately translate into information for decision-making.

2:Use the marketing information management concepts, systems, and tools needed to obtain, evaluate, and disseminate information for use in making marketing decisions.

3:Conduct research to identify and analyze client needs and desires and make marketing recommendations regarding business decisions and use appropriate leadership skills and styles to maximize employee productivity.

4:Practice critical and creative thinking to improve the decision making

process.

5:Conduct research to identify new business trends and customer needs.

BBA PROGRAM-PROGRAM AND COURSE OUTCOMES- 2021-2023

No.	Program Outcome
PO1	Upon completion of the BBA program, the individual must demonstrate maturity, professionalism and team working skills.
PO2	Upon completion of the BBA program the students will have general idea of operations in business.
PO3	Upon completion of the BBA program, the individual will have specialized skills to deal with area specific issues of concern.
PO4	Upon completion of the BBA program, the individual will be able to apply technological know how for business advancements.
PO5	Upon completion of the BBA program, the individual will be capable of analyzing, investigating and solving critical business issues.

Program Educational Objectives

- To develop students professionally to handle business issues.
- To develop students to be a better team worker.
- To bridge the gap between theoretical and practical knowledge of the students byadopting innovative teaching pedagogy.
- To develop socially, ethically responsible business leaders.
- To sharpen soft and hard skills among the students.
- To promote entrepreneurial skills among students.

SEMESTER I

S. No	Course code	Course Type	Course Name	Course Outcomes
1	101	CC	Business Organization	CO1: Explain the management process (planning, organizing, directing, and controlling). CO2: Compare different organizational structures. CO3: Recognize ethical issues and formulate ethical and socially responsible responses. CO4: Use foundational business principles to evaluate and solve problems for business management. CO5: Integrate knowledge and skills in the program of study.
2	102	CC	Business Mathematics	CO1: Apply the knowledge of Mathematics (Algebra, Matrices, Calculus, Optimization) in solving business problems. CO2: Demonstrate mathematical skills required in mathematically intensive areas in Commerce such as Finance and Economics. CO3: Understand the use of equations, formulae, and mathematical expressions and relationships in a variety of contexts. CO4: Demonstrate critical thinking, modelling, and problem-solving skills in a variety of contexts. CO5: Understand the important role Mathematics plays in all facets of the business world.
3	103	CC	Principles of Economics	CO1: Understand concept of equilibrium: stable and unstable, static, comparative static, dynamic. CO2: Production and cost: law of variable proportions and returns to scale, isoquants, Isocost, least cost combination, expansion path; cost of TC, AC, MC and their interrelation; long run ac curves, economics and dis-economies of scale. CO3: Consumer behaviour: cardinal approach indifference curves-assumptions CO4: Factor pricing: wage determination under perfect

				competition, monopsony and bilateral monopoly, differential, economic and quasi rent; risk and uncertainty bearing theories of profit.
4	104	CC	Basic Accounting and Book Keeping	CO1: Get familiarized with various costs and the effective utilization of the resources to reduce cost. This will be beneficial for them with they get hired for a job of an accountant. CO2: Gain an insight on Accounting Policies, Principles and Standards so, as to assure the consistency and transparency in accounting. CO3: Develop the ability to use the fundamental Accounting Equation to analyse the effect of business transactions on an organization's accounting records and Financial Statements.
5	105	CC	Business Law	CO1: Understand the concept of Law; will throw light on the formation of Indian Contract Act and essentials of a Valid Contract. CO2: Understand the concept, Essential Elements, importance of adequacy of consideration and to identify the persons who are not competent to enter into Contracts. CO3: Understand the concept of Conditions and Warranties under the Sale of Goods Act. CO4: Understand about the nature of the Company, its Characteristics and various types of Company.
6	106	CC	Fundamentals of Management	CO1: Apply the fundamental knowledge and exposure to concepts theories and practices in the field of Management. CO2: Understand the importance of motivation in building a strong and competitive Business Organization. CO3: Understand the different Determinants of Individual Behaviour and how these can be used for the benefit of the Organization. CO4: Understand the work techniques of Organizations to ensure success and timely completion of tasks.
7	107	CC	Business Ethics	CO1: Develop a background to ethics as a prelude to learn the skills of ethical decision-making and, then, to apply those skills to the real and current challenges of the information professions. CO2: Demonstrate the application of professional value and judgment through an ethical framework that is in the best interests of society and the profession, in compliance with relevant professional codes, laws and regulations. CO3: Apply relevant knowledge, skills and exercise professional judgment in carrying out the role of the accountant relating to Governance, Internal Control, Compliance and the management of risk within an organization, in the context of an overall ethical framework. CO4: Define Governance and explain its function in the effective Management and control of organizations and of the resources for which they are accountable.

SEMESTER II

S. No	Course code	Course Type	Course Name	Course Outcomes

1	201	CC	Business Environment	CO1: Familiarize with the nature of Business Environment and its components. CO2**:** Able to demonstrate and develop conceptual framework of Business Environment and generate interest in business. CO3: Analyse the key decisions that the firms make in relation to the choice of markets and entry strategies. CO4: Apply an understanding of the different modes of engagement with markets and explore the inter contentedness between these and the economic, legal, governmental, political, regulatory, cultural and other environments in which expanding companies operate.
2	202	CC	Business Communication	CO1: Demonstrate knowledge of personal beliefs and values and a commitment to continuing personal reflection and reassessment. CO2:Assert strengthened personal character and further, an enhanced ethical sense. CO3:Use persuasive and professional language in speech and writing in a better manner. CO4: Utilize constructive negotiation and conflict management skills.
2	203	CC	Indian Economy	CO1: Develop an understanding of problems and solutions in Indian Economy CO2: Explain the problems of Poverty, Unemployment and Inflation in India CO3: Outline the importance of Agriculture and Industry in India. CO4: Interpret Monetary and Fiscal Policies. CO5: Explain Balance of Payments & the Global Markets.
3	204	CC	Principles of Accounting	CO1: Develop an understanding of different types of Accounting i.e. Management, Cost and Financial Accounting. CO2: Analyze and Interpret the Financial data in order to help Management to take decisions, make Policies, Strategies and control the Organization effectively. CO3: Develop knowledge and understanding of how to prepare and process basic Cost and Quantitative information. CO4: Support management in Planning and decision-making in a variety of Business contexts. CO5: Create and apply Standards and Budgets for Planning and Controlling purposes.
4	205	CC	Organizational Behaviour	CO1: Understand the different Determinants of Individual Behavior and how these can be used for the benefit of the Organization. CO2: Understand the work techniques of Organizations to ensure success and timely completion of tasks. CO3: Apply the fundamental knowledge and exposure to concepts theories and practices in the field of Management CO4: Understand the importance of Leaders and Leadership in the context of Business Organizations. CO4: Understand the importance of motivation in building a strong and competitive Business Organization..
5	206	CC	Business Statistics	CO1: Students will be able use summary statistics to describe data. CO2: Student would be able to use probability theory and probability distributions in decision making. CO3: Student would be able to perform basic statistical analysis using the concepts of correlation and regression. CO4: Student would understand the sampling theory and sampling distributions

SHRI LAL BAHADUR SHASHTRI DEGREE COLLEGE GONDA

BACHELOR OF COMPUTER APPLICATIONS
B.C.A.

Program Outcomes Program Specific OutcomesCourse Outcomes

Bachelor of Computer Applications

Program Outcomes (PO)

PO1: Computational information: Appreciate and apply mathematical organization, computing and domain information for the conceptualization of computing models from clear harms.

PO2: Difficulty Analysis: Talent to classify, significantly evaluate and prepare complex computing problems using fundamentals of computer knowledge and request domains.

PO3: Drawing / Improvement of Solutions: Facility to transform composite production scenarios and present-day issues into problems, explore, recognize and propose included solutions using rising technologies.

PO4: Accomplish Investigations of Compound Computing Troubles: Ability to invent and ways experiments interpret data and present well up to date conclusions.

PO5: Current Implement Procedure: Skill to select recent computing tools, skills and techniques compulsory for original software solutions

PO6: Proficient Principles: Facility to apply and give expert principles and cyber systems in a universal monetary situation.

PO7: Ultimate Education: Identify the need for and enlarge the ability to appoint in permanent education as a Computing qualified.

PO8: Mission Administration: Skill to recognize administration and computing philosophy with computing acquaintance to supervise projects in multidisciplinary environments.

PO9: Announcement Usefulness: Converse successfully with the computing society as well as culture by being able to know successful documentations and presentations.

PO10: Public & Ecological Alarm: Ability to make out cost-effective, green, public, fitness, authorized, moral issues concerned in the use of processor expertise and other significant tasks applicable to qualified observers.

PO11: Personality & Group Job: Ability to job as a part or manager in various teams in multidisciplinary situations.

PO12: Modernization and Private Enterprise: Classify opportunities, private enterprise dream and use of original thoughts to build worth and means for the betterment of the human being and the world.

Program Specific Outcome (PSO)

PSO1: An ability to enhance the application of knowledge of theory subjects in diverse fields.

PSO2: Develop language proficiency to handle corporate communication demands.

PSO3: Preparing students in various disciplines of technologies such as computer applications, computer networking, software engineering, JAVA, database concepts and programming.

PSO4: In order to enhance programming skills of the young IT professionals, the concept of project development in using the technologies learnt during the semester has been introduced.

PSO5: To enhance knowledge in robotics, provide experimental hardware equipment for teaching the basics of robotics, robot dynamics and control, and robot system design and application.

PSO6: To enhance logical ability and programming concepts by implementing programming lab.

PSO7: Preparing students for future aspects by building and improving their creativity, social awareness, and general knowledge.

PSO8: Encouraging students to convert their start-up idea to reality by implementing.

PSO9: Ability to understand the changes or future trends in the field of computer application.

PSO10: Ability to identify, formulate, analyse and solve problems of programming using different languages.

Course Outcome (CO)

BCA-S101 Computer Fundamental and office automation

CO1: They can classify the computers in different categories based on their capabilities.

CO2: They will be able to discuss an understanding of the importance of algorithms in the development of computer applications.

CO3: They may identify computer hardware and peripheral devices.

CO4: They will be able to discuss the evolution of computers in different generations.

CO5: They will be able to manage the files.

BCA-S102 Programming, Principle& Algorithm

CO-1: They will be able to understand basic terms used in programming.

C0-2: They will be able to design an algorithmic solution for a given problem.

CO3: They will be able to write a C programme for a given algorithm.

CO4: They will be able to use different data structures and update basic data files.

CO5: They will be able to trace out the error and resolve it using debugging and develop logical and analytical thinking.

BCA-S103 Principle of Management

CO1: They will be able to identify various approaches in management in order to solve a problem.

CO2: To understand the roles and responsibilities associated with managerial functions.

CO3: They will be able to learn the strategies that can motivate our employee to give his best.

CO4: They can identify the key contributors and their contributions in the development of management decisions.

CO5: They will be able to know what a manager does and how they are integral to planning, organizing, leading, and controlling a modern organization.

BCA-S104 Business Communication

CO1: They will be able to identify key principles in business communication.

CO2: They can discuss different processes and considerations involved in writing in business.

CO3: They can create various types of business reports.

CO4: They will be able to create a presentation using slides.

CO5: They will recruit and select new employees.

BCA-S105 Mathematics I

CO1: Students will be able to demonstrate competency in the areas that comprise the core of the mathematics major.

CO2: They will be able to solve applied problems with the application of differentiation and integration.

CO3: They will be able to use appropriate technologies to solve mathematical problems.

CO4: They will be able to apply matrices in different industry problems.

CO5: They will be able to generate mathematical models to solve different types of practical problems.

BCA-S101P Computer Fundamentals and Office Automation Lab

CO1: Students will learn about the four basic functions of the computer.

CO2: Students were made familiar with the need of computers in our daily lives.

CO3: Students will be made familiar with application software's.

CO4: With the help of labs, students became familiar with computers, and the various technologies related to them.

BCA-S102P Programming Principles and Algorithms Lab

CO1: It helped us to know that to code is like learning how to read and write in a different medium, thus, enabling us with creative and expressive power.

CO2: Students will be made familiar with logic building and systematic programming.

CO3: Students will be made aware of and apply appropriate coding skills for different requirements or scenarios.

CO4: With the help of the lab, students will be able to practice and learn planning by thinking through the steps necessary to achieve our end goal.

CO5: It will help students to gain an ability to move past debugging, frustrations andcontinue to find solutions to help complete their projects.

BCA-S106T: C Programming (C Prog.)

CO1: Understand the difference between object oriented programming and procedural oriented language and data types in C.

CO2: Program using C features such as composition of objects, Operator overloading, inheritance, Polymorphism etc.

CO3: Simulate the problem in the subjects like Operating system, Computer networks and real world problems

BCA-S107: Digital Electronics & Computer Organization (DECO)

CO1: Have a thorough understanding of the fundamental concepts.

CO2: Techniques used in digital electronics.

CO3: To understand and examine the structure of various number systems and its application in digital design.

BCA-S108: Organizational Behaviour (OB)

CO1: To analyze and compare different models used to explain individual behaviour related to motivation and rewards.

CO2: To identify the processes used in developing communication and resolving conflicts.

CO3: To explain group dynamics and demonstrate skills required for working in groups (team building).

BCA-S109: Financial Accounting & Management (FAM)

CO1: Apply oral and written communication skills.

CO2: Describe and explain the ethical and social responsibilities of accountants in ensuring the integrity of financial information.

CO3: Develop an understanding of internal control issues and the effects of the regulatory environment on financial reporting

CO4: Statements clearly describing the meaningful, observable and measurable knowledge, skills and/or dispositions students will learn in this course.

BCA-S110: Mathematics II (MATHS)

CO1: Reason mathematically about basic discrete structures such as numbers, sets, used in computer science

CO2: Familiar with Determinant and Matrices.

CO3: Formulate Limit, Continuity and Differentiability.

CO4: Familiar with propositional calculus.

CO5: Master the basic set theory.

BCA-S106P: Computer Laboratory and Practical Work of C Programming (P)

CO1: To impart adequate knowledge on the need of programming languages and problem solving techniques.

CO2: To develop an in-depth understanding of functional and logical concepts of C

Programming.

CO3: Acquire logical thinking, Implement the algorithms and analyze their complexity, Identify the correct and efficient ways of solving problems

CO4: Implement real time applications using the power of C language features.

BCA-S201T Object oriented programming with C++

CO1: Understand the difference between the top-down and bottom-up approach.

CO2: Describe the object-oriented programming approach in connection with C++.

CO3: Apply the concepts of object-oriented programming.

CO4: Illustrate the process of data file manipulations using C++.

CO5: Apply virtual and pure virtual function & complex programming situations.

CO6: Ability to design and develop Object Oriented systems

BCA-S202T Data Structure Using C & C++

CO1: Understanding the linear and non-linear data structures, sorting and searching operations, File structures.

CO2: Analyse the performance of - Stack, Queue, and Lists.

CO3: Analyse the performance of Trees, Graphs, Searching and Sorting techniques.

CO4: Implement all the applications of Data structures in a high-level language.

CO5: Design and apply appropriate data structures for solving computing problems

BCA-S203 Computer Architecture & Assembly Language

CO1: Understand the theory and architecture of central processing unit.

CO2: Analyse some of the design issues in terms of speed, technology, cost, performance.

CO3: Design a simple CPU with applying the theory concepts.

CO4: Use appropriate tools to design verify and test the CPU architecture.

CO5: Learn the concepts of parallel processing, pipelining and inter processor communication.

CO6: Understand the architecture and functionality of central processing unit.

BCA-S204 Business Economics

CO1: Develop an understanding of the applications of managerial economics.

CO2: Interpret regression analysis and discuss why it's employed in decision-making.

CO3: Discuss optimization and utility including consumer behaviour.

CO4: Assess the relationships between short-run and long-run costs.

CO5: Analyse perfectly competitive markets including substitution.

CO6: Explain uniform pricing and how it relates to price discrimination and total revenue.

BCA-S205 Element of Statics

CO1: Describe and discuss the key terminology, concepts tools and techniques used inbusiness statistical analysis.

CO2: Critically evaluate the underlying assumptions of analysis tools.

CO3: Understand and critically discuss the issues surrounding sampling and significance.

CO4: Discuss critically the uses and limitations of statistical analysis.

CO5: Solve a range of problems using the techniques covered.

CO6: Conduct basic statistical analysis of data.

BCA-S201P Computer Laboratory and Practical Work of OOPS

CO1: Describe the procedural and object-oriented paradigm with concepts of streams, classes, functions, data and objects.

CO2: Understand dynamic memory management techniques using pointers, constructors, destructors, etc

CO3: Describe the concept of function overloading, operator overloading, virtual functions and polymorphism.

CO4: Classify inheritance with the understanding of early and late binding, usage ofexception handling, generic programming.

CO5: Demonstrate the use of various OOPs concepts with the help of programs.

BCA-S202P Computer Laboratory and Practical Work of DS

CO1: Understand the concept of Dynamic memory management, data types, algorithms, BigO notation.

CO2: Understand basic data structures such as arrays, linked lists, stacks and queues.

CO3: Describe the hash function and concepts of collision and its resolution methods.

CO4: Solve problem involving graphs, trees and heaps.

CO5: Apply Algorithm for solving problems like sorting, searching, insertion and deletion of data.

BCA S206T: Computer graphics and Multimedia Applications (CGMA)CO1:

Be able to identify computer Graphics and Tools.

CO2: Be familiar with Multimedia applications.

CO3: Understand Graphical formula in3-D to 2-Dimensional objects.

CO4: To follow a series of stages collectively known as Graphics Pipeline.

CO5: Primary role is to render the digital content in a human comprehensible form on a computer screen.

BCA S207: Operating System (OS)

CO1: To understand the basic components of a computer operating system, and the interactions among the various components.

CO2: The course will cover an introduction on the policies for scheduling, deadlocks,memory management, synchronization, system calls, and file systems.

CO3: Responsible for allocating resources to users and processes

CO4: Some operating systems implement significant OS functionality in user-mode, e.g. User-mode such as Linux.

CO5: Program execution, Access to I/O devices – Display, disk, network, printer, keyboard, camera, etc. Controlled access to files – Access protection, System access – User authentication.

BCA S208: Software Engineering (SE)

CO1: Enables students to embrace problem solving and learning as a natural aspect of their work.

CO2: Enhances value and is valued by their professional teammates.

CO3: Gain to have broad and deep knowledge of the technical issues that they face.

CO4: Basic knowledge and understanding of the analysis and design of complex systems.

CO5: To develop methods and procedures for software development that can scale up for large systems and that can be used consistently to produce high-quality software at low cost and with a small cycle of time.

BCA S209: Optimization Techniques (OT)

CO1: Ability to apply the theory of optimization methods and algorithms to develop and for solving various types of optimization problems.

CO2: Ability to go in research by applying optimization techniques in problems of

Engineering and Technology.

CO3: The purpose of optimization is to achieve the "best" design relative to a set of prioritized criteria or constraints (In equations).

CO4: Enrich about maximizing factors such as productivity, strength, reliability, longevity, efficiency, and utilization.

CO5: The decision making process about Information System, Industry-Engineering and Manufacturing Systems, Multicriteria Decision Making and Operations and Supply Chain Management.

BCA S210: Mathematics III

CO1: Understand and be able to apply basic definitions and concepts in set and function theory.

CO2: Understand the definitions of limits and convergence in the context of sequences and series of real numbers.

CO3: Be able to compute limits of sequences involving elementary functions.

CO4: Classify partial differential equations and transform into canonical form.

CO5: Solve linear partial differential equations of both first and second order and apply partial derivative equation techniques to predict the behaviour of certain phenomena.

BCA S206P: CGMA Lab

CO1: Using OpenGL for Graphics.

CO2: Programming User-interface issues.

CO3: Concepts of 2D & 3D object representation.

CO4: Implementation of various scan & clipping algorithms .

CO5: Visibility detection & 3D viewing Implementation of a project based on learnedconcepts.

BCA-S301T: Introduction to DBMS

CO1: Identify the basic concepts and various data model used in database design ER modelling concepts and architecture use and design queries using SQL.

CO2: Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression fro queries.

CO3: Recognize and identify the use of normalization and functional dependency, indexing and hashing technique used in database design.

CO4: Recognize/ identify the purpose of query processing and optimization and also demonstrate the basic of query evaluation.

CO5: apply and relate the concept of transaction, concurrency control and recovery in database.

BCA-S302T: Java Programming and Dynamic Webpage DesignCO1:

Learn basic concepts Java Programming Language.

CO2: Acquire knowledge of control structures.

CO3: Familiarize in Java Programming.

CO4: Create wide range of Applications and Applets using Java.

CO5: Ability to work with I/O Streams.

BCA-S303: Computer Network

CO1: Understand the overview of networks OSI model and Physical Layer.

CO2: Obtain the knowledge about error deduction and correction in Data Link Layer.

CO3: Obtain the knowledge about packet switching network and addressing in Network Layer.

CO4: Acquire the knowledge about TCP in Transport Layer.

CO5: Ability to understand client/Server programming, WWW and Email using Application Layer.

CO2: Programming User-interface issues.

CO3: Concepts of 2D & 3D object representation.

CO4: Implementation of various scan & clipping algorithms .

CO5: Visibility detection & 3D viewing Implementation of a project based on learnedconcepts.

BCA-S301T: Introduction to DBMS

CO1: Identify the basic concepts and various data model used in database design ER modelling concepts and architecture use and design queries using SQL.

CO2: Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression fro queries.

CO3: Recognize and identify the use of normalization and functional dependency, indexing and hashing technique used in database design.

CO4: Recognize/ identify the purpose of query processing and optimization and also demonstrate the basic of query evaluation.

CO5: apply and relate the concept of transaction, concurrency control and recovery in database.

BCA-S302T: Java Programming and Dynamic Webpage DesignCO1:

Learn basic concepts Java Programming Language.

CO2: Acquire knowledge of control structures.

CO3: Familiarize in Java Programming.

CO4: Create wide range of Applications and Applets using Java.

CO5: Ability to work with I/O Streams.

BCA-S303: Computer Network

CO1: Understand the overview of networks OSI model and Physical Layer.

CO2: Obtain the knowledge about error deduction and correction in Data Link Layer.

CO3: Obtain the knowledge about packet switching network and addressing in Network Layer.

CO4: Acquire the knowledge about TCP in Transport Layer.

CO5: Ability to understand client/Server programming, WWW and Email using Application Layer.

BCA-S304: Numerical Methods

CO1: This course is an introduction to a broad range of numerical methods for solving mathematical problems that arise in Science and Engineering.

CO2: The goal is to provide a basic understanding of the derivation, analysis, and use of these numerical methods, along with a rudimentary understanding of finite precision arithmetic and the conditioning and stability of the various problems and methods.

CO3: This will help you choose, develop and apply the appropriate numerical techniques for your problem, interpret the results, and assess accuracy.

CO4: The problems cover (i) systems of linear equations, linear least squares problems, and eigenvalue calculation; (ii) interpolation, approximation, and integration of functions; (iii) initial values problems governed by ordinary differential equations; (iv) nonlinear scalar equations.

CO5: Such methods include techniques for simple optimisation, interpolation from the known to the unknown, linear algebra underlying systems of equations, ordinary differential equations

to simulate systems, and stochastic simulation under random influences.

BCA-S305: Minor Project

CO1: Understanding of how practices impact on different selected groups of students (potential withdrawers; actual withdrawers; disabled students; low participation and ethnic minority groups).

CO2: Recommendations and model of practice for institution and sector.

CO3: Student tool to aid identification, articulation and measurement of activities that contribute to Belonging and Intimacy.

CO4: Longitudinal view of the student experience from 1st to final year including key decision-making episodes.

CO5: Integrated data set related to retention and methodology for continued analysis.

BCA-S306: Viva-Voice on Summer Training

CO1: To offer the opportunity for the young students to acquire on job the skills, knowledge, attitudes, and perceptions along with the experience needed to constitute a professional identity.

CO2: To provide means to immerse students in actual supervised professional experiences.

CO3: To give an insight into the working of the real organizations.

CO4: To appreciate the linkages among different functions and departments.

CO5: To develop perspective about business organizations in their totality.

BCA-S301P: Computer Laboratory and Practical Work of DBMS

CO1: Design and implement a database schema for given problem.

CO2: Capable to design and build a GUI application.

CO3: Apply the normalization techniques for development of application software torealistic problems.

CO4: Formulate queries using SQL DML/DDL/DCL commands.

CO5: To design and build a simple database system and demonstrate competence with the fundamental tasks involved with modelling, designing, and implementing a DBMS.

BCA-S302P: Computer Laboratory and Practical Work of Java Programming &

DynamicWebpage Design

CO1: Identify classes, objects, members of a class and relationships among them needed fora specific problem.

CO2: Write Java application programs using OOP principles and proper program structuring.

CO3: Demonstrate the concepts of polymorphism and inheritance .

CO4: Write Java programs to implement error handling techniques using exception handling.

CO5: Gain knowledge about basic Java language syntax and semantics to write Java programs and use concepts such as variables, conditional and iterative execution methods etc.

BCA-S307-Computer Network Security

CO1: Students will be able to identify some of the factors driving the need for network security.

CO2: Students can identify and classify particular examples of attacks. **CO3:**

Students will able define the terms vulnerability, threat and attack. **CO4:**

They may identify physical points of vulnerability in simple networks.

CO5: Students can compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack, and explain the characteristics of hybrid systems.

BCA-S308-ISAD

CO1: Students will be able to understand basic terms used in information system.

CO2: To write a C Programme for a given algorithm.

CO3: To use different data structures and update basic data files.

CO4: To trace out the error and resolve it using debugging and develop logical and analytical thinking.

BCA-S309-E- Commerce

CO1: To understand the Concept of E-commerce and Business Strategy in Electronic Age and different models of E-Commerce.

CO2: Administer and Maintain B2B E-Business sites.

CO3: Understand the Internet Architecture and Electronic Payment System.

CO4: Demonstrate the knowledge of Legal and Regulatory policy issues in E-commerce.

CO5: Determine the protection methods from public policy issues.

CO6: Evaluate E-commerce models and identify the requirements for starting up and operating E-business sites.

BCA-S310-Knowledge Management

CO1: Remember different knowledge management concepts.

CO2: Create an understanding of data mining and knowledge discovery.

CO3: Understand the use of one of the approaches of MIS i.e. Executive information system for developing the strategic information in an organization.

CO4: Evaluate different approaches of MIS and take business decisions for different organizations.

CO5: Analyze the relationship between information, tacit knowledge, explicit knowledge and organizational knowledge.

BCA-S311P Major Project

CO1: It makes the student confident in designing an Online Project with advanced technologies of their choice.

CO2: Students are trained to meet the requirements of the industry.

CO3: students will able to develop a project professionally.

CO4: students will be able to prepare a SRS report.

CO5: To be able to develop good presentation skills.

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE, GONDA
श्री लाल बहादुर शास्त्री डिग्री कॉलेज, गोण्डा
AN AFFILIATED COLLEGE OF DR RAMMANOHAR LOHIA AVADH UNIVERSITY, AYODHYA,(U.P)

DEPARTMENT OF CHEMISTRY

Bachelor of Science (B.Sc.) Chemistry

Program's Outcomes

Bachelor of Science in chemistry is a three-year degree program in which students will have precise insight into: -

- Fundamentals and application of current chemical and scientific theories in analytical, inorganic, organic, and physical chemistry.
- Designing and performing scientific experiments, data curation, and analysis.
- Problem-solving, critical thinking, and analytical reasoning for scientific problems.
- New areas of research in both chemistry and allied fields of science and technology.
- Central role of chemistry in our society including an understanding of safe handling of chemicals, environmental issues, and key issues facing our society in energy, health, and medicine.
- Potential of chemistry for addressing social, economic, and environmental problems.

Program Specific Outcomes

B.Sc. I-Year

(Certificate in Bioorganic and Medicinal Chemistry)

This certificate course will give an insight into all the branches of chemistry and enable students to join the knowledge and available opportunities related to chemistry in the government and private sector services particularly in the field of food safety, health inspector, pharmacist, etc. After the completion of the course, the students will have a precise understanding of -

- Fundamental principles of chemistry like periodic properties, molecular polarity, and theories of bonding.
- Stereochemistry, and mechanism of organic Reactions.
- Basic mathematical concepts and computer knowledge.
- Chemistry of carbohydrates, proteins, and nucleic acids, medicinal chemistry, synthetic polymers, and synthetic dyes.
- Qualitative quantitative and biochemical analysis of the compounds in the laboratory.

B.Sc. II-Year

(Diploma in Chemical Dynamics and Analytical Techniques)

A diploma in Chemical Dynamics and Analytical Techniques will make the students skilled to work in industries, especially in chemical industries like cement industries, agro product, paint industries, rubber industries, petrochemical industries, food processing industries, fertilizer industries, pollution monitoring, and control agencies, etc. It will provide theoretical as well as practical knowledge of handling chemicals, apparatus, equipment, and instruments. It introduces the student to various aspects like-

- The knowledge about feasibility and velocity of chemical reactions through chemical kinetics, chemical equilibrium, phase equilibrium, and kinetic theories of gases, solid, and liquid states.
- Introduction to coordination chemistry, metal carbonyls, and bioinorganic will enable the students to work as chemists in the pharmaceutical industries.
- The knowledge about atomic structure, quantum mechanics, various spectroscopic tools, and separation techniques.

- The laboratory skills and safe measurements to transfer and interpret knowledge entirely in the working environment.

B.Sc. III-Year

(Degree in Bachelor of Science)

Upon completion of a degree, chemistry students are able to employ critical thinking and scientific inquiry in the performance, design, interpretation, and documentation of laboratory experiments, at a level suitable to succeed at an entry-level position in the chemical industry or a chemistry graduate program. Degree in Bachelor of Science programme aims to-

- Introduce very important aspects of the modern-day course curriculum, namely, the chemistry of hydrocarbons, alcohols, carbonyl compounds, carboxylic acids, phenols, amines, heterocyclic compounds, and natural products.
- To study the main group elements, qualitative analysis, separation techniques, and analytical techniques.
- To understand the importance of the elements in the periodic table including their physical, and chemical nature and role in daily life.
- To understand the concept of chemistry to interrelate and interact with the other subject like mathematics, physics, biological science, etc. ·

Course Outcome

Semester-1, Paper-1 (Theory)

Course Title: Fundamentals of Chemistry

Students admitted to B.Sc. chemistry semester-1 program will gain precise insight into the:

- Molecular geometries, physical and chemical properties of the molecules.
- Current bonding models for simple inorganic and organic molecules in order to predict structures and important bonding parameters.
- Basics of organic chemistry, reactive intermediates, transition states, bond breaking, and bond formation.
- Theoretical picture in multiple stages in an overall chemical reaction.
- Understanding the reactants, catalyst, stereochemistry, and major and minor products of any organic reaction.
- Kinetic and thermodynamic aspects of reaction and the ways how the reaction mechanism can be determined.
- Stereochemistry, and their role in reaction mechanism.

Semester-1, Paper-2 (Practical)

Course Title: Quantitative Analysis

Upon the completion of this course the students will have the knowledge and skills to understand the laboratory methods and tests related to-

- Estimation of metal ions and estimation of acids and alkali contents in commercial products.
- Potability tests of water samples.
- Estimation of metal ions in samples.
- Estimation of alkali and acid contents in samples.
- Estimation of inorganic salts and hydrated water in samples.

Semester-2, Paper-1 (Theory)

Course Title: Bioorganic and Medicinal Chemistry

Biomolecules are important for the functioning of living organisms. These molecules perform or trigger important biochemical reactions in living organisms. When studying biomolecules, one can understand the physiological function that regulates the proper growth and development of a human body. This course aims to introduce the students with-

- Basic understanding of carbohydrates, amino acids, proteins, and nucleic acids.
- Introduction to medicinal chemistry.
- Understanding the space lattice, crystallography, X-ray diffraction of crystals, and crystal structure of some common salts.
- Introduction to polymers, inorganic and organic polymers and their kinetics.
- Introduction to natural and synthetic dyes and their applications.

Semester-2, Paper-2 (Practical)

Course Title: Biochemical Analysis

This course will provide basic of -

- Qualitative and quantitative experimental knowledge of biomolecules such as carbohydrates, proteins, amino acids, nucleic acids, and drug molecules.
- Demonstration of separation techniques like thin layer and paper chromatography.
- Extraction of protein, nucleic acids, and synthesis of simple drugs, and osazones.

Semester-3, Paper-1 (Theory)

Course Title: Chemical Dynamics & Coordination Chemistry

Upon successful completion of this course, students will be able to describe-

- Characteristic of the three states of matter.
- The different physical properties of each state of matter.
- Kinetic theory of gases, laws of crystallography, liquid state, and liquid crystals.
- Conductometric, potentiometric, optical methods, polarimetry, and spectrophotometer.
- Chemical kinetics and chemical equilibrium.
- Metal- ligand bonding in transition metal complexes, thermodynamic and kinetic aspects of metal complexes.

Semester-3, Paper-2 (practical)

Course Title: Physical Analysis

Upon successful completion of this course, students should be able-

- To calibrate apparatus.
- Prepare solutions of various concentrations.
- Estimation of components through volumetric analysis.
- To perform dilatometric experiments: one and two component phase equilibrium experiments.

Semester-4, Paper-1 (Theory)

Course Title: Quantum Mechanics and Analytical Techniques

Students will be able to explore new areas of research in both chemistry and allied fields of science and technology. Students will be able to function as a member of an interdisciplinary problem-solving team. Students will be skilled in problem-solving, critical thinking and analytical reasoning as applied to scientific problems. Students will gain an understanding of-

- Atomic structure, elementary quantum mechanics, wave function and its significance comprising Schrodinger wave equation and its applications, and Molecular orbital theory.
- Molecular Spectroscopy, Rotational Spectrum, vibrational Electronic Spectrum, mass spectrometry, ^{1}H-NMR technique.
- To develop basic skills required for purification, solvent extraction, TLC and column chromatography.
- Determination of the structure of organic molecules using IR and NMR spectroscopic techniques.

Semester-4, Paper-2 (Practical)

Course Title: Instrumental Analysis

Upon completion of this course, chemistry majors are able to employ critical thinking and scientific inquiry in the performance, design, interpretation and documentation of laboratory experiments, at a level suitable to succeed at an entry-level position in the chemical industry or a chemistry graduate program.

- Students will be skilled in problem-solving, critical thinking, and analytical reasoning as applied to a scientific problem.
- Students will gain an understanding of how to determine the structure of organic molecules using IR and NMR spectroscopic techniques.
- To develop basic skills required for purification, solvent extraction, TLC and column chromatography.

Semester-5, Paper-1 (Theory)

Course Title: Organic Synthesis A

This course will provide a broad foundation for the synthesis of hydrocarbons, hydroxyl, and carbonyl compounds. Students will gain an understanding of selecting solvents and raw materials for the synthesis of drugs and other pharmaceutically important compounds. The course will provide firm knowledge about-

- Synthesis and chemical properties of aliphatic and aromatic hydrocarbons.
- Synthesis and chemical properties of alcohols, phenols, halides, ethers, carbonyl compounds, carboxylic acids and esters.
- How to design and synthesize aliphatic and aromatic hydrocarbons.

- How to convert aliphatic and aromatic hydrocarbons to other industrially important compounds, functional group interconversion.

Semester-5, Paper-2 (Theory)

Course Title: Rearrangements and Chemistry of Group Elements

This paper provides detailed knowledge of the synthesis of various classes of organic compounds and functional groups' interconversion. Organic synthesis is the most important branch of organic chemistry which provides jobs in production & QC departments related to chemicals, drugs, medicines, FMCG etc. industries.

- It relates and gives an analytical aptitude for synthesizing various industrially important compounds.
- This paper also provides detailed knowledge of the elements present in our surroundings, and their occurrence in nature. Their position in the periodic table, their physical and chemical properties as well as their extraction.
- This paper also gives a detailed understanding of the s, p, d, and f block elements, and their characteristics.
- Discuss the homogeneous and heterogeneous catalysis including their industrial application.
- Discuss the enzymatic reactions and their kinetics.
- Introduce some important organic rearrangement reactions.

Semester-5, Paper-3 (Practical)

Course Title: Qualitative Analysis

Upon completion of this course, the students will have the knowledge and skills to understand the laboratory methods and tests related to inorganic mixtures and organic compounds.

- Identification of acidic and basic radicals in inorganic mixtures.
- Separation of organic compounds from a mixture.
- Elemental analysis in organic compounds.
- Identification of functional groups in organic compounds.
- Identification of organic compounds.

Semester-6, Paper-1 (Theory)

Course Title: Organic Synthesis B

This paper provides detailed knowledge of the synthesis of various classes of organic compounds and functional groups inter-conversion. Organic synthesis is the most important branch of organic chemistry which provides jobs in production & QC departments related to chemicals, drugs, medicines, FMCG etc. industries. The study of natural products and heterocyclic compounds offers an excellent strategy for identifying novel biological probes for a number of diseases. Historically, natural products have played an important role in the development of pharmaceutical drugs for a number of diseases including cancer and infection.

- It relates and gives an analytical aptitude for synthesizing various industrially important compounds.
- Learn the different types of alkaloids, & terpenes etc and their chemistry and medicinal importance.

- Explain the importance of natural compounds as lead molecules for new drug discovery.
- Discuss the reagents in organic synthesis and organometallic compounds.
- Study of different organic compounds comprising carboxylic acids, aldehydes, ketones, and nitrogen-containing compounds.
- Study of heterocyclic compounds, their synthesis and application.

Semester-6, Paper-2 (Theory)

Course Title: Chemical Energetics and Radio Chemistry

Upon successful completion of this course, students should be able to describe-

- laws of thermodynamics and its applications.
- phase equilibria of one and two-component systems.
- electrochemistry, ionic equilibrium applications of conductivity, and potentiometric measurements.
- Colligative properties of ideal and non–ideal solutions and related thermodynamic derivations.
- Physical and chemical adsorption, adsorption isotherms, heterogeneous catalysis, colloids, and their properties.
- Natural and induced radioactivity, measurement of radioactivity, and radiochemistry.

Semester-6, Paper-3 (Practical)

Course Title: Analytical methods

Upon successful completion of this course, students should be able to

- Quantify the product obtained through the Gravimetric method.
- Determine R_f values and identify the organic compounds through paper and thin layer chromatography.
- Perform thermochemical reactions and relevant Laboratory techniques.

DEPARTMENT OF ECONOMICS

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE, GONDA

- ***PROGRAMME OUTCOMES***
- ***PROGRAMME SPECIFIC OUTCOMES***
- ***COURSE OUTCOMES*** ***SESSION- 2022-23***

B.A.(ECONOMICS)

PROGRAMME OUTCOMES(POs)-

Economics Graduate will be able to-

PO 1. **Critical Thinking**. Take informed actions after identifying the assumptions that frame our thinking and actions, checking out the degree to which these assumptions are accurate and valid, and looking at our Ideas and decisions (intellectual, organizational, and personal) from different perspectives.

PO 2. **Effective Communication**. Speak, read, write and listen clearly in person and through electronic media in English and in one Indian language, and make meaning of the world by connecting people, ideas, books, media and technology.

PO 3. **Social Interaction**. Elicit views of others, mediate disagreements and help reach conclusions in group settings.

PO 4. **Effective Citizenship**. Demonstrate empathetic social concern and equity centered national development, and the ability to act with an informed awareness of issues and participate in civic life through volunteering.

PO 5. **Ethics**. Recognize different value systems including your own, understand the moral dimensions of your decisions, and accept responsibility for them.

PO 6. **Environment and Sustainability**. Understand the issues of environmental contexts and sustainable development.

PO 7. **Self-directed and Life-long Learning**. Acquire the ability to engage in independent and life-long learning in the broadest context socio-technological changes.

PROGRAMME SPECIFIC OUTCOMES (PSOs)-

At the end of the programme, the students will be able to-

PSO 1. Understand the basic concept of microeconomics.
PSO 2. Understanding basic concepts of Macroeconomics.
PSO 3. Acquaint with some basic statistical methods to be applied in economics.
PSO 4. Acquaint with some basic theoretical concept of public finance.
PSO 5. Acquaint with the measurement of development with the help of theories along with the Conceptual issues of poverty and inequalities with Indian perspectives.
PSO 6. Learn the development issues of Indian economy.
PSO 7. Learn the real and monetary sides of International economics
PSO 8. To familiarize the students about issues of ethics in economic thinking and practice.

COURSE OUTCOMES (COs)- 2022-23

After successfully completion of the course the students will be able to-

Semester/ Year	Course Code/Paper	Course Name	Course Outcomes (COs)
Ist Sem.	A080101T	Principle of Micro Economics	• The students are familiarized with basic concepts of microeconomics such as laws of demand and supply and elasticity etc so that he/she can comprehend them & familiarize with day today happenings. • The students learn and understand the concepts of consumer behavior like cardinal utility and ordinal utility analysis. • The students learn, understand and compare between the Traditional and modern theory of cost. • Demonstrate an understanding, usage and application of basic economic principles. • To analyze the behavioral patterns of different economic agents regarding profit, price, cost etc.
IInd Sem.	A080201T	Principles of Macro Economics	• Students are able to explain national income, comprehend calculation methods of national income, and concepts related to national income. • Students are able to comprehend classical theory of employment and the Keynesian approach. • Students are able to comprehend the concept of multiplier and it's working. • Students are able to understand the relationship between inflation and employment. • Students are able to relate factors determining national income such as consumption, saving and investment
IIIrd Sem.	A080301T	History of Economic Thought	• To learn and discuss, at an advanced undergraduate level, how the economic thought has evolved over time. • Introducing students to the critical comparison of the contributions of the main schools of economics. • To introduce & highlight before the students about Indian Economic Thinkers and their valuable contribution in the field of Economics. • The classical, the marginalize revolution and its application to the theories of general and partial equilibrium. • The current macroeconomic debate between the neo-classical and the Keynesian school.
IVth Sem.	A080401T	Money, Banking and Public Finance	• Understand simple concepts related with monetary economics and banking theory. • Correlate and apply to current events & key models and concepts of monetary economics and banking theory.

			• Appreciate the potential importance of monetary phenomenon in the economy. • Understand the sources of finance both public and private • Demonstrate the role of government to correct market failures and possible advantage of public financing.
3rd Year	Paper Ist	Economics of Less Development Countries	• Demonstrate knowledge of growth and development models and applicability. • Evaluate the development issues prevailing in developing countries. • Analyze the growth models and its applicability to developing countries. • Interpret the development strategies for internalizing for development. • Assess the issues concerning economic development.
	Paper IInd (A)	Quantitative Methods	• Enables the student to understand the various methods of statistical analysis such as measure of central tendency, measure of dispersion. Correlation analysis and regression analysis. • Enables the student to understand the concept, method of construction, types and application of Index Number. • Enables the student to understand the technique of interpolation and xtrapolation • Solve some business problems using discrete and continuous probability distributions • Decide which inferential statistics tool can be applied in a real-life situation
	Paper IIIrd	Indian Economic Policy	• Develop ideas of the basic characteristics of Indian economy and its planning process. • Find out role of primary sector and its transformation since independence. • Enables the student to understand the Different aspects and problems as well as policies of industrial sector of Indian economy. • Enables the student to understand the Different aspects and problems as well as policies of external sector of Indian economy. • Enables the student to understand the Process of Economic Reforms in India, lobalisation of Indian economy, Issues in competition and safety nets in Indian conomy.

M.A. (Economics)

PROGRAMME OUTCOMES(POs)-

Economics Post Graduate will be able to-

PO 1. Demonstrate knowledge of theories, policies, and empirical findings of economics.
PO 2. Engage in scientific inquiry, critical thinking, using quantitative and qualitative methods.
PO 3. Access and extract data from multiple sources, analyse and interpret the results using quantitative and qualitative tools.
PO 4. Demonstrate competence in written and oral communication and convincingly present arguments with virtual tools.

PO 5. Apply knowledge of economics for team building and create entrepreneurial initiatives for livelihood and social development.

PROGRAMME SPECIFIC OUTCOMES

At the end of the programme, the students will be able to-

PSO 1. Would be able to prepare various competitive examinations such as—NET, JRF, UPSC, PCS, IES etc.
PSO 2. Would be able to find out respectable and rewarding job both in public and private sector.
PSO 3. Would be able to start its own business, career in academics, computer related services, consultation services etc.
PSO 4. Would be able to take admissions in quality institutions for research activities.
PSO 5. Would have better understanding and skill in policy formation, economic analysis and entrepreneurship.

COURSE OUTCOMES (COs)- 2022-23

After successfully completion of the course the students will be able to-

Semester / Year	Course Code/Paper	Course Name	Course Outcomes (COs)
M. A. Economics I st Sem.	ECO-101	Micro Economic Analysis	• Enables the student to understand the various behaviours of various economic units such as consumer, producer and firm. • Enables the student to understand the decision making process of various economic units such as consumer, producer and firm. • Enables the student to understand the price determination process of firm under different market conditions • Evaluate theories of firms for revenue and welfare maximization. • Analyze alternative criteria in welfare economics.
	ECO-102	Problems of Indian Economy: Basic Issues	• Enables the student to understand the facts and various aspects of basic issues of Indian economy such as national income, poverty, unemployment, population, labor force etc. • Enables the student to understand the planning process and resources base such as natural resources, physical infrastructure and social infrastructure of Indian economy. • Enables the student to understand the situation, problems and prospects of agriculture sector of Indian economy • Generating awareness about the relationship between technical change and peasant agriculture. • Understanding the various aspects of agricultural price policy in Indian.
	ECO-103	Statistical Methods	• Examine the characteristics of grouped and ungrouped data statistical data and apply measures of central tendency and dispersion • Assess the relationship between variables and how independent variable is associated with the dependent variable • Solve some business problems using discrete and continuous probability distributions • Employ different sampling methods for designing and selecting a sample from a population using basic principles of sampling and estimation • Decide which inferential statistics tool can be applied in a real-life situation
	ECO-105	Labor Economics	• How basic labor market institutions, such as unions, and the government influence the operation of labor markets.

			• How incentives shape labor market outcomes, such as the allocation of labor across the operation of labor markets. • How opportunity costs shape labor market decisions, such as labor supply or which job benefits to offer. • How these forces play out in domestic and international economies.
M. A. Economics II nd Sem.	ECO-201	Advance Economic Theory	• Analyze consumer behavior for utility maximization. • Evaluate firm's production functions in the short-run and long-run. • Apply pricing and output decisions in diverse market structure. • Evaluate theories of firms for revenue and welfare maximization. • Analyze alternative criteria in welfare economics
	ECO-202	Indian Economy: Industrial and External Sector	• Develop ideas of the basic characteristics of Indian economy and its planning process. • Find out role of primary sector and its transformation since independence. • Evaluate the performance of industrial sector pre and post economic reforms. • Identify major service sector issues and their importance in Indian economy. • Discuss the basic structure and the working of India's financial sector
	ECO-203	Quantitative Methods	• Enables the student to understand the various methods of statistical analysis such as measure of central tendency, measure of dispersion. Correlation analysis and regression analysis. • Enables the student to understand the concept, method of construction, types and application of Index Number. • Enables the student to understand the technique of interpolation and xtrapolation. • Demonstrate knowledge in testing of hypothesis using t, z, f and chi square. • Analyze the consequences and remedial measures for Auto-correlation.
	ECO-204	Industrial Economic	• Demonstrate knowledge about theories of industrialization. • Evaluate the role of industry for economic development. • Analyze the factors contributing to industrial location. • Evaluate factors contributing to industrial productivity and efficiency. • Internalize means for industrial dispute and settlement.
M. A. Economics 2 nd Year	Paper 1	Macro Economic Analysis	• Understand national income estimates and social accounting. • Analyze the consumption and investment functions and multiplier. • Evaluate the classical and Keynesian models using IS-LM framework. • Analyze the trade-off between inflation and unemployment. • Assess open macroeconomic models for achieving internal and external balance.
	Paper 2	Public Finance	• Evaluate the role of the State in allocation and distribution of resources and stabilization of the economy • Analyze the trends and patterns expenditure • Apply the theories of taxation in public policy • Evaluate impact of budget on various sectors • Understand the principles of federal finance for devolution and formulating healthy center-state financial relations
	Paper 3	International Economics	• Demonstrate knowledge about international trade theories. • Evaluate factor price equalization due to international trade. • Analyze factors contributing intra-industry trade. • Assess the gains from international trade. • Evaluate the trade policy for protection and tariff.
	Paper 4	Economics Growth & Development	• Demonstrate knowledge of growth and development models and applicability. • Evaluate the development issues prevailing in developing countries. • Analyze the growth models and its applicability to developing countries. • Interpret the development strategies for internalizing for development. • Assess the issues concerning economic development.
	Paper 5	Demography	• Enables the student to understand the Concept, Scope, Subject Matter and

			Important Tools of Demographic Analysis as well as Demographic Measurements. • Enables the student to understand the Population Theories and Concept and Causes of Demographic Transition. • Enables the student to understand the Construction, Types, Importance and Uses of Life Table in Demographic Analysis. • Enables the student to understand the Sources and Importance Demographic Data, Census. • Enables the student to understand the Methods of Measurement of population growth and Population Projection. • Enables the student to understand the Fertility Patterns in India, Population Policy of India, Meaning and Theories and Models of Migration. Demographic Trends in selected countries.

Prof. D. N. Tiwari
(H. O. D.)
Department of Economics

DEPARTMENT OF PSYCHOLOGY
SRI LAL BAHADUR SHASTRI DEGREE COLLEGE GONDA (U.P.)

- PROGRAMME OUTCOMES
- COURSE OUTCOMES

Undergraduate Psychology Programme

Programme Outcome (After 3 years) The learning outcomes that a student should be able to exhibit on completion of a degree level programme in psychology are as follows:

- Comprehension about the discipline, its research methods, related theories and models.
- Knack to link up theory with individual experiences and varied applied settings.
- Capacity to practice professional skills in the area of psychological testing, assessment and counselling.
- Development of skills in specific areas related to specific specialization (e.g., psychological diagnostics, counselling, learning disability, health, community mental health and organizational behaviour)
- A general understanding about how knowledge of psychology can be applied to benefit the management and / or amendment of problems of mankind.
- Capability to articulate ideas in appropriate manner with scientific writing and authentic reporting.
- Sensitivity towards diverse contexts, ethnic groups, minorities, marginalized groups and gender issues.
- Development of skills and attributes of empathy, team work coordination, cooperation, conflict, resolution and congruence.

- COURSE OUTCOMES

Programme/Class : Certificate	Year : First	Semester : First

Theory: Paper I
Practical: Paper II

Title	Outcome
Basic Psychological Processes	• The students will learn about the fundamental processes and core psychological concepts, models, classical theories, varied perspectives. • The students will be able to apply them in their own and in others lives. • It will also give the learner a clear understanding of the concepts like intelligence, motivation, emotion and personality. • It will develop critical analytical skills regarding the individualistic traits
Lab Work	• Students will be imparted a variety of skills to design and conduct psychological experiments ensuring controlled conditions, report writing and interpretation of the report.

Programme/Class : Certificate	Year : First	Semester : Second

Theory: Paper I
Practical: Paper II

Title	Out Come

Basic Research Methodology and Statistics.	• The leaners will be able to comprehend psychological data. • The learners will be able to put data on appropriate scaling method. • The learners will be getting hold of essentials of psychological testing. • The learners will be known to various kinds of tests implemented.
Lab Work/Psychological Testing	• students will be conferred an array of skills to carry out experiments in lab settings • Students will be able to design and conduct psychological experiments ensuring controlled conditions. • Students will be able to write the report and interpret the report.

Programme/Class : Diploma	Year : Second	Semester : Third

Theory: Paper I
Practical: Paper II

Title	Outcome
Psychology of Social Behaviour	• Students will be able to summarize. general information, through in-class discussion and assignments pertaining to social psychological theories. • Students will get an opportunity to apply social psychological theories to their lives. • Students will be able to critically evaluate research to understand. and explain distressing human social behaviour. • Students will be able to relate social psychological theories and concepts to the context of historic and current world, national and local events.
Lab Work and Measurement of Social Behaviour	• students will be exposed to the mixture of skills such as how to conduct a psychological experiment for understanding social behaviour. • Students will be able to know about psychological measurements and scientific reporting of the data.

Programme/Class : Diploma	Year : Second	Semester : Four

Theory: Paper I
Practical: Paper II

Title	Outcome
Abnormal Psychology	• The students will be able to understand criteria of abnormality. • The students will be capable to understand one's own behaviour and behaviour of others.

	• By applying the knowledge of assessment, diagnosis, classification system and DSM categories, the learners' will develop the sensitivity towards individual diversity. • Students will learn the various. approaches to the diagnosis and treatment of psychological disorders. • Students will learn the clinical features of symptoms, ethology and valid and reliable treatment of diagnostic categories of mental health disorders.
Assessment/ Testing	• The students will develop the proficiency to conduct the screening and assessment of psychological tools for examining developmental issues and disorders. • The practicum of case study will let the students learn and execute an in-depth investigation of a single person, group, event or community.

Programme/Class : Degree	Year : Third	Semester : Five

Theory: Paper I
Theory: Paper II
Practical: Paper III
Research Project: IV

Title	Outcome
Life span Human Development	• The students will be able to develop an ability to identify the milestones in diverse domains of human developments across the child, adolescent and adulthood stages. • The students will be able to understand the contributions of socio-cultural context towards shaping human development. • Students will acquire the ability to decipher key developmental challenges and issues.
Positive Psychology	• The students will be able to understand the basic principles of positive psychology and the major areas within positive psychology. • The students will be able to use the positive psychology tools and techniques in own and in other's life. • The students will be able to understand easily the positive aspects of human behaviour through the wisdom embedded in Indian scriptures like Vedas, Upanishad, Shrimad Bhagwat Gita, Buddhist literature and folk tales.
Lab Work/Survey/Field Visit	• The students will have an understanding about how to frame research objectives and questions. • The students will understand to plan, decide and execute appropriate methods of research,

	data analysis, interpretation and discussion of the findings.
Research Project (Problem Identification and Research Proposal (writing)	• After completing this practicum, the students will have a comprehensive understanding about carrying out research project. • Students will be able to frame. research objectives and questions. • Students will be able to plan, decide and execute appropriate methods of research, and intended data analysis.

Programme/Class : Degree	Year : Third	Semester : Six

Theory: Paper I
Theory: Paper II
Practical: Paper III
Research Project: Paper IV

Title	Outcome
Community and Health Psychology	• The students will be able to recognize that individuals relate to their communities and the reciprocal effect of communities on individuals. • The students will be able to understand and resolve community issues, analyse the data and recommend interventions that promote community wellness. • The students will be able to use the psychological theories on health-related practices. • The students will be able to examine persons health history and describe and enact a positive, proactive attitude toward healthy living for oneself and others.
Counselling Psychology	• Students will be able to understand how to establish rapport and use various approaches in counselling. • Students will understand counselling in a functional manner and also they will be well acquainted with various areas of counselling. • Students will understand the nature of problems among human beings and how to counsel oneself and others.
Survey/Field Visit	• After completing this practicum, the students will have an understanding about how to frame research objectives and questions. • The students will be able to plan, decide and execute. appropriate methods of research, date analysis, interpretation and discussion of the findings.
Research Project	• It will help the learner to critically reflect or, review the scientific basis for and integrate the learned material as a student of psychology. • It will help the learner to prepare himself/herself to explore the cultural, social

	and ethical impact of psychological application on community and daily life.

Dr. Mamta Sharma
Associate Professor & Head
Deptt. of Psychology

UG- ENGLISH

Programme Outcome

- Develop an appreciation of English language, its connotations and interpret and appreciate the didactic purpose of literature.
- Take cognizance of the historical, social and cultural context of each literary work and thereby make connections between literature and society & appreciate literature's ability to stimulate feeling.
- Sensitize students to the aesthetic, cultural and social aspects of literature.
- Present an extensive view of the cultural and social patterns of the society in specific time and situations in which it flourished by covering all walks of human life- rational, irrational, carnal, and emotional.
- Make the students aware of literature written/translated in English speaking countries like UK/ USA.

B.A. I [Certificate in English]

Programme Specific Outcomes (PSOs)

- Understand the growth of Indian literature in English and appraise the evolution of Indian culture from traditional to modern.
- Develop an understanding of the basic poetic and prose devices to read, identify and analyse various literary forms of poetry and prose.
- Understand the nuances of poetic language, structure and composition of idea in Indian English Prose.
- Develop their critical thinking skills & comprehend life skills through the study of prose/short fiction & develop their own creativity by enhancing their writing skills.
- Get enhanced/enriched vocabulary to demonstrate a significant modification in comprehensive skills and writing techniques.

Semester: First, Course Title: English Prose and Writing Skills, Course Code: A040101T

- Understand Indian English Writing as a new form of Indian culture and voice in which India converses regularly. They will be able to understand contributions of various authors in the growth of Indian English Writing.
- Understand the formal qualities of a text, intricacies of structure, stylistics and figurative elements found in the text.
- Analyse the difference in the prose techniques of different writers like Addison, Lamb and Bacon and identify the writings of classic prose and short story writers like Chekhov, Maupassant and O' Henry.
- Understand the prominence of logic and reason in the 18th century British literature.
- Describe the literary terms related to prose.

Semester: Second, Course Title: English Poetry, Course Code: A040201T

- Understand the basic terminology and practical elements of poetry.

- Comprehend the meaning of words, phrases and sentences in a given context.
- Analyse the underlying meaning of a poem by using the elements of poetry.
- Identify the representative poets and writers of 16th ,17th, 18th and 19th and 20th century.
- Identify the devices used by the poet, the mood, the atmosphere, the voice, the stanzaic form, rhyme pattern and metre scheme.

B.A. II [Diploma in English]

Programme Specific Outcomes (PSOs)

- Comprehend and learn to critically and aesthetically analyse works in British & American drama.
- Recognize the elements of drama and analysing and identifying the plot types, character analysis, thematic explanations and identifying the settings and understand the structure of a play and learn the dramatic devices used in writing a play.
- Analyse and evaluate different drama by discussing the significance of the literary age of the particular text and by analysing the effects of major events of that period.
- Understand the social and artistic movements that shaped the British and American drama and theatre.
- Comprehend the dramatic techniques to understand the development of drama in America and understand the process of communicating and interpreting human experiences through literary representation using historical contexts and disciplinary methodologies.

Semester: Third, Course Title: British and American Drama, Course Code: A040301T

- Develop an understanding of various types of drama & related literary terms.
- Learn the core elements of structure such as exposition, complication and resolution or denouement.
- Trace the origin and growth of drama in England and America.
- Comprehend the political, economic, social and intellectual background leading to the rise of drama in England and America.
- Analyse and appreciate the representative works of British and American Drama

Semester: Fourth, Course Title: Indian Literature in Translation, Course Code: A040401T

- Develop a comparative perspective to study the texts.
- Understand the history of translation and various forms of translations.
- Analyse the translation tools to make use of technology like computer and mobile in the process of translation.
- Attain accessibility to regional literary forms.
- Contextualize the texts of Jaishankar Prasad, Amrita Pritam, and Tagore in their respective social and cultural milieu.

B.A. I [Degree in English]

Programme Specific Outcomes (PSOs)

- Comprehend and analyse how English literature has evolved through centuries establishing a perception of its literary history in chronological order.
- Develop an appreciation for the western classical literature.
- Generate awareness towards the problems of interpreting Indian Culture via the English Language and acquaintance with the work of significant Indian writers of Poetry, Prose, Fiction and Drama.
- Develop an acquaintance with the works, themes, styles and sensibilities of the writers from Europe, North and South America, Canada, and Africa.
- Recognise the evolution of certain thematic trends reflected in the narrative and linguistic experimentation of the writers of 'New Literatures'

Semester: Fifth, Course Title: Classical Literature & History of English Literature, Course Code: A040501T

- Develop an understanding of the historical background of Greek and Roman literature and history.
- Recognise the great works of unparalleled classical writers like Plato, Homer and Sophocles.
- Develop an understanding of the evolution of English Literature, the concept, causes and impact of Renaissance and Reformation.
- Trace the origin and development of English drama through Miracle and Morality plays and the plays of University Wits.
- Develop an acquaintance with major religious, political and social movements from 15th to 20th century and their influence on English literature

Semester: Fifth, Course Title: Fiction, Course Code: A040502T

- Develop an understanding of the growth of novel form and its various types.
- Enhance their reading skills and understand how to represent their experience and ideas critically, creatively, and persuasively through the medium of English language.
- Get acquainted with different cultures, myths and social conservation through the reading of selected novels of Britain, America and India.
- Learn human values and behavioural pattern from the prescribed novels and develop an understanding of the human race.
- Exposed to the unflattering portrayal of the contemporary Indian society through popular works of Indian fiction writers in English

Semester: Sixth, Course Title: Indian & New Literatures in English, Course Code: A040601T

- Develop an understanding of the Indian freedom struggle, the contemporary political, social and economic scenario and the also the trauma of the partition.
- Develop an understanding of the themes, styles and poetic sensibilities of poets like Toru Dutt, Nissim Ezekiel, Jayant Mahapatra and Keki N. Daruwala.
- Critically analyse the drama as a medium of exploration of existing social issues and prejudices through the work of dramatists like Mahesh Dattani and Asif Currimbhoy.
- Understand the socio-cultural-political conditions of the contemporary India as explored in the fiction of writers like Kamala Markandaya.

- Analyse and evaluate the difference in the theme and background of the works of Indian writers in English and the English writers already studied in the previous years

Semester: Sixth, Course Title: Literature in Films & Media Studies, Course Code: A040602T

- Develop an understanding of the technical terminology associated with film and media studies.
- Interpret films as text and evaluate them critically.
- Appraise the process of adaption of texts into films.
- Recognize the nuances of film narration.
- Assess various film genres and their characteristics

Semester: Sixth, Course Title: Media and Journalistic Writing, Course Code: A040603T

- Understand different types of journalism and their importance.
- Comprehend various principles of mass communication.
- Differentiate between various forms of media & journalistic writing and reporting.
- Understand the meaning and nature of public speaking.
- Identify social media norms and online journalism.

PROGRAMME NAME- B.A. (COURSE OUTCOMES)

YEAR	SEM.	COURSE CODE	THEORY/ PRACTICAL	COURSE TITLE	COURSE OUTCOMES (On completion of this course, students will be able to understand followings features.)
1	1st	A110101T	Theory	Physical Geography	**1.** The Earth geomorphic transition from beginning to present day. **2.** Plate tectonics and related movements. **3.** Landforms carved by various agents of erosion. **4.** Earth's climate and that factors that influence it and oceans system and biogeography of the world.
1	1st	A110102P	Practical	Elements of Map and Surveying	To understand the basic idea of Map, Scale and Topographic sheets.
1	2nd	A110201T	Theory	Human Geography	**1.** To understand the Concept, Nature, Meaning and Scope of Human Geography. **2.** To understand the natural and Cultural Changes in and around the Human Environs and their interrelationship **3.** Evolution to civilization and various cultural development and cultural system according to religion, language and geography, and global cultural changes. **4.** To study the origin and growth of culture and agriculture and its

					basic concepts.
1	2nd	A110202P	Practical	Thematic Mapping and Surveying	**1.** The basic idea of Map, Scale and Topographic sheets. **2.** This paper enables the students to understand the techniques of map making and understanding the different elements of map making through the use of geographical and statistical methods.
2	3rd	A110301T	Theory	Environment, Disaster Management and Climate Change	**1.** The course aim is to give basic understanding of concept Environment, Climate Change and Disaster Management. **2.** Understanding of the concept of appraisal and conservation of Environment and Natural Resources. **3.** It will help in developing understanding about various Impacts of Climate Change. **4.** This course shall introduce the basic concepts related to disaster Management. **5.** This paper shall help in understanding Global effort in field of disaster management.
2	3rd	A110302P	Practical	Statistical Techniques and Surveying	**1.** Differentiate between qualitative and quantitative information. **2.** To understand the nature of various data. **3.** To understand sampling methods for data collection. **4.** To present data through graphical and diagrammatic formats.

					5. To use the concept of probability mainly the normal distribution.
2	4th	A110401T	Theory	Economic Geography	**1.**Define Meaning, concepts and approaches of Economic Geography **2.**Understand the nature of Economic activities, Resource Distribution **3.** Understand the Effect of globalization on developing countries. **4.** Describes the concept of economic geography. **5.** Describe realized human and economic activities in the world.
2	4th	A110402P	Practical	Weather Maps, Geological Maps and Surveying	**1.** Identify the various Survey Operations and Survey Instruments. **2.** To understand the idea of Basic and applied Instrumental surveying
3	5th	A110501T	Theory	Regional Geography	**1.** To understand the concept of Region and Regional Planning. **2.** To familiarize the students with Theories and Models for Regional Planning. **3.** To develop understanding about concept of Development, Sustainable. **4.** To study about region **5.** To study the different approaches of regional geography
3	5th	A110502T	Theory	Basics of	Understand the Basic idea and

				Remote Sensing and GIS	application of Remote sensing Techniques and Geographical Information System.
3	5th	A110503R	Practical	Tour and Tour report	**1.** The variation among geographical locations. **2.** Interaction with people with different natural and cultural settings. **3.** Study physical and human geography of area being visited. **4.** Learn to prepare tour report.
3	5th	A110504R	Practical	Project Report-1	**1.** In-depth knowledge of research methodology. **2.** Learn to prepare Project Report.
3	6th	A110601T	Theory	Geography of India	**1.** Understand the importance of "Ek Bharat Shrestha Bharat" 2.Understand the wider aspects of Geography of India. **3.** Understand the location, Physiography, Drainage, Climate, and Vegetation of India. **4.** To understand the environmental global problems such as deforestation, desertification, depletion of ozone, global warming, La-nina and El nino.
3	6th	A110602T	Theory	Evolution of Geographical Thoughts	**1.** Understand the contribution of Indian and other renowned Geographers. **2.** Understand the concept of evolution of Geographical Thought. **3.** Students should obtain

					knowledge on the most influential epochs and schools in the history of Geography as a discipline.
3	6th	A110603P	Practical	Remote Sensing and GIS	**1.** Understand and Conceptualize Remote Sensing and GIS Technique. **2.**Understand the use of various image processing Software **3.**Basic idea of Geographical Information System
3	6th	A110604R	Practical	Project Report-2	**1.** In-depth knowledge and application of RS and GIS technology in research. **2.** Learn to prepare Project Report.

PROGRAMME OUTCOMES FOR P G

After completion of the programme, the post graduates will be capable of:

- Develop effective communications skills that promote leadership qualities individually as well as within a group.
- Prepare objective scientific approach so that students can address research problems in Applied Geography and allied fields.
- Strive towards making enlightened citizens with commitment and empathy to social concerns.
- Inculcate a sense of environmental ethics that focus research and concerns on sustainability.
- Familiarity with major theories, methods, and Practical concepts in the subject.
- Students will be able to learn the application of various modern instruments and by these they will be able to collect primary data.
- They will learn how to prepare map based on GIS by using the modern geographical map making techniques.
- They will be capable to develop their observation power through field experience and in future they will be able to identify the socio-environmental problems of a locality.
- They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- Understand the impact of the acquired knowledge in societal and environmental contexts, and demonstrate the knowledge of need for sustainable development.
- Able to skilled about coastal management, resilience and sustainability with proper research.

PROGRAMME OUTCOMES FOR U G

By the end of the program the students will be able to:

- This course provides the basic ideas and concepts of Physical & Human aspect of Geography.
- This course intends to orient the learner with the Approaches to the broader discipline of Geography. It will help in developing analytical and critical thinking based on the themes and issues of geography. It eventually prepares the students to understand the development of the subject and delve around issues suited to the needs of the contemporary world.
- It will help in exhaustive understanding of the basic concepts of Geography and an awareness of the emerging areas of the field.
- Acquisition of in-depth understanding of the applied aspects of Geography as well as interdisciplinary subjects in everyday life.
- Improvement of critical thinking and skills facilitating.
- The application of knowledge gained in the field of Geography in the classroom to the practical solving of societal problems.
- The programme orients students with tradition geographical knowledge along with advance comtemprary skills like remote sensing and GIS.

PROGRAMME SPECIFIC OUTCOMES FOR UG

The students of Geography will acquire their theoretical and practical basic knowledge about the different branches of Geography like Physical Geography, Human Geography, Environmental Geography, Geography of India, Soil and Biogeography, Economic Geography, Urban Geography, Remote Sensing, Computer Basics, etc. by studying programme. This programme also opens up the career paths to select in many related and sub-related areas like academics, research, computer and space related work etc.

After completion of the programme, the graduates will be capable of

PSO1: Acquiring the knowledge about the different core branches of Geography like Physical Geography, Human Geography, Practical Geography, Environmental Geography, etc.

PSO2: Developing the ability to use skills in Geography and its related domains of practical knowledge for formulating and tackling Geography-related problems.

PSO3: Acquiring their understanding skills about the different experiments of different branches of Geography by designing as well as conducting several experiments in different problems to solve the problem by proper interpretation and analysis of the experimental results and drawing the conclusions by the supporting data.

PSO4: Developing several experiment related tools e.g. statistical techniques for representation of data, summaries, various graph and diagram, and data analysis.

PSO5: Accumulating their knowledge and skills about the applications of GIS and remote sensing techniques for sketch out the problems and explore the spatio-temporal variation, which can help the planners and policy makers to solve the problem.

PSO6: Attaining a level of proficiency and intellectually in predicting the geographical phenomena by using spatial, computational and remote sensing knowledge and abilities about the applications of computer programming and GIS techniques for solving different problems of Geography as well as global problems.

PSO7: Comprehending and cultivating an understanding of the influence of Geography on the modern society and livelihood patterns with the means of sustainable development.

PSO8: Attaining the quantitative and qualitative understanding of Geography in different theoretical and practical phenomena.

PSO9: Theoretical knowledge and abilities on different GIS and remote sensing software as well as statistical software, etc. that helps them in their higher studies in Geography.

PSO10: Developing knowledge and abilities on the use of different measurement instruments and as well as workshops skills.

PSO11: Opening the career paths to select a career in many related and sub-related areas like academics, research, GIS based map consultant, hydrologist GIS and water resource modelling consultant etc.

PROGRAMME SPECIFIC OUTCOMES FOR P G

Geography mainly concerns changes in spatial attributes in a temporal perspective. The programme in geography is tailored to meet the students' specific educational and professional goals in mind. It focuses on spatial studies, qualitative as well as quantitative, and emphasizes on human-environment relationship. During the the programme, students are trained on advanced concepts of physical and human geography. The programme also concentrates on specific areas of the subject, on which they complete their field reports. After completing the course, the students will be amply prepared for professional careers in geography and allied disciplines like GIS and Remote Sensing. They will also be able to pursue Ph.D. Course in Geography.

After completion of the programme, the Post Graduates will be capable of

- Establish the position of Geography as a subject and its importance and interrelationships that reiterate and validate the Man Environment relationship.
- In the course of field surveys, students acquire a greater understanding of the socio-economic and cultural dimensions of the populations with greater focus on marginalized section of society.
- Physical field surveys enable the students to understand the landforms, geomorphic process and associated hazards.
- Provide training to students in handling modern instruments and methods like Aerial Photographs, Satellite Imagery, Total Station and Meteorological instruments.
- Computer-based techniques (RS & GIS) are incorporated in the syllabus which prepares the students for further analytical studies.
- The students are directed towards problem analysis so that they can design and conduct independent research.
- The comprehensive syllabus promotes and develops a thorough knowledge of concepts, methods and theory.
- The Ability Enhancement Course strives to develop communication powers in the student, both written and oral.

- The Dissertations written by the students prepare them to examine social and environmental issues along with the causes, consequences and remedial measures emerging at local and national levels.
- The syllabus is oriented towards emerging job opportunities and future prospects for the students. Assistance is given to students in preparing for various competitive exams like NET, SET, SSC etc.

PROGRAMME NAME- B.A. (COURSE OUTCOMES)

YEAR	SEM.	COURSE CODE	THEORY/ PRACTICAL	COURSE TITLE	COURSE OUTCOMES (On completion of this course, students will be able to understand followings features.)
1	1st	A110101T	Theory	Physical Geography	**1.** The Earth geomorphic transition from beginning to present day. **2.** Plate tectonics and related movements. **3.** Landforms carved by various agents of erosion. **4.** Earth's climate and that factors that influence it and oceans system and biogeography of the world.
1	1st	A110102P	Practical	Elements of Map and Surveying	To understand the basic idea of Map, Scale and Topographic sheets.
1	2nd	A110201T	Theory	Human Geography	**1.** To understand the Concept, Nature, Meaning and Scope of Human Geography. **2.** To understand the natural and Cultural Changes in and around the Human Environs and their interrelationship **3.** Evolution to civilization and various cultural development and cultural system according to religion, language and geography, and global cultural changes. **4.** To study the origin and growth of culture and agriculture and its

					basic concepts.
1	2nd	A110202P	Practical	Thematic Mapping and Surveying	**1.** The basic idea of Map, Scale and Topographic sheets. **2.** This paper enables the students to understand the techniques of map making and understanding the different elements of map making through the use of geographical and statistical methods.
2	3rd	A110301T	Theory	Environment, Disaster Management and Climate Change	**1.** The course aim is to give basic understanding of concept Environment, Climate Change and Disaster Management. **2.** Understanding of the concept of appraisal and conservation of Environment and Natural Resources. **3.** It will help in developing understanding about various Impacts of Climate Change. **4.** This course shall introduce the basic concepts related to disaster Management. **5.** This paper shall help in understanding Global effort in field of disaster management.
2	3rd	A110302P	Practical	Statistical Techniques and Surveying	**1.** Differentiate between qualitative and quantitative information. **2.** To understand the nature of various data. **3.** To understand sampling methods for data collection. **4.** To present data through graphical and diagrammatic formats.

					5. To use the concept of probability mainly the normal distribution.
2	4th	A110401T	Theory	Economic Geography	**1.**Define Meaning, concepts and approaches of Economic Geography **2.**Understand the nature of Economic activities, Resource Distribution **3.** Understand the Effect of globalization on developing countries. **4.** Describes the concept of economic geography. **5.** Describe realized human and economic activities in the world.
2	4th	A110402P	Practical	Weather Maps, Geological Maps and Surveying	**1.** Identify the various Survey Operations and Survey Instruments. **2.** To understand the idea of Basic and applied Instrumental surveying
3	5th	A110501T	Theory	Regional Geography	**1.** To understand the concept of Region and Regional Planning. **2.** To familiarize the students with Theories and Models for Regional Planning. **3.** To develop understanding about concept of Development, Sustainable. **4.** To study about region **5.** To study the different approaches of regional geography
3	5th	A110502T	Theory	Basics of	Understand the Basic idea and

				Remote Sensing and GIS	application of Remote sensing Techniques and Geographical Information System.
3	5th	A110503R	Practical	Tour and Tour report	**1.** The variation among geographical locations. **2.** Interaction with people with different natural and cultural settings. **3.** Study physical and human geography of area being visited. **4.** Learn to prepare tour report.
3	5th	A110504R	Practical	Project Report-1	**1.** In-depth knowledge of research methodology. **2.** Learn to prepare Project Report.
3	6th	A110601T	Theory	Geography of India	**1.** Understand the importance of "Ek Bharat Shrestha Bharat" 2.Understand the wider aspects of Geography of India. **3.** Understand the location, Physiography, Drainage, Climate, and Vegetation of India. **4.** To understand the environmental global problems such as deforestation, desertification, depletion of ozone, global warming, La-nina and El nino.
3	6th	A110602T	Theory	Evolution of Geographical Thoughts	**1.** Understand the contribution of Indian and other renowned Geographers. **2.** Understand the concept of evolution of Geographical Thought. **3.** Students should obtain

					knowledge on the most influential epochs and schools in the history of Geography as a discipline.
3	6th	A110603P	Practical	Remote Sensing and GIS	**1.** Understand and Conceptualize Remote Sensing and GIS Technique. **2.**Understand the use of various image processing Software **3.**Basic idea of Geographical Information System
3	6th	A110604R	Practical	Project Report-2	**1.** In-depth knowledge and application of RS and GIS technology in research. **2.** Learn to prepare Project Report.

PROGRAMME OUTCOMES FOR P G

After completion of the programme, the post graduates will be capable of:

- Develop effective communications skills that promote leadership qualities individually as well as within a group.
- Prepare objective scientific approach so that students can address research problems in Applied Geography and allied fields.
- Strive towards making enlightened citizens with commitment and empathy to social concerns.
- Inculcate a sense of environmental ethics that focus research and concerns on sustainability.
- Familiarity with major theories, methods, and Practical concepts in the subject.
- Students will be able to learn the application of various modern instruments and by these they will be able to collect primary data.
- They will learn how to prepare map based on GIS by using the modern geographical map making techniques.
- They will be capable to develop their observation power through field experience and in future they will be able to identify the socio-environmental problems of a locality.
- They will perform effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- Understand the impact of the acquired knowledge in societal and environmental contexts, and demonstrate the knowledge of need for sustainable development.
- Able to skilled about coastal management, resilience and sustainability with proper research.

PROGRAMME OUTCOMES FOR U G

By the end of the program the students will be able to:

- This course provides the basic ideas and concepts of Physical & Human aspect of Geography.
- This course intends to orient the learner with the Approaches to the broader discipline of Geography. It will help in developing analytical and critical thinking based on the themes and issues of geography. It eventually prepares the students to understand the development of the subject and delve around issues suited to the needs of the contemporary world.
- It will help in exhaustive understanding of the basic concepts of Geography and an awareness of the emerging areas of the field.
- Acquisition of in-depth understanding of the applied aspects of Geography as well as interdisciplinary subjects in everyday life.
- Improvement of critical thinking and skills facilitating.
- The application of knowledge gained in the field of Geography in the classroom to the practical solving of societal problems.
- The programme orients students with tradition geographical knowledge along with advance comtemprary skills like remote sensing and GIS.

PROGRAMME SPECIFIC OUTCOMES FOR P G

Geography mainly concerns changes in spatial attributes in a temporal perspective. The programme in geography is tailored to meet the students' specific educational and professional goals in mind. It focuses on spatial studies, qualitative as well as quantitative, and emphasizes on human-environment relationship. During the the programme, students are trained on advanced concepts of physical and human geography. The programme also concentrates on specific areas of the subject, on which they complete their field reports. After completing the course, the students will be amply prepared for professional careers in geography and allied disciplines like GIS and Remote Sensing. They will also be able to pursue Ph.D. Course in Geography.

After completion of the programme, the Post Graduates will be capable of

- Establish the position of Geography as a subject and its importance and interrelationships that reiterate and validate the Man Environment relationship.
- In the course of field surveys, students acquire a greater understanding of the socio-economic and cultural dimensions of the populations with greater focus on marginalized section of society.
- Physical field surveys enable the students to understand the landforms, geomorphic process and associated hazards.
- Provide training to students in handling modern instruments and methods like Aerial Photographs, Satellite Imagery, Total Station and Meteorological instruments.
- Computer-based techniques (RS & GIS) are incorporated in the syllabus which prepares the students for further analytical studies.
- The students are directed towards problem analysis so that they can design and conduct independent research.
- The comprehensive syllabus promotes and develops a thorough knowledge of concepts, methods and theory.
- The Ability Enhancement Course strives to develop communication powers in the student, both written and oral.

- The Dissertations written by the students prepare them to examine social and environmental issues along with the causes, consequences and remedial measures emerging at local and national levels.
- The syllabus is oriented towards emerging job opportunities and future prospects for the students. Assistance is given to students in preparing for various competitive exams like NET, SET, SSC etc.

PROGRAMME SPECIFIC OUTCOMES FOR UG

The students of Geography will acquire their theoretical and practical basic knowledge about the different branches of Geography like Physical Geography, Human Geography, Environmental Geography, Geography of India, Soil and Biogeography, Economic Geography, Urban Geography, Remote Sensing, Computer Basics, etc. by studying programme. This programme also opens up the career paths to select in many related and sub-related areas like academics, research, computer and space related work etc.

After completion of the programme, the graduates will be capable of

PSO1: Acquiring the knowledge about the different core branches of Geography like Physical Geography, Human Geography, Practical Geography, Environmental Geography, etc.

PSO2: Developing the ability to use skills in Geography and its related domains of practical knowledge for formulating and tackling Geography-related problems.

PSO3: Acquiring their understanding skills about the different experiments of different branches of Geography by designing as well as conducting several experiments in different problems to solve the problem by proper interpretation and analysis of the experimental results and drawing the conclusions by the supporting data.

PSO4: Developing several experiment related tools e.g. statistical techniques for representation of data, summaries, various graph and diagram, and data analysis.

PSO5: Accumulating their knowledge and skills about the applications of GIS and remote sensing techniques for sketch out the problems and explore the spatio-temporal variation, which can help the planners and policy makers to solve the problem.

PSO6: Attaining a level of proficiency and intellectually in predicting the geographical phenomena by using spatial, computational and remote sensing knowledge and abilities about the applications of computer programming and GIS techniques for solving different problems of Geography as well as global problems.

PSO7: Comprehending and cultivating an understanding of the influence of Geography on the modern society and livelihood patterns with the means of sustainable development.

PSO8: Attaining the quantitative and qualitative understanding of Geography in different theoretical and practical phenomena.

PSO9: Theoretical knowledge and abilities on different GIS and remote sensing software as well as statistical software, etc. that helps them in their higher studies in Geography.

PSO10: Developing knowledge and abilities on the use of different measurement instruments and as well as workshops skills.

PSO11: Opening the career paths to select a career in many related and sub-related areas like academics, research, GIS based map consultant, hydrologist GIS and water resource modelling consultant etc.

Sir,

Please find the outcome for BA First Year under NEP-2020,

1. Program Outcomes:

- Develop historical outlook to resolve the day to day life struggles in the society and nation
- Orient the learner with the approaches to the broader discipline of History
- Developing analytical and critical thinking based on the themes and issues of history
- Improvement of critical thinking and skills facilitating
- Inculcate generic and subject-specific skills to succeed in the employment market and standards of life

2. Program Specific Outcomes:

- Learn about the discipline of History as holistic field
- Appreciate the role of history in covering multiple facets and requirements of human beings in day to day living
- Awareness, need, and use of historical resources
- Access to adequate knowledge system for wholesome development
- Build capabilities to start earning by enhancing their skills in the field of Historical and Traditional knowledge system, Tourism, Archives and Museums

3. Course Outcomes:

<u>Ancient and Early Medieval India (Till 1206 A.D.)</u>

- Gain knowledge of ancient civilizations of India
- Get familiar with the political and cultural development of ancient India
- Art, culture and philosophy of religion of ancient India have been included in the syllabus
- Get knowledge of the nature of Muslim attacks and the struggle of Rajputs
- Motivate the students to contribute towards nation building by making them aware of the social culture of India

<u>History of Medieval India (1206 A.D - 1757 A.D)</u>

- Develop the understanding of India with the advent of Turks , Timurs , Afghans and subsequently the establishment of Mughal rule
- Cover the regions of India not under the domination of Turks and Mughals in India
- Covers the territorial expansion of various Indian King

- Study impact of medievalism on Indian society and culture
- Gain historical knowledge of political and strategic weakness of India through political conflicts

Thanks,
Dr. Aman Chandra

Learning outcomes of homescience 1sem

FUNDAMENTAL of NUTRITION

1:Utilize knowledge from foundational sciences as a basis for understanding the role of food and nutrients in health and disease.

2:Integrate scientific information, research, and critical thinking into evidence- based practice.

3:Demonstrate professionalism and ethical behavior in all areas of practice.

4:Engage in advocacy on issues that affect public health and nutrition policy.

5:Establish a basis for lifelong learning and interprofessional collaboration.

HUMAN DEVELOPMENT

1:Demonstrate an understanding of the biological, psychological, social and cultural influences of lifespan human development.

2:Demonstrate an understanding of how gender, ethnicity, class, historical period, and social location relate to the life course experience.

3:Critically evaluate research relevant to human development as well as popular notions of human nature.

4:Use the primary literature of the field to prepare a clear, organized summary of a topic.

5:Understand and work effectively with a diversity of individuals and communities.

LEARNING OUTCOMES OF HOME SCIENCE 2nd Semester

TEXTILE

1:conduct structured research; analyze cultural and aesthetic trends, both historical and contemporary, on textile surface design products and use information to develop creative design concepts;

2:think critically, including the ability to evaluate visual information and compare diverse perspectives, as well as come to fundamental conclusions and interpret information to produce original designs for appropriate textile markets;

3:apply comprehensive textile design skills to design textiles through painting, weaving, screen printing, and demonstrate basic skills in drawing, repeat creation, and color application;

4:apply fundamental computer skills to complement traditional design skills and develop original designs using CAD as a tool including basic technical preparation of designs for production;

5:communicate ideas and express project concepts using foundational visual, oral, and written presentation skills, including the use of appropriate industry vocabulary.

#HOME MANAGEMENT

1:Understand the sciences and technologies that enhance the quality of life in day to day living.

2:Acquire professional and entrepreneurial skills for economic empowerment of self in particular and of community in general.

3:Develop professional skills in food, nutrition, textiles, housing, product making etc.

4:Take science from the laboratory to the people.Competence in public speaking, writing and inter personal skills.

5:Development of critical sensitivity towards community issues and process.

Learning Outcomes of M.Com 1st yr

#STATISTICAL ANALYSIS

1:Students will formulate complete, concise, and correct mathematical proofs.

2:Students will frame problems using multiple mathematical and statistical representations of relevant structures and relationships and solve using standard techniques.

3:Students will create quantitative models to solve real world problems in appropriate contexts.

4:Students will effectively use professional level technology tools to support the study of mathematics and statistics.

5:Students will clearly communicate quantitative ideas both orally and in writing to a range of audiences.

#THEORY & PRACTICE MANAGEMENT

1:Formulate appropriate organizational structures using the seven elements of organizations.

2:.Explain how to motivate employees using motivational theories.

3:Discuss the dynamics of teams in organizations.

4:Apply leadership theories to different organizational situations.

5:Describe the managerial control process

#MANAGERIAL ECONOMICS

1:Students will be skilled in critical thinking and decision-making, supported by economic principles and best practices in business.

2:Students will have the ability to use data to inform economic and business decision making.

3:Students will be able to put together quantitative reports as well as to evaluate reports put together by others.

4:Students will be effective communicators, confidently using appropriate terminology in oral and written form.

5:Students will be able to work effectively in teams and to address strategic and organizational challenges.

#MARKETING MANAGEMENT

1:Critically evaluate the key analytical frameworks and tools used in marketing

2:Apply key marketing theories, frameworks and tools to solve Marketing problems

3:Utilise information of a firm's external and internal marketing environment to identify and prioritise appropriate marketing strategies

4:Exercise critical judgement through engagement and reflection with existing marketing literature and new developments in the marketing environment

5:Critically evaluate the marketing function and the role it plays in achieving organisational success both in commercial and non-commercial settings

#HUMAN RESOURCE MANAGEMENT

1:Demonstrate an understanding of key terms, theories/concepts and practices within the field of HRM

2:Demonstrate competence in development and problem-solving in the area of HR Management

3:Provide innovative solutions to problems in the fields of HRM

4:Be able to identify and appreciate the significance of the ethical issues in HR

5:Develop an ability to undertake qualitative and quantitative research

Learning Outcomes of M.Com 2yr

#FINANCIAL MANAGEMENT

1:Business environment and basic concept of financial management: the role of financial management with realizing the purpose of operations. Forms of business organizing. Concept of temporal money value. Financial environment of an enterprise.

2: Financial markets and evaluation: Risk, return and model for ascertaining the price of invested capital. Evaluation and financial management.

3:Long-term financial decisions. Financing decisions. Capital structure and the policy of dividends.

4: Long-term investment decisions: Capital investments planning. Estimation of the risk of investment projects.

5: Financing and investment in international perspective.
Management of working capital and financial analysis: management of working capital, short-term financing sources, cash management, debtors management and the management of stocks. Users, purpose and methods of analysis of financial statements

#ORGNISATION BEHAVIOUR

1:Describe the general history of management theory and practice and frame how organizational behavior has developed from these into a discreet field.

2:Describe organizational behavior and differentiate between the three levels of influence

3:Describe contemporary issues and topics in organizational behavior

4:Describe how contemporary organizations both benefit and struggle with diversity oriented themes and topics

5:Describe the methods to encourage ethical behavior in contemporary organizations

#ACCOUNTING FOR MANEGERIAL DECISIONS

1:Describe the nature and purpose of financial statements;

2:Interpret and apply the conventions and rules underlying the preparation of major accounting reports;

3:Analyse financial and managerial decision making and the different accounting information that supports these decisions.

4:Think critically about financial and managerial accounting theory, tools and techniques;

5:Evaluate, analyse and interpret relevant accounting information;

#INDUSTRIAL RELATIONS

1:Students should able to elaborate the concept of Industrial Relations.
2:The students should able to illustrate the role of trade union in the industrial setup.
3:Students should able to outline the important causes & impact of industrial disputes.
4:Students should able to elaborate Industrial Dispute settlement procedures.
5:Student should be able to summarize the important provisions of Wage

#INTERNATIONAL MARKETING

1:Describe the factors involved in consumer decision making in international contest

2:The student should be able to segment markets and develop the profile of a target international market

:3The student should be able to develop product strategies and discuss how services and nonprofit "products" differ from traditional ones

4:The student should be able to develop distribution, promotion, and international pricing strategies

5:The student should be able to explain the importance of Internet marketing, customer relationship marketing, and one-to-one marketing

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE, GONDA
श्री लाल बहादुर शास्त्री डिग्री कॉलेज, गोण्डा
AN AFFILIATED COLLEGE OF DR RAMMANOHAR LOHIA AVADH UNIVERSITY, AYODHYA,(U.P)

DEPARTMENT OF CHEMISTRY

Master of Science (M.Sc.) Chemistry

Program's Outcomes

Master of Science in chemistry is a two-year degree program in which students will have precise insight into: -

- Demonstrate, solve and have an understanding of major concepts in all disciplines of Chemistry independently.
- Employ critical thinking and scientific knowledge to design, carry out, record and analyse the results of Chemistry experiments
- Generation of new scientific insights or to the innovation of new applications of chemical research
- Present scientific and technical information resulting from laboratory experimentation in both written and oral formats.
- Apply modern methods of analysis to chemical systems in a laboratory setting.
- The students will become well versed in the mechanisms of all types of high-level and complicated chemical reactions.

Program Specific Outcomes

- Appreciates the importance of various spectroscopic techniques for the structural investigation of organic and inorganic molecules.
- Learns about the potential uses of analytical, industrial chemistry and medicinal chemistry, environmental chemistry.
- Understand and apply principles of organic chemistry for understanding the scientific phenomenon in reaction mechanisms, stereochemistry, organic synthesis, complex chemical structures, instrumental method of chemical analysis, molecular rearrangements and separation techniques.
- Study of organometallic reactions.
- Understanding the foundation of research, designing of research, report writing and communication.

Course Outcomes

M.Sc. Final Year
Paper-1 (Theory)
Inorganic Spectroscopy and Bioinorganic

- Basic principle of Infrared, Raman, NMR, ESR, Mossbauer spectroscopy and mass spectrometry and their application in inorganic compound structure study.
- Role of metal ions in the biological system, and diseases related to metal deficiency.
- Application of thermodynamics in a biological system.
- Functions, structures, bonding, and stereochemistry of different metalloenzymes.

Paper-2 (Theory)
Organic Spectroscopy, pericyclic, and photochemistry

- Familiarization with UV-Visible, NMR, IR spectroscopy and mass spectrometry and their application for the structural elucidation of organic compounds.
- Comprehensive study of pericyclic reaction comprising electrocyclic reactions, cycloadditions, and sigma tropic reactions.
- Study of the photochemistry of alkenes, carbonyls, aromatic compounds and rearrangements.

Paper-3 (Theory)
Organic Synthesis

- Describe methods for synthesis and transformation of the most common functional groups and acquainting with rearrangement reactions and named reactions.
- Describe and apply stereochemical concepts such as chirality, stereoisomerism, and stereoselectivity in relation to chemical transformations.
- Identify, analyse and evaluate synthetic routes to target molecules using retrosynthesis.

- Apply organometallic reagents and reactions in organic synthesis.
- Will learn the multistep synthesis of complex molecules.
- Understanding the principles and designing reactions in green chemistry.

Paper-4 (Theory)
Biomolecules

- Describing the structure, nomenclature, classification and physiological action of alkaloids. Design of their retrosynthetic approach.
- Structural elucidation, classification, stereochemistry and synthesis of terpenoids.
- Study of steroids and prostaglandins.
- Basic understanding of carbohydrates, amino acids, proteins, and nucleic acids.
- Study of biosynthesis of terpenes, fatty acids, and alkaloids.
- Discussing the chemistry of azoles, pyrazine, pyrimidine, and pyridazine.

Paper-VA (Theory)
Environmental and Analytical chemistry

- Discussion of the basic concepts of environmental chemistry.
- Understanding causes and solutions of the greenhouse effect and global warming phenomenon.
- Study the causes and remediation of air pollution.
- Study of chemical and environmental toxicology of chemicals.
- Learning data curation, processing, and analysis.
- Study of principles and application of electroanalytical, thermoanalytical and electroanalytical techniques.
- Describing principles and application of different separation techniques.

Paper-VB (Theory)
Medicinal Chemistry

- Describe the drug design, action of drug, and their structure-based classification.
- Describe the concept of receptors, thermokinetics and thermodynamics.
- Describe the antineoplastic agents, cardiovascular agents and psychoactive agents and antibiotics.
- Understanding the chemical aspect of Vitamins and Hormones.
- Describe the various stages involved in the development of a drug.
- Identify and describe the connection between chemical structure and physical-chemical properties,

Paper-VC (Theory)
Chemistry of Materials

- Describing the multiphase materials, glass, ceramics and composites.
- Introduction of nanomaterials and their application.
- Study of thin film techniques and their advantages.
- Study of solid state devices, and molecular devices.
- Describing the polymeric materials, liquid crystals and ionic conductors.

Paper-VD (Theory)
Polymers

- Define related concepts of polymers and summarize the historical evolution of the polymers.
- Evaluate the structure of polymers and recognize bonds between polymer chains.
- Debate thermal character and affecting factors of thermal behaviours.

- Study of molecular weights of polymers and different techniques for its determination.
- categorize polymers and explain polymers' production and processing.

Paper-VE (Theory)
Research Aptitude in Chemistry

- Understanding of the foundation of the research, research methodology, and formulation.
- Learning method designing, literature survey, and error analysis.
- Aquatinting with the fundamental laboratory techniques and report writing.
- Understanding research ethics and paper communication.

M.Sc. Final Year
Inorganic Practical

- Inorganic preparation of double salts and coordination complexes.
- Performing acid-base, redox, and precipitation titration.
- Estimation of metal ions by colorimetry and spectrophotometry.
- EDTA titration, and separation of ions by chromatography.

M.Sc. Final Year
organic Practical

- Separation, purification, and identification of a ternary mixture of organic compounds.
- Learning multistep organic synthesis
- Separation and identification of organic mixtures by chromatography
- Structural elucidation by spectroscopic analysis.

M.Sc. Final Year
Physical Practical

- Conductometric and potentiometric titration of acid and bases.
- pH- metry titration of acid and bases.
- Demonstration of colorimetry and polarimetry.
- Learning computer applications in chemistry.

UG- Medieval and Modern History

Programme Outcome

- This course provides the basic ideas and concepts of History and Historical development of Humanity.
- The program has been designed to develop historical outlook to resolve the day to day life struggles in the society and nation.
- Designed to enhance the capacity of students to understand universal and domain-specific values in History.
- This course intends to orient the learner with the Approaches to the broader discipline of History.
- Develop the ability to address the complexities and interface among of self, societal, national and International priorities.

B.A. I [Certificate in Medieval and Modern History]

Programme Specific Outcomes (PSOs)

- Learn about the discipline of History as a holistic field of study covering multiple facets and requirements of human beings in day to day living, for example, achievement of appropriate milestones in personal development; awareness, need and use of historical resources; access to adequate knowledge system for wholesome development; historical fundamentals.
- May have capabilities to start earning by enhancing their skills in the field of Historical and Traditional knowledge system, Tourism, Archives and Museums.

Semester: First, Course Title: Ancient and Early Medieval India (Till 1206 A.D.), Course Code: A050101T

- The present course will be useful in providing historical knowledge to the students. It has been constructed in such a way that a student will not only gain knowledge of ancient civilizations of India, but historical development can be understood easily. Students will be familiar with the political and cultural development of ancient India. The art, culture and philosophy of religion of ancient India have been included in the syllabus. Through this paper a student will get acquainted with historical facts, acquire knowledge of ancient pride of India and develop a positive attitude towards history. This approach will motivate the students to contribute towards nation building by making them aware of the social culture of India. This course will develop the logical ability of students to do a rational analysis of historical events and develop students' research aptitude. The course presented will inspire the ability of knowledge generation in the students.
- This section studies the political situation in North India. Students can gain knowledge of how political decentralization arose in North India after death ofHarshaand which historical circumstances proved helpful in the origin of Rajputs. It also includes the history of the dynasties of Kashmir, Punjab and Sindh. This section gives a historical account of new political conditions and conflicts in India after 1000 AD. Students can gain historical knowledge of political and strategic weakness of India through political conflicts. In this paper, a student will get knowledge of the nature of Muslim attacks and the struggle of Rajputs.

Semester: Second, Course Title: History of Medieval India (1206 A.D - 1757 A.D), Course Code: A050201T

- This paper is designed to develop the understanding of India with the advent of Turks , Timurs , Afghans and subsequently the establishment of Mughal rule in some parts of India.
- An emphasis has been laid to cover the regions og India not under the domination of Turks and Mughals in India. This paper covers the territorial expansion of various Indian Kings and impact of Medievalism on Indian society and culture

B.A. II [Diploma in Medieval and Modern History]

Programme Specific Outcomes (PSOs)

- Develop historical outlook to resolve the day to day life struggles in the society and nations.
- Develop sensitivity, resourcefulness, and competence to render service to enhance development of individuals, families, communities, and the nation at large.
- Enhance abilities involved in acting as proactive agents of change in promoting the discipline of Social Sciences.
- Explore and decide upon viable avenues of self-employment and entrepreneurship.
- Learn more about human and community & relationship.

Semester: Third, Course Title: History of Modern India (1757 A.D – 1950 A.D), Course Code: A050301T

- This paper is designed to cover the era of Indian history witnesses the transfer of power from Mughals, other provincial important dynasties to East India Company. It covers the study of Indian resistance at various levels and finally culminates in the First War of Independence. This is an important era of Indian History, as it witnesses the rise of indigenous powers like Marathas and Sikh State, along with new regional identities.
- This paper covers also the colonial land revenue system and Indian Renaissance. The course is designed to provide an overview of modern Indian political history and key concepts of the modern constitutional development to the students. The paper covers the history of British educational and agricultural policy with their impact over India. This paper also covers the development of communalism in India and mergers of Princely states after Independence

Semester: Fourth, Course Title: History of Modern world (1453 A.D – 1950A.D), Course Code: A050401T

- This paper is designed to develop the understanding of Modern Europe from a theocratic society to modern Nation-State system. Renaissance and its aftermaths on European society, economy, polity and culture and above all breaking of Roman Catholic Church leading to subsequent development of Nation-State and emergence of new ideologies culminating in the form of French Revolution which is supposed to be the last nail in the Medieval coffins and first cradle of Modern Times in European context. This paper covers the Napoleon era in Europe also.
- This paper is designed to introduce the student regarding rapid changes which occurred in Europe. Special emphasis is laid on the positioning of Nationalities and the rise of new order

defying the traditional theory of kingship. This is era of new ideologies leading to the First World War to which a student of history must be introduced with.

- This paper covers the history of Modern World between the two World Wars. This is an era when there is shift from Euro-centric history of world history. These turbulent times witnessed the rise of Totalitarianism as an alternative to democratic and liberal ideal, as Second World War was lesser Imperialistic clash and more a clash of two ideologies. This period also witnesses the formation of International Agencies and above all in the same period Colonist and Imperialist structure crumbled.

B.A. I [Degree in Medieval and Modern History]

Programme Specific Outcomes (PSOs)

- Appreciate and benefit from the symbiotic relationship among the core disciplines of History – SocialHistory, Economic History, Political History, Cultural History of India and the World.
- Programme is designed to encourage Ethical and Environmental values for sustainable development in the society.
- Programme is designed to encourage a genre of responsible students with a passion for lifelong learning and entrepreneurship, it also generate multi-skilled leaders with a holistic perspective that cuts across disciplines.
- Promote research, innovation and design (map and atlas) development favoring all the disciplines in History.
- Enhance digital literacy and apply them to engage in real time problem solving and ideation related to all fields of History.

Semester: Fifth, Course Title: Nationalism in India, Course Code: A050501T

- Acquaintance to Indian National Movement is indispensable for a student to make a sense of Indian Modern History and Nationalism.
- The course is designed to provide an overview of Indian freedom Struggle and key concepts of the Indian Nationalism to the students, which would evolve them into a conscientious citizen.
- The paper covers the history of Freedom Movement in a manner that each section, which played a vital role in independence of the country is introduced to the student.

Semester: Five, Course Title: History of Modern world (1453 A.D – 1815A.D), Course Code: A050502T (Optional)

- This paper is designed to develop the understanding of Modern Europe from a theocratic society to modern Nation-State system. Renaissance and its aftermaths on European society, economy, polity and culture and above all breaking of Roman Catholic Church leading to subsequent development of Nation-State and emergence of new ideologies culminating in the form of French Revolution which is supposed to be the last nail in the Medieval coffins and first cradle of Modern Times in European context.
- This paper covers the Napoleon era in Europe also.

Semester: Fifth, Course Title: Socio-Cultural and Economic History of Medieval India (1200A.D- 1700 A.D), Course Code: A050503T (Optional)

- This paper comprises social, economic and cultural aspect of medieval India. In this paper a student will be introduced to the saints of medieval India who had shown the path of Bhakti movement and flourish the Indian culture and religion during Turk and Mughal attacks.
- It covers also the condition of women in medieval Indian history. In spite of Turk ,Timur, Mughal and Afghan attacks Indian economy had a lion's share in all over world's economy, this aspect will also be known to the scholars of history.

Semester: Fifth, Course Title: Ethics in History, Course Code: A050504T (Optional)

- History is in an excellent position to inculcate moral values in students' mind.
- Study of Ved and Geeta with Life stories of great saints, heroes and reformers, like Shankracharya, Buddha, Rama, MaharanaPratap, Guru Nanak, Swami Dayananda, Swami Vivekananda, Mahatma Gandhi,Aurobindo and Radhakrishnan etc. encourage students to be truthful, courageous, just and selfless.

Semester: Fifth, Course Title: Research Methodology, Tour and Study of Maps, Course Code: A050501R

- In-depth knowledge of research methodology.
- The variation among Historical locations.
- Interaction with people with different natural and cultural settings.
- Study of Historical area being visited.
- Learn to prepare tour report.

Semester: Sixth, Course Title: Era of Gandhi and Mass Movement., Course Code: A050601T

- This paper is designed to introduce the student regarding the Gandhian Philosophy ,his tools and techniques which laid a mass movement in India.
- This paper covers rise of revolutionary movement and Gandhian programs that guided the path of Indian National Movement in twentieth century. It concludes with the vital role of 'Netaji' Subhash Chandra Bose in the National Movement.

Semester: Sixth, Course Title: History of Modern world (1815A.D- 1945A.D), Course Code: A050602T (Optional)

- This paper is designed to introduce the student regarding rapid changes which occurred in Europe. Special emphasis is laid on the positioning of Nationalities and the rise of new order defying the traditional theory of kingship. This is era of new ideologies leading to the First World War to which a student of history must be introduced with .
- This paper covers the history of Modern World between the two World Wars. This is an era when there is shift from Euro-centric history of world history. These turbulent times witnessed the rise of Totalitarianism as an alternative to democratic and liberal ideal, as Second World War was lesser Imperialistic clash and more a clash of two ideologies. This period also witnesses the formation of International Agencies and above all in the same period Colonist and Imperialist structure crumbled.

Semester: Sixth, Course Title: Socio-Cultural and Economic History of Medieval India (1700A.D- 1900 A.D), Course Code: A050603T (Optional)

- This paper comprises social, economic and cultural aspect of modern India. In this paper a student will be introduced to the social and religious reformation movement in colonial India.
- Decline of Indian Handicraft, land revenue system and commercialization of agriculture are the salient feature of 18th and 19th Century India. Development of banking and Railway had played a vital role in the drain of Indian wealth to England. All these aspects have been covered under this paper title.

Semester: Sixth, Course Title: History and its Professional Utility, Course Code: A050604T (Optional)

- This paper is designed to introduce application of history among students of history. Different units are designed about use of Archives, Museums and Libraries. Historyandits professional utility is the central idea behind this paper.
- This paper covers environmental aspect of history as well as historical survey of development of science and technology in India.

Semester: Sixth, Course Title: Study of Languages used in Indian History, Course Code: A050601R

- In-depth knowledge of Languages used in Indian History.
- The variation among Historical aspect of different languages.
- Interaction with people with different languages and cultural settings.
- Study of Historical area of different languages being visited.
- Learn to prepare language analysis report.

DEPARTMENT OF BOTANY

Sri Lal Bahadur Shastri Degree College, Gonda-271003

PROGRAMME OUTCOMES (POS):

Transformed curriculum shall develop educated outcome-oriented candidature, fostered with discovery learning, equipped with practice & skills to deal practical problems and versed with recent pedagogical trends in education including e-learning, flipped class and hybrid learning to develop into responsible citizen for nation-building and transforming the country towards the future with their knowledge gained in the field of plant science.

- CBCS syllabus with a combination of general and specialized education shall introduce the concepts of breadth and depth in learning.
- Shall produce competent plant biologists who can employ and implement their gained knowledge in basic and applied aspects that will profoundly influence the prevailing paradigm of agriculture, industry, healthcare and environment to provide sustainable development.
- Will increase the ability of critical thinking, development of scientific attitude, handling of problems and generating solutions, improve practical skills, enhance communication skill, social interaction, increase awareness in judicious use of plant resources by recognizing the ethical value system.
- The training provided to the students will make them competent enough for doing jobs in Govt. and private sectors of academia, research and industry along with graduate preparation for national as well as international competitive examinations, especially UGC-CSIR NET, UPSC Civil Services Examination, IFS, NSC, FCI, BSI, FRI etc.
- Certificate and diploma courses are framed to generate self- entrepreneurship and self-employability, if multi exit option is opted.
- Lifelong learning be achieved by drawing attention to the vast world of knowledge of plants and their domestication.

B.Sc I Y ear PROGRAMME SPECIFIC OUTCOMES (PSOS):

CERTIFICATE COURSE IN MICROBIAL TECHNOLOGY & CLASSICAL BOTANY.

This Programme imparts knowledge on various fields of plant biology through teaching, interactions and practical classes. It shall maintain a balance between the traditional botany and modern science for shifting it towards the frontier areas of plant sciences with applied approach. This syllabus has been drafted to enable the learners to prepare them for self-

entrepreneurship and employment in various fields including academics as well as competitive exams. Students would gain wide knowledge in following aspects:

1. Diversity of plants and microbes, their habitat, morphology, architecture and reproduction.

2. Plant disease causing microbes, symptoms & control.

3. Economic value of plants and their use in Human Welfare.

B.Sc II Year PROGRAMME SPECIFIC OUTCOMES (PSOS):

DIPLOMA IN PLANT IDENTIFICATION, UTILIZATION AND ETHNOMEDICINE.

This course provides a broad understanding of identifying, growing and using plants. This course is primarily aimed to introduce people to the richness of plant diversity found in surrounding areas. Lecture sessions are designed to cover fundamental topics concerning classification of plants and their utilization required for understanding the flora and vegetation. Practical sessions are organized following theory for easy understanding of the various parts of the plants, structural organization of floral parts and diversity therein. Participants are taken to different locations covering a variety of habitats and forest types to acquaint them with the native flora, in the long run, will contribute towards building momentum for people's participation in environmental conservation without compromising on academic rigor and our rich wealth of knowledge inherited over generations.

1. The course will cover conventional topics in Field Botany like Evolutionary History & Diversity of plants, Complete Morphology, Nomenclature of plants, Systems of Classification, Keys to important Families of Flowering Plants, Field Data Collection & Herbarium Techniques.

2. The course is designed to become a commercial crop grower, florist, protected cultivator, green belt plant advisor to industries, pharmacologist & taxonomist.

B.Sc III Year PROGRAMME SPECIFIC OUTCOMES (PSOS):

BACHELOR OF SCIENCE.

The learning outcomes of a three years graduation course are aligned with programme learning outcomes but these are specific to-specific courses offered in a program. The core courses shall be the backbone of this framework whereas discipline electives, generic electives and skill enhancement courses would add academic excellence in the subject together with a multi-dimensional and multidisciplinary approach.

1. Understanding of plant classification systematics, evolution, ecology, developmental biology, physiology, biochemistry, plant interactions with microbes and insects, morphology, anatomy, reproduction, genetics and molecular biology of various life-forms.

2. This course is suitable to produce expertise in conservation biology like ex-situ conservation, response to habitat change, genotype characterization and reproductive biology.

3. Understanding of various analytical techniques of plant sciences, use of plants as industrial resources or as a human livelihood support system and is well versed with the use of transgenic technologies for basic and applied research in plants.

4. Understanding of various life forms of plants, morphology, anatomy, reproduction, genetics, microbiology, molecular biology, recombinant DNA technology, transgenic technology and use of bioinformatics tools and databases and the application of statistics to biological data**.**

5. Entrepreneurship Skill Development, Understand the issues of environmental contexts and sustainable development, Inculcation of human values.

6. Strengthen mathematical and computational skills. Enable students to use ICT and AI effectively.

7. Develop good skills in the laboratory such as observation and evaluation by the use of modern tools and technology.

- Understanding the nature and basic concepts of all the plant groups, their metabolism, components at the molecular level, biochemistry, taxonomy and ecology. The course will make them aware of natural resources and the environment and the importance of conserving it. Hands-on training in various fields will develop practical skills, handling equipment and laboratory use along with collection and interpretation of biological materials and data. Knowledge gained through theoretical and lab-based experiments will generate technical personnel in various priority areas such as genetics, cell and molecular biology, plant systematics and biotechnology.

- Botanists are able to contribute to all these fields and therefore, are mainly employed with educational institutions, government or public sectors or companies in industries, such as agriculture or forestry, oil, chemical, biotechnology, geological survey, environmental protection, drugs, genetic research, plant resources laboratories, plant health inspection services, lumber and paper, food, fermentation, nursery, fruit and so on. Jobs available as a botanist: •Microbiologist, plant pathologist, Taxonomist • Plant Physiologist • Plant Biochemist • Researcher • Mycologist • Ecologist • Weed Scientist • Palaeobotanist •Conservationist • Fruit Grower • Morphologist • Cytologist • Ethnobotanist • Plant geneticists etc.

- Inculcate strong fundamentals on modern and classical aspects of Botany, understand knowledge of Botany is an essential pre-requisite for the pursuit of many applied sciences. It will facilitate students for taking up and shaping a successful career in Botany and allied sciences.

- Introduction of research project will inculcate research aptitude and passion for higher education and scientific research.

COURSE OUTCOMES:

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

1. Develop understanding about the classification and diversity of different microbes including viruses, Algae, Fungi & Lichens & their economic importance.
2. Develop conceptual skill about identifying microbes, pathogens, biofertilizers & lichens.
3. Gain knowledge about developing commercial enterprise of microbial products.
4. Learn host −pathogen relationship and disease management.
5. Learn Presentation skills (oral & writing) in life sciences by usage of computer & multimedia.
6. Gain Knowledge about uses of microbes in various fields.
7. Understand the structure and reproduction of certain selected bacteria algae, fungi and lichens.
8. Gain Knowledge about the economic values of this lower group of plant community.
9. Develop critical understanding on morphology, anatomy and reproduction of Bryophytes, Pteridophytes and Gymnosperms.
10. Understanding of plant evolution and their transition to land habitat.
11. Understand morphology, anatomy, reproduction and developmental changes therein through typological study and create a knowledge base in understanding the basis of plant diversity, economic values & taxonomy of plants.
12. Understand the details of external and internal structures of flowering plants.
13. To gain an understanding of the history and concepts underlying various approaches to plant taxonomy and classification.
14. To learn the major patterns of diversity among plants, and the characters and types of data used to classify plants.
15. To compare the different approaches to classification with regard to the analysis of data.
16. To become familiar with major taxa and their identifying characteristics, and to develop in depth knowledge of the current taxonomy of a major plant family.
17. To discover and use diverse taxonomic resources, reference materials, herbarium collections, publications.
18. For the entrepreneur career in plants, one can establish a nursery, start a landscaping business, Set up a farm or Run a plantation consultancy firm.
19. Understand about the uses of plants −will know one plant-one employments
20. Understand phytochemical analysis related to medicinally important plants and economic products produced by the plants.
21. Know about the importance of Medicinal plants and its useful parts, economically important plants in our daily life and also about the traditional medicines and herbs, and its relevance in modern times.
22. Understand the role of Physiological and metabolic processes for plant growth and development.
23. Learn the symptoms of Mineral Deficiency in crops and their management.
24. Assimilate Knowledge about Biochemical constitution of plant diversity.

25. Know the role of plants in development of natural products, nutraceuticals, dietary supplements, antioxidants.
26. Understand nucleic acids, organization of DNA in prokaryotes and Eukaryotes, DNA replication mechanism, genetic code and transcription process.
27. Know about Processing and modification of RNA and translation process, function and regulation of expression.
28. Gain working knowledge of the practical and theoretical concepts of bioinformatics.
29. Acquire knowledge on cell ultrastructure.
30. Understand the structure and chemical composition of chromatin and concept of cell division.
31. Interpret the Mendel's principles, acquire knowledge on cytoplasmic inheritance and sex-linked inheritance.
32. Understand the concept of 'one gene one enzyme hypothesis' along with the molecular mechanism of mutation.
33. Acquaint the students with complex interrelationship between organisms and environment.
34. Make them understand methods for studying vegetation, community patterns and processes, ecosystem functions, and principles of phytogeography.
35. This knowledge is critical in evolving strategies for sustainable natural resource management and biodiversity conservation.

Prof. S.K Srivastava,
Head, Deptt. of Botany

Bachelor of Science Physics Syllabus

SEMESTER-WISE TITLES OF THE PAPERS IN UG PHYSICS COURSE			
YEAR	SEME-STER	PAPER TITLE	THEORY / PRACTICAL
CERTIFICATE IN BASIC PHYSICS & SEMICONDUCTOR DEVICES			
FIRST YEAR	I	Mathematical Physics & Newtonian Mechanics	Theory
		Mechanical Properties of Matter	Practical
	II	Thermal Physics & Semiconductor Devices	Theory
		Thermal Properties of Matter & Electronic Circuits	Practical
DIPLOMA IN APPLIED PHYSICS WITH ELECTRONICS			
SECOND YEAR	III	Electromagnetic Theory & Communication Systems	Theory
		Demonstrative Aspects of Electricity & Magnetism	Practical
	IV	Perspectives of Modern Physics & Modern Optics	Theory
		Demonstrative Aspects of Optics & Lasers	Practical
DEGREE IN BACHELOR OF SCIENCE			
THIRD YEAR	V	Classical & Statistical Mechanics	Theory
		Digital Electronics & Microprocessor	Theory
		Digital Electronics Instrumentation	Practical
	VI	Quantum Physics & Spectroscopy	Theory
		Solid State & Nuclear Physics	Theory
		Exploration of Communication Systems	Practical

SUBJECT PREREQUISITES

To study this subject, a student must have had the subjects **Physics & Mathematics** in class 12th.

PROGRAMME OUTCOMES (POs)

The practical value of science for productivity, for raising the standard of living of the people is surely recognized. Science as a power, which provides tools for effective action for the benefit of mankind or for conquering the forces of Nature or for developing resources, is surely highlighted everywhere. Besides the utilitarian aspect, the value of Science, lies in the fun called intellectual enjoyment. Science teaches the value of rational thought as well as importance of freedom of thought.

Our teaching so far has been aimed more at formal knowledge and understanding instead of training and application oriented. Presently, the emphasis is more on training, application and to some extent on appreciation,the fostering in the pupils of independent thinking and creativity. Surely, teaching has to be more objective based. The process of application based training, whether we call it a thrill or ability, is to be emphasized as much as thecontent.

Physics is a basic science; it attempts to explain the natural phenomenon in as simple a manner as possible. It is an intellectual activity aimed at interpreting the Multiverse. The starting point of all physics lies in experience. Experiment, whether done outside or in the laboratory, is an important ingredient of learning physics and hence the present programme integrates six experimental physics papers focusing on various aspects of modern technology based equipments. With all the limitations imposed (even the list of experiments as given in the syllabus) if the spirit of discovery by investigation is kept in mind, much of the thrill can be experienced.

- *The students would learn about the behaviour of physical bodies it provides the basic concepts related to the motion of all the objects around us in our daily life. The course builds a foundation of various applied field in science and technology; especially in the field of mechanical engineering. The course comprises of the study vectors, laws of motion, momentum, energy, rotational motion, gravitation, fluids, elasticity and special relativity.*
- *The programme intends to nurture the proficiency in functional areas of Physics, which is in line with the international standards, aimed at realizing the goals towards skilled India.*
- *The students would gain the knowledge of Basic Electronics circuits, network theorems and measuring instruments: They would know about common solid state devices: Semiconductor diodes and transistors. The topics also include the Rectifiers, Filters and their applications, number systems and logic gates which are foundation blocks of digital electronics.*
- *The Bachelor's Project (Industrial Training / Survey / Dissertation) is intended to give an essence of research work for excellence in explicit areas. It integrates with specific job requirements / opportunities and provides a foundation for Bachelor (Research) Programmes.*
- *Students would be able to understand various types of crystal structures and symmetries and understand the relationship between the real and reciprocal space and learn the Bragg's X-ray diffraction in crystals. Would also learn about phonons and lattice.*

PROGRAMME SPECIFIC OUTCOMES (PSOs)

This programme contains very important aspects of modern day course curriculum, namely, Classical, Quantum and Statistical computational tools required in the calculation of physical quantities of relevance in interacting many body problems in physics. It introduces the branches of Solid State Physics and Nuclear Physics that are going to be of utmost importance to both undergraduate and graduate level. Proficiency in this area will attract demand in research and industrial establishments engaged in activities involving applications of these fields.

- *To understand the basic laws and explore the fundamental concepts of physics*
- *To understand the concepts and significance of the various physical phenomena.*
- *To carry out experiments to understand the laws and concepts of Physics.*
- *To apply the theories learnt and the skills acquired to solve real time problems.*
- *To acquire a wide range of problem solving skills, both analytical and technical and to apply them.*
- *To enhance the student's academic abilities, personal qualities and transferable skills this will give them an opportunity to develop as responsible citizens.*

YEAR	SEME-STER	PAPER	PAPER TITLE	UNIT TITLE (Periods Per Semester)
CERTIFICATE IN BASIC PHYSICS & SEMICONDUCTOR DEVICES				
FIRST YEAR	SEMESTER I	Theory Paper-1	Mathematical Physics & Newtonian Mechanics Part A: Basic Mathematical Physics Part B: Newtonian Mechanics& Wave Motion	Part A I: Vector Algebra (7) II: Vector Calculus (8) III: Coordinate Systems (8) IV: Introduction to Tensors (7) Part B V: Dynamics of a System of Particles (8)VI: Dynamics of a Rigid Body (8) VII: Motion of Planets & Satellites (7) VIII: Wave Motion (7)
		Practical Paper	Mechanical Properties of Matter	Lab Experiment List Online Virtual Lab Experiment List/Link
	SEMESTER II	Theory Paper-1	Thermal Physics & Semiconductor Devices Part A: Thermodynamics & Kinetic Theory of Gases Part B: Circuit Fundamentals& Semiconductor Devices	Part A I: 0^{th} & 1^{st} Law of Thermodynamics (8) II: 2^{nd} & 3^{rd} Law of Thermodynamics (8)III: Kinetic Theory of Gases (7) IV: Theory of Radiation (7) Part B V: DC & AC Circuits (6) VI: Semiconductors & Diodes (9)VII: Transistors (9) VIII: Electronic Instrumentation (6)
		Practical Paper	Thermal Properties of Matter & Electronic Circuits	Lab Experiment List Online Virtual Lab Experiment List/Link

Course Outcomes (COs)

Recognize the difference between scalars, vectors, pseudo-scalars and pseudo-vectors.
Understand the physical interpretation of gradient, divergence and curl.
Comprehend the difference and connection between Cartesian, spherical and cylindrical coordinate systems.
Know the meaning of 4-vectors, Kronecker delta and Epsilon (Levi Civita) tensors.
Study the origin of pseudo forces in rotating frame.
Study the response of the classical systems to external forces and their elastic deformation.
Understand the dynamics of planetary motion and the working of Global Positioning System (GPS).
Comprehend the different features of Simple Harmonic Motion (SHM) and wave propagation.

PART A
Basic Mathematical Physics

I	Introduction to Indian ancient Physics and contribution of Indian Physicists,in context with the holistic development of modern science and technology, should be included under Continuous Internal Evaluation (CIE). Vector Algebra Coordinate rotation, reflection and inversion as the basis for defining scalars, vectors, pseudo-scalars and pseudo-vectors (include physical examples). Component form in 2D and 3D. Geometrical and physical interpretation of addition, subtraction, dot product, wedge product, cross product and triple product of vectors. Position, separation and displacement vectors.	7
II	Vector Calculus Geometrical and physical interpretation of vector differentiation, Gradient, Divergence and Curl and their significance. Vector integration, Line, Surface (flux) and Volume integrals of vector fields. Gradient theorem, Gauss-divergence theorem, Stoke-curl theorem, Greens theorem and Helmholtz theorem (statement only). Introduction to Dirac delta function.	8
III	Coordinate Systems 2D & 3D Cartesian, Spherical and Cylindrical coordinate systems, basis vectors, transformation equations. Expressions for displacement vector, arc length, area element, volume element, gradient, divergence and curl in different coordinate systems. Components of velocity and acceleration in different coordinate systems. Examples of non-inertial coordinate system and pseudo-acceleration.	8

IV	Introduction to Tensors Principle of invariance of physical laws w.r.t. different coordinate systems as the basis for defining tensors. Coordinate transformations for general spaces of nD, contravariant, covariant & mixed tensors and their ranks, 4-vectors. Index notation and summation convention. Symmetric and skew-symmetric tensors. Invariant tensors, Kronecker delta and Epsilon (Levi Civita) tensors. Examples of tensors in physics.	7
PART B **Newtonian Mechanics & Wave Motion**		
V	Dynamics of a System of Particles Review of historical development of mechanics up to Newton. Background, statement and critical analysis of Newton's axioms of motion. Dynamics of a system of particles, centre of mass motion, and conservation laws & their deductions. Rotating frames of reference, general derivation of origin of pseudo forces (Euler, Coriolis & centrifugal) in rotating frame, and effects of Coriolis force.	8
VI	Dynamics of a Rigid Body Angular momentum, Torque, Rotational energy and the inertia tensor. Rotational inertia for simple bodies (ring, disk, rod, solid and hollow sphere, solid and hollow cylinder, rectangular lamina). The combined translational and rotational motion of a rigid body on horizontal and inclined planes. Elasticity, relations between elastic constants, bending of beam and torsion of cylinder.	8
VII	Motion of Planets & Satellites Two particle central force problem, reduced mass, relative and centre of mass motion. Newton's law of gravitation, gravitational field and gravitational potential. Kepler's laws of planetary motion and their deductions. Motions of geo-synchronous & geo-stationary satellites and basic idea of Global Positioning System (GPS).	7
VIII	Wave Motion Differential equation of simple harmonic motion and its solution, use of complex notation, damped and forced oscillations, Quality factor. Composition of simple harmonic motion, Lissajous figures. Differential equation of wave motion. Plane progressive waves in fluid media, reflection of waves and phase change, pressure and energy distribution. Principle of superposition of waves, stationary waves, phase and group velocity.	7

Suggested Readings

PART A

Murray Spiegel, Seymour Lipschutz, Dennis Spellman, "Schaum's Outline Series: Vector Analysis", McGraw Hill, 2017, 2e

Shanti Narayan, P.K. Mittal, "A Text Book of Vector Analysis", S. Chand Publishing, 2010

Shanti Narayan, P.K. Mittal, "A Text Book of Vector Calculus", S. Chand Publishing, 1987, 4e

PART B

Charles Kittel, Walter D. Knight, Malvin A. Ruderman, Carl A. Helmholz, Burton J. Moyer, "Mechanics (In SI Units): Berkeley Physics Course Vol 1", McGraw Hill, 2017, 2e

Richard P. Feynman, Robert B. Leighton, Matthew Sands, "The Feynman Lectures on Physics - Vol. 1", Pearson Education Limited, 2012

Hugh D. Young and Roger A. Freedman, "Sears & Zemansky's University Physics with Modern Physics", Pearson Education Limited, 2017, 14e

D.S. Mathur, P.S. Hemne, "Mechanics", S. Chand Publishing, 1981, 3e

Course Books published in Hindi may be prescribed by the Universities.

Course Outcomes (COs)

Recognize the difference between reversible and irreversible processes.
Understand the physical significance of thermodynamical potentials.
Comprehend the kinetic model of gases w.r.t. various gas laws.
Study the implementations and limitations of fundamental radiation laws.
Utility of AC bridges.
Recognize the basic components of electronic devices.
Design simple electronic circuits.
Understand the applications of various electronic instruments.

Unit	Topics	No. of Lectures
	PART A **Thermodynamics & Kinetic Theory of Gases**	
I	0^{th} & 1^{st} Law of Thermodynamics State functions and terminology of thermodynamics. Zeroth law and temperature. First law, internal energy, heat and work done. Work done in various thermodynamical processes. Enthalpy, relation between C_P and C_V. Carnot's engine, efficiency and Carnot's theorem. Efficiency of internal combustion engines (Otto and diesel).	8
II	2^{nd} & 3^{rd} Law of Thermodynamics Different statements of second law, Clausius inequality, entropy and its physical significance. Entropy changes in various thermodynamical processes. Third law of thermodynamics and unattainability of absolute zero. Thermodynamical potentials, Maxwell's relations, conditions for feasibility of a process and equilibrium of a system. Clausius- Clapeyron equation, Joule-Thompson effect.	8
III	Kinetic Theory of Gases Kinetic model and deduction of gas laws. Derivation of Maxwell's law of distribution of velocities and its experimental verification. Degrees of freedom, law of equipartition of energy (no derivation) and its application to specific heat of gases (mono, di and poly atomic).	7
IV	Theory of Radiation Blackbody radiation, spectral distribution, concept of energy density and pressure of radiation. Derivation of Planck's law, deduction of Wien's distribution law, Rayleigh-Jeans law, Stefan-Boltzmann law and Wien's displacement law from Planck's law.	7

PART B
Circuit Fundamentals & Semiconductor Devices

V	**DC & AC Circuits** Growth and decay of currents in RL circuit. Charging and discharging of capacitor in RC, LC and RCL circuits. Network Analysis - Superposition, Reciprocity, Thevenin's and Norton's theorems. AC Bridges - measurement of inductance (Maxwell's, Owen's and Anderson's bridges) and measurement of capacitance (Schering's, Wein's and de Sauty's bridges).	6
VI	**Semiconductors & Diodes** P and N type semiconductors, qualitative idea of Fermi level. Formation of depletion layer in PN junction diode, field & potential at the depletion layer. Qualitative idea of current flow mechanism in forward & reverse biased diode. Diode fabrication. PN junction diode and its characteristics, static and dynamic resistance. Principle, structure, characteristics and applications of Zener, Tunnel, Light Emitting, Point Contact and Photo diodes. Half and Full wave rectifiers, calculation of ripple factor, rectification efficiency and voltage regulation. Basic idea about filter circuits and voltage regulated power supply.	9
VII	**Transistors** Bipolar Junction PNP and NPN transistors. Study of CB, CE & CC configurations w.r.t. characteristics; active, cutoff & saturation regions; current gains & relations between them. DC Load Line analysis and Q-point stabilisation. Voltage Divider bias circuit for CE amplifier. Qualitative discussion of RC coupled voltage amplifier.	9
VIII	**Electronic Instrumentation** Multimeter: Principles of measurement of dc voltage, dc current, ac voltage, ac current and resistance. Specifications of a multimeter and their significance. Cathode Ray Oscilloscope: Block diagram of basic CRO. Construction of CRT, electron gun, electrostatic focusing and acceleration (no mathematical treatment). Front panel controls, special features of dual trace CRO, specifications of a CRO and their significance. Applications of CRO to study the waveform and measurement of voltage, current, frequency & phase difference.	6

Suggested Readings

PART A

1. M.W. Zemansky, R. Dittman, "Heat and Thermodynamics", McGraw Hill, 1997, 7e
2. F.W. Sears, G.L. Salinger, "Thermodynamics, Kinetic theory & Statistical thermodynamics", Narosa Publishing House, 1998
3. Enrico Fermi, "Thermodynamics", Dover Publications, 1956
4. S. Garg, R. Bansal, C. Ghosh, "Thermal Physics", McGraw Hill, 2012, 2e
5. Meghnad Saha, B.N. Srivastava, "A Treatise on Heat", Indian Press, 1973, 5e

PART B

1. B.G. Streetman, S.K. Banerjee, "Solid State Electronic Devices", Pearson Education India, 2015, 7e
2. W.D. Stanley, "Electronic Devices: Circuits and Applications", Longman Higher Education, 1989
3. J.D. Ryder, "Electronic Fundamentals and Applications", Prentice-Hall of India Private Limited, 1975, 5e
4. S.L. Gupta, V. Kumar, "Hand Book of Electronics", Pragati Prakashan, Meerut, 2016, 43e

Course Books published in Hindi may be prescribed by the Universities.

SECOND YEAR

DETAILED SYLLABUS FOR

DIPLOMA

IN

ADVANCED PHYSICS WITH ELECTRONICS

YEAR	SEME-STER	PAPER	PAPER TITLE	UNIT TITLE (Periods Per Semester)
DIPLOMA IN APPLIED PHYSICS WITH ELECTRONICS				
SECOND YEAR	SEMESTER III	Theory Paper-1	Electromagnetic Theory & Communication Systems Part A: Electromagnetic Theory Part B: Communication Systems & Introduction to Fiber Optics	Part A I: Electrostatics (8) II: Magnetostatics (8) III: Time Varying Electromagnetic Fields (7) IV: Electromagnetic Waves (7) Part B V: Communication System (7) VI: Basics of Amplitude Modulation (8) VII: Introduction to Angle Modulation (7) VII: Introduction to Fiber Optics (8)
		Practical Paper	Demonstrative Aspects of Electricity & Magnetism	Lab Experiment List Online Virtual Lab Experiment List/Link
	SEMESTER IV	Theory Paper-1	Perspectives of Modern Physics & Modern Optics Part A: Perspectives ofModern Physics Part B: Physical Optics &Lasers	Part A I: Relativity-Experimental Background (7) II: Relativity-Relativistic Kinematics (9) III: Inadequacies of Classical Mechanics (7) IV: Introduction to Quantum Mechanics (7) Part B V: Interference (8) VI: Diffraction (8) VII: Polarisation (7) VIII: Lasers (7)
		Practical Paper	Demonstrative Aspects of Optics & Lasers	Lab Experiment List Online Virtual Lab Experiment List/Link

Course Outcomes (COs)

Better understanding of electrical and magnetic phenomenon in daily life.
To troubleshoot simple problems related to electrical devices.
Comprehend the powerful applications of ballistic galvanometer.
Study the fundamental physics behind reflection and refraction of light (electromagnetic waves).
Understand the various components and features of a general communication system.
Recognize the importance of amplitude modulation and demodulation.
Insight in basics and properties of frequency and phase modulation.
Comprehend the theory and working of optical fibers along with its applications.

Unit	Topics	No. of Lectures
	PART A **Electromagnetic Theory**	
I	Electrostatics Electric charge & charge densities, electric force between two charges. General expression for Electric field in terms of volume charge density (divergence & curl of Electric field), general expression for Electric potential in terms of volume charge density and Gauss law (applications included). Study of electric dipole. Electric fields in matter, polarization, auxiliary field **D** (Electric displacement), electric susceptibility and permittivity.	8
II	Magnetostatics Electric current & current densities, magnetic force between two current elements. General expression for Magnetic field in terms of volume current density (divergence and curl of Magnetic field), General expression for Magnetic potential in terms of volume current density and Ampere's circuital law (applications included). Study of magnetic dipole (Gilbert & Ampere model). Magnetic fields in matter, magnetisation, auxiliary field **H**, magnetic susceptibility and permeability.	8
III	Time Varying Electromagnetic Fields Faraday's laws of electromagnetic induction and Lenz's law. Displacement current, equation of continuity and Maxwell-Ampere's circuital law. Self and mutual induction (applications included). Derivation and physical significance of Maxwell's equations. Theory and working of moving coil ballistic galvanometer (applications included).	7
IV	Electromagnetic Waves Electromagnetic energy density and Poynting vector. Plane electromagnetic waves in linear infinite dielectrics, homogeneous & inhomogeneous plane waves and dispersive & non-dispersive media. Reflection and refraction of homogeneous plane electromagnetic waves, law of reflection, Snell's law, Fresnel's formulae (only for normal incidence & optical frequencies) and Stoke's law.	7

PART B Communication Systems & Introduction to Fiber Optics		
V	Communication System Introduction and Block diagram. Components of Communication System - amplifier, transmitter, channel receiver and band spectrum modulation. Types of modulation, modulation factor & its importance. Forms of modulation.	7
VI	Basics of Amplitude Modulation Modulation-index, frequency spectrum, generation of AM (balanced modulator, collector modulator). Amplitude Demodulation (diode detector), Double Side Band Suppressed Carrier (DSBSC) generation, Single Side Band Suppressed Carrier (SSBSC) generation.	8
VII	Introduction to Angle Modulation General Frequency & Phase modulation, frequency spectrum, bandwidth requirement, Frequency & Phase Deviation, Modulation index, equivalence between FM & PM, Generation of FM and FM detector.	7
VIII	Introduction to Fiber Optics Basics of Fiber Optics, step index fiber, graded index fiber, light propagation through an optical fiber, acceptance angle & numerical aperture, intermodal dispersion losses and applications of optical fibers.	8

Suggested Readings

PART A

D.J. Griffiths, "Introduction to Electrodynamics", Prentice-Hall of India Private Limited, 2002, 3e

E.M. Purcell, "Electricity and Magnetism (In SI Units): Berkeley Physics Course Vol 2", McGraw Hill, 2017,2e

Richard P. Feynman, Robert B. Leighton, Matthew Sands, "The Feynman Lectures on Physics - Vol. 2", Pearson Education Limited, 2012

D.C. Tayal, "Electricity and Magnetism", Himalaya Publishing House Pvt. Ltd., 2019, 4e

PART B

M.S. Roden, "Analog and Digital Communication Systems", Discovery Press, 2003, 5e

D. Roddy, J. Coolen, "Electronic Communications", Pearson Education Limited, 2008, 4e

Jeffrey S. Beasley, Gary M. Miller, "Modern Electronic Communication", Pearson Education Limited, 2007, 9e

W. Schweber, "Electronic Communication Systems: A Complete Course", Pearson Education Limited, 2001, 4e

John M. Senior, "Optical Fiber Communications: Principles and Practice", Pearson Education Limited, 2010, 3e

John Wilson, John Hawkes, "Optoelectronics: Principles and Practice", Pearson Education Limited, 2018, 3e

Course Books published in Hindi may be prescribed by the Universities.

Course Outcomes (COs)

Recognize the difference between the structure of space & time in Newtonian & Relativistic mechanics.
Understand the physical significance of consequences of Lorentz transformation equations.
Comprehend the wave-particle duality.
Develop an understanding of the foundational aspects of Quantum Mechanics.
Study the working and applications of Michelson and Fabry-Perot interferometers.
Recognize the difference between Fresnel's and Fraunhofer's class of diffraction.
Comprehend the use of polarimeters.
Study the characteristics and uses of lasers.

Unit	Topics	No. of Lectures
	PART A **Perspectives of Modern Physics**	
I	Relativity-Experimental Background Structure of space & time in Newtonian mechanics and inertial & non-inertial frames. Galilean transformations. Newtonian relativity. Galilean transformation and Electromagnetism. Attempts to locate the Absolute Frame: Michelson-Morley experiment and significance of the null result. Einstein's postulates of special theory of relativity.	7
II	Relativity-Relativistic Kinematics Structure of space & time in Relativistic mechanics and derivation of Lorentz transformation equations (4-vector formulation included). Consequences of Lorentz Transformation Equations (derivations & examples included): Transformation of Simultaneity (Relativity of simultaneity); Transformation of Length (Length contraction); Transformation of Time (Time dilation); Transformation of Velocity (Relativistic velocity addition); Transformation of Acceleration; Transformation of Mass (Variation of mass with velocity). Relation between Energy & Mass (Einstein's mass & energy relation) and Energy & Momentum.	9
III	Inadequacies of Classical Mechanics Particle Properties of Waves: Spectrum of Black Body radiation, Photoelectric effect, Compton effect and their explanations based on Max Planck's Quantum hypothesis. Wave Properties of Particles: Louis de Broglie's hypothesis of matter waves and their experimental verification by Davisson-Germer's experiment and Thomson's experiment.	7
IV	Introduction to Quantum Mechanics Matter Waves: Mathematical representation, Wavelength, Concept of Wave group, Group (particle) velocity, Phase (wave) velocity and relation between Group & Phase velocities. Wave Function: Functional form, Normalisation of wave function, Orthogonal & Orthonormal wave functions and Probabilistic interpretation of wave function based on Born Rule.	7

PART B Physical Optics & Lasers		
V	Interference Conditions for interference and spatial & temporal coherence. Division of Wavefront - Fresnel's Biprism and Lloyd's Mirror. Division of Amplitude - Parallel thin film, wedge shaped film and Newton's Ring experiment. Interferometer - Michelson and Fabry-Perot.	8
VI	Diffraction Distinction between interference and diffraction. Fresnel's and Fraunhofer's class of diffraction. Fresnel's Half Period Zones and Zone plate. Fraunhofer diffraction at a single slit, n slits and Diffracting Grating. Resolving Power of Optical Instruments - Rayleigh's criterion and resolving power of telescope, microscope & grating.	8
VII	Polarisation Polarisation by dichronic crystals, birefringence, Nicol prism, retardation plates and Babinet's compensator. Analysis of polarized light. Optical Rotation - Fresnel's explanation of optical rotation and Half Shade & Biquartz polarimeters.	7
VIII	Lasers Characteristics and uses of Lasers. Quantitative analysis of Spatial and Temporal coherence. Conditions for Laser action and Einstein's coefficients. Three and four level laser systems (qualitative discussion).	7

Suggested Readings

PART A

A. Beiser, Shobhit Mahajan, "Concepts of Modern Physics: Special Indian Edition", McGraw Hill, 2009, 6e

John R. Taylor, Chris D. Zafiratos, Michael A.Dubson, "Modern Physics for Scientists and Engineers",Prentice-Hall of India Private Limited, 2003, 2e

R.A. Serway, C.J. Moses, and C.A. Moyer, "Modern Physics", Cengage Learning India Pvt. Ltd, 2004, 3e

R. Resnick, "Introduction to Special Relativity", Wiley India Private Limited, 2007

R. Murugeshan, Kiruthiga Sivaprasath, "Modern Physics", S. Chand Publishing, 2019, 18e

PART B

Francis A. Jenkins, Harvey E. White, "Fundamentals of Optics", McGraw Hill, 2017, 4e

Samuel Tolansky, "An Introduction to Interferometry", John Wiley & Sons Inc., 1973, 2e

A. Ghatak, "Optics", McGraw Hill, 2017, 6e

Course Books published in Hindi may be prescribed by the Universities.

THIRD YEAR

DETAILED SYLLABUS FOR

DEGREE

IN

BACHELOR OF SCIENCE

YEAR	SEME-STER	PAPER	PAPER TITLE	UNIT TITLE (Periods Per Semester)
DEGREE IN BACHELOR OF SCIENCE				
THIRD YEAR	SEMESTER V	Theory Paper-1	Classical & Statistical Mechanics Part A: Introduction toClassical Mechanics Part B: Introduction toStatistical Mechanics	Part A I: Constrained Motion (6) II: Lagrangian Formalism (9) III: Hamiltonian Formalism (8)IV: Central Force (7) **Part B** V: Macrostate & Microstate (6)VI: Concept of Ensemble (6) VII: Distribution Laws (10) VIII: Applications of Statistical Distribution Laws (8)
		Theory Paper-2	Digital Electronics & Microprocessor Part A: Digital ElectronicsPart B: Microprocessor	Part A I: Number System (7) II: Binary Arithmetic (6)III: Logic Gates (8) IV: Combinational & Sequential Circuits (9) Part B V: Microprocessor Architecture (6)VI: 8085 BUS Organization (7) VII: Memory & I/O Interfacing (8) VIII: Programming in 8085 (9)
		Practical Paper	Digital Electronics Instrumentation	Lab Experiment List Online Virtual Lab Experiment List/Link
	SEMESTER VI	Theory Paper-1	Quantum Physics & Spectroscopy Part A: Introduction toQuantum Mechanics Part B: Introduction toSpectroscopy	Part A I: Operator Formalism (5) II: Eigen & Expectation Values (6) III: Uncertainty Principle & Schrodinger Equation (7) IV: Applications of Schrodinger Equation (12) Part B V: Vector Atomic Model (10) VI: Spectra of Alkali & Alkaline Elements (6)VII: X-Rays & X-Ray Spectra (7) VIII: Molecular Spectra (7)
		Theory Paper-2	Solid State & NuclearPhysics Part A: Introduction to Solid State Physics Part B: Introduction to Nuclear Physics	Part A I: Crystal Structure (7) II: Crystal Diffraction (7)III: Crystal Bindings (7) IV: Lattice Vibrations (9) Part B V: Nuclear Forces & Radioactive Decays (9)VI: Nuclear Models & Nuclear Reactions (9)VII: Accelerators & Detectors (6) VIII: Elementary Particles (6)
		Practical Paper	Exploration of Communication Systems	Lab Experiment List Online Virtual Lab Experiment List/Link

Course Outcomes (COs)

Understand the concepts of generalized coordinates and D'Alembert's principle.
Understand the Lagrangian dynamics and the importance of cyclic coordinates.
Comprehend the difference between Lagrangian and Hamiltonian dynamics.
Study the important features of central force and its application in Kepler's problem.
Recognize the difference between macrostate and microstate.
Comprehend the concept of ensembles.
Understand the classical and quantum statistical distribution laws.
Study the applications of statistical distribution laws.

Unit	Topics	No. of Lectures
	PART A **Introduction to Classical Mechanics**	
I	Constrained Motion Constraints - Definition, Classification and Examples. Degrees of Freedom and Configuration space. Constrained system, Forces of constraint and Constrained motion. Generalised coordinates, Transformation equations and Generalised notations & relations. Principle of Virtual work and D'Alembert's principle.	6
II	Lagrangian Formalism Lagrangian for conservative & non-conservative systems, Lagrange's equation of motion (no derivation), Comparison of Newtonian & Lagrangian formulations, Cyclic coordinates, and Conservation laws (with proofs and properties of kinetic energy function included). Simple examples based on Lagrangian formulation.	9
III	Hamiltonian Formalism Phase space, Hamiltonian for conservative & non-conservative systems, Physical significance of Hamiltonian, Hamilton's equation of motion (no derivation), Comparison of Lagrangian & Hamiltonian formulations, Cyclic coordinates, and Construction of Hamiltonian from Lagrangian. Simple examples based on Hamiltonian formulation.	8
IV	Central Force Definition and properties (with prove) of central force. Equation of motion and differential equation of orbit. Bound & unbound orbits, stable & non-stable orbits, closed & open orbits and Bertrand's theorem. Motion under inverse square law of force and derivation of Kepler's laws. Laplace-Runge-Lenz vector (Runge-Lenz vector) and its applications.	7

PART B Introduction to Statistical Mechanics		
V	Macrostate & Microstate Macrostate, Microstate, Number of accessible microstates and Postulate of equal a priori. Phase space, Phase trajectory, Volume element in phase space, Quantisation of phase space and number of accessible microstates for free particle in 1D, free particle in 3D & harmonic oscillator in 1D.	6
VI	Concept of Ensemble Problem with time average, concept of ensemble, postulate of ensemble average and Liouville's theorem (proof included). Micro Canonical, Canonical & Grand Canonical ensembles. Thermodynamic Probability, Postulate of Equilibrium and Boltzmann Entropy relation.	6
VII	Distribution Laws Statistical Distribution Laws: Expressions for number of accessible microstates, probability & number of particles in ith state at equilibrium for Maxwell-Boltzmann, Bose-Einstein & Fermi-Dirac statistics. Comparison of statistical distribution laws and their physical significance. Canonical Distribution Law: Boltzmann's Canonical Distribution Law, Boltzmann's Partition Function, Proof of Equipartition Theorem (Law of Equipartition of energy) and relation between Partition function and Thermodynamic potentials.	10
VIII	Applications of Statistical Distribution Laws Application of Bose-Einstein Distribution Law: Photons in a black body cavity and derivation of Planck's Distribution Law. Application of Fermi-Dirac Distribution Law: Free electrons in a metal, Definition of Fermi energy, Determination of Fermi energy at absolute zero, Kinetic energy of Fermi gas at absolute zero and concept of Density of States (Density of Orbitals).	8

Suggested Readings

PART A

Herbert Goldstein, Charles P. Poole, John L. Safko, "Classical Mechanics", Pearson Education, India, 2011, 3e

N.C. Rana, P.S. Joag, "Classical Mechanics", McGraw Hill, 2017

R.G. Takwale, P.S. Puranik, "Introduction to Classical Mechanics", McGraw Hill, 2017

PART B

F. Reif, "Statistical Physics (In SI Units): Berkeley Physics Course Vol 5", McGraw Hill, 2017, 1e

B.B. Laud, "Fundamentals of Statistical Mechanics", New Age International Private Limited, 2020, 2e

B.K. Agarwal, M. Eisner, "Statistical Mechanics", New Age International Private Limited, 2007, 2e

Course Books published in Hindi may be prescribed by the Universities.

Course Outcomes (COs)

Understand various number systems and binary codes.
Familiarize with binary arithmetic.
Study the working and properties of various logic gates.
Comprehend the design of combinational and sequential circuits.
Learn the basics of microprocessor architecture.
Study the 8085 BUS organization.
Comprehend the Memory and I/O Interfacing.
Develop the technique of programming in 8085.

Unit	Topics	No. of Lectures
	PART A **Digital Electronics**	
I	Number System Number Systems: Binary, Octal, Decimal & Hexadecimal number systems and their inter conversion. Binary Codes: BCD, Excess-3 (XS3), Parity, Gray, ASCII & EBCDIC Codes and their advantages & disadvantages. Data representation.	7
II	Binary Arithmetic Binary Addition, Decimal Subtraction using 9's & 10's complement, Binary Subtraction using 1's & 2's compliment, Multiplication and Division.	6
III	Logic Gates Truth Table, Symbolic Representation and Properties of NOT, AND, OR, NOR, NAND, EX-OR & EX- NOR Gates. NOR and NAND Gates as Universal Gates. Boolean Algebra. Karnough Map.	8
IV	Combinational & Sequential Circuits Combinational Circuits: Half Adder, Full Adder, Parallel Adder, Half Substractor, Full Substractor, Multiplexer, Demultiplexer. Sequential Circuits: Flip-Flop, Counters and Sequential Circuits.	9

PART B Microprocessor		
V	Microprocessor Architecture Evolution of microprocessors and microprocessor architecture. Features and PIN diagram of 8085 Microprocessor. Address Bus & Multiplexed Address / Data Bus, Control and Status Signals, Power-supply and Clock frequency, Externally initiated signals including Interrupts Serial I/O Ports and Block diagram of 8085 microprocessor.	6
VI	8085 BUS Organization 8085 BUS organization and 8085 registers. Microprocessor operations - Microprocessor initiated operations, Internal data operations and Externally initiated operations. Microprocessor Communication & Bus Timings, De-multiplexing the Bus AD7 to AD0, Generating Control Signals, 8085 Machine Cycles & Bus Timings, Opcode Fetch Machine Cycle and Memory Read Machine Cycle.	7
VII	Memory & I/O Interfacing Memory and I/O Interfacing. Memory classifications, Flip-Flop or Latch as a storage element, Memory Map and Addresses Memory Instruction. Fetch Memory Interfacing - Memory structure & its requirements, basic concepts in Memory Interfacing circuits, Address Decoding and Memory Addresses. Input & Output Devices - I/Os with 8-Bit Addresses, I/Os with 16-Bit Addresses, Logic devices for Interfacing and Tri-State devices.	8
VIII	Programming in 8085 Instruction set and Programming techniques. Instruction Formats - Single Byte, Two Bytes & ThreeBytes instructions and Opcode format. Instruction Timings & Operation Status, DATA Transfer operations, Arithmetic operations, Logic operations, Branch operations, Stack, I/O & Machine Control instructions, Looping, Counting & Indexing Counter, Timing delays, Stack & Subroutines, Code conversion, BCD Arithmetic operations and 16 Bit data operations. How to write an assemble language program and execute a simple program.	9

Suggested Readings

PART A

D. Leach, A. Malvino, Goutam Saha, "Digital Principles and Applications", McGraw Hill, 2010, 7e

William H. Gothmann, "Digital Electronics: An Introduction to Theory and Practice", Prentice-Hall of India Private Limited, 1982, 2e

R.P. Jain, "Modern Digital Electronics", McGraw Hill, 2009, 4e

PART B

Ramesh S. Gaonkar, "Microprocessor Architecture, Programming and Applications with the 8085", Penram International Publishing, 2013, 6e

B. Ram, "Fundamentals of Microprocessors and Microcontrollers", Dhanpat Rai Publications, NewDelhi, 2012

Dr. D.K. Kaushik, "An Introduction to 8085", Dhanpat Rai Publications, NewDelhi, 2012

Course Books published in Hindi may be prescribed by the Universities.

DEPARTMENT OF EDUCATION

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE, GONDA (U.P)

- **PROGRAMME OUTCOMES**
- **PROGRAMME SPECIFIC OUTCOMES**
- **COURSE OUTCOMES**

B.A. EDUCATION

PROGRAMME OUTCOMES (POS)

At the end of the Programme the student teacher will be able:

By doing the BA Education course, a student will soon be forced out of his/her comfort zone and learn how to deal with the latest issues. This program will give students the opportunity to constantly challenge and push them in order to continuously improve themselves.

• Students will become a graduate.

• Students will develop advanced critical thinking skills, inclusive of information literacy.

• Students will develop teaching attitude.

• Students will develop as an educational counsellor.

• Students will develop abilities for further education.

• Students will develop exceptional textual, visual, and verbal communication abilities.

• Students will have the ability to use, analyze and learn communication technologies.

• Students will develop priceless managerial skills.

• Students will experience a new place and culture during their studies.

• Students will build and maintain relationships to develop values.

PROGRAMME SPECIFIC OUTCOMES -

At the end of the programme, the student:

- This course provides the basic ideas and concepts of education and nature of education. This course intends to clarify the educational aims and functions. This course will help students to understand constitutional values and provisions for Education. This paper will help in developing analytical and critical thinking based on the themes and issues of education.

- This course will also attempt to build an understanding about the agencies and structure of Indian Education System, ie. Pre Primary, Primary, Secondary and Higher level. Learners are introduced to various governing/regulatory systems of the Education System.
- The course aims to acquaint students with modern education in contemporary India. It would familiarize them with key debates prevalent during the anti-colonial struggle and subsequent developments in post - independent India.
- This paper introduces the challenges faced by Indian Education and initiates a critical analysis of concerns and solutions towards better education.

COURSE OUTCOMES FOR B.A. EDUCATION (3-YEARS)

Tittle	Course Outcomes
Conceptual Framework of Education	**Course Outcomes:** On completion of this course, learners will be able to: • To understand the meaning, nature, scope and aims of education. • To explain the factors of education and their interrelationship. • To become aware of different agencies of education that influence education. • To be acquainted with the Constitutional values and Educational provisions • Distinguish between different levels of the Education System. • Explain the present status of different levels of Education. • Identify the level of Education and concern governing/regulatory bodies. • Differentiate the needs and importance of different levels of Education.
Development and	**Course Outcomes:**

challenges of Indian Education System	• Understand the development of Indian Education during different ages, • Analyze the trends of Education running in the different educational systems. • Narrate the major contributions of Indian Educational Heritage in the different fields of study. • Discuss the views of foreign travelers about Indian cultural and educational heritage. • Identify the problems of Indian education at different levels of education. • Assess the root cause of challenges faced by Indian education system..
Philosophical- Sociological- Political- Economic Perspectives of Education	**Course Outcomes:** On completion of this course, learners will be able to: • Define Education and Philosophy. • Explain difference between Darshan and Philosophy. • Identify significant features of the Indian and Western philosophies. • Illustrate the relevance of the Indian and Western philosophical for modern educational system and society. • Compare the Indian and Western Philosophical thoughts. • Define pluralism and diversity in Indian society. • Relate Education with Political and Economic issues. • Distinguish between Fundamental Rights and duties. • Value role of Education for Sustainable Development
Psychological	**Course Outcomes:** On completion of this course, learners will be able to:

Perspectives of Education	• Define Education and Psychology. • Relate Education and Psychology • Compare characteristics and needs of different stages of development. • Name different approaches of learning. • Distinguish between different psychological traits. • Identify Individual Differences. • Examine the importance Mental Health. • Illustrate Teaching Learning Process.
Educational Assessment	**Course Outcomes:** On completion of this course, learners will be able to: • Define assessment measurement and evaluation. • Enumerate and Illustrate Characteristics of a good test. • Classify different psychological tests. • Test Intelligence/Personality/Aptitude of a subject.
Educational Statistics	**Course Outcomes:** On completion of this course, learners will be able to: • Define Statistical terms. • Prepare graphical charts. • Interpret the results various operations of statistics. • Survey and collect data. • Analyze the data with Suitable Statistical methods.
Educational Administration and Management	**Course Outcomes:** Course Learning Outcomes On completion of this course, learners will be able to: • Describe different Educational Organizations.

	• Compare Administration, Management and Supervision. • Differentiate between inspection and supervision.
Milestones and New Dimensions of Indian Education	**Course Outcomes:** On completion of this course, learners will be able to: ● List and differentiate the different education programs and schemes. ● Use MOOCs and SWAYAM. ● Collect and use material from OERs. Review e-journals and e-Magazines.

Prof. Shiv Sharan Shukla
Head of Department
Department of Education

Department of Zoology

Sri L.B.S. Degree College, Gonda

Programme Outcomes (POs)

1. The programme has been designed in such a way so that the students get the flavour of both classical and modern aspects of Zoology/Animal Sciences. It aims to enable the students to study animal diversity in Indian subcontinent, environmental science and behavioural ecology.
2. The modern areas including cell biology and genetics, molecular biology, biochemistry, physiology followed by biostatistics, Evolutionary biology, bioinformatics and genetic engineering have been included to make the study of animals more interesting and relevant to human studies which is the requirement in recent times.
3. The lab courses have been designed in such a way that students will be trained to join public or private labs.

B.Sc I Programme Specific Outcomes (PSOs)

Certificate Course in Medical Diagnostics & Public Health

- This course introduces System Biology and various functional components of an organism. Emphasis will be on physiological understanding abnormalities and anomalies associated with white blood cells and red blood cells. The course emphasizes cell identification, cell differentiation and cell morphology evaluation procedures. This will enhance hematology analytical skills along with skill of using many instruments.
- The students will learn the basic principles of genetics and how to prepare karyotypes to study the chromosomes.

How chromosomal aberrations are inherited in humans by pedigree analysis in families.

- The students will have hands-on training in the techniques like microscopy, centrifugation and chromatography, and various biochemical techniques, preparation of slides which will help them in getting employment in pathology labs and contribute to health care system.
- The Certificate courses will enable students to apply for technical positions in government and private labs/institutes.

B.Sc II Programme Specific Outcomes (PSOs)

Diploma in Molecular Diagnostics and Genetic Counselling

- The student at the completion of the course will be able to have a detailed and conceptual understanding of molecular processes *viz*. DNA to trait. The differential regulation of genes in prokaryotes and eukaryotes leads to the development of an organism from an embryo.
- The students will be able to understand and apply the principles and techniques of molecular biology which prepares students for further career in molecular biology. Independently execute a laboratory experiment using the standard methods and techniques.
- The principles of genetic engineering, gene cloning, immunology and related technologies will enable students to play an important role in applications of biotechnology in various fields like agriculture, forensic sciences, industry and human health and make a career out of it. Students can have their own start-ups as well.
- The basic tools of bioinformatics will enable students to analyze large amount of genomic data and its application to evolutionary biology.Apply knowledge and awareness of the basic principles and concepts of biology, computer science and mathematics existing software effectively to extract information from large databases and to use this information in computer modeling.
- The Diploma courses will ensure employability in Hospitals/Diagnostics and Pathology labs with good hands-on training. It will also enable students to take up higher studies and Research as their career and work in renowned labs in the country and abroad.

B.Sc III Programme Specific Outcomes (PSOs)
Degree in Bachelor of Science

- This programme aims to introduce students to animal diversity of invertebrates and vertebrates. The students will be taught about invertebrates and vertebrates using observational strategies, museum specimens and field reports.
- A variety of interacting processes generate an organism's heterogeneous shapes, size, and structural features.
- Inclusion of ecology and environmental sciences will enrich students with our world which is crucial for human well being and prosperity. This section will provide new knowledge of the interdependence between people and nature that is vital for food production, maintaining clean air and water, and sustaining biodiversity in a changing climate.
- Students will also come to know about the basic principle of life, how a cell divides leading to the growth of an organism and also reproduces to form new organisms.
- The basic concepts of biosystematics, evolutionary biology and biodiversity will enable students to solve the biological problems related to environment.

- At the end of the course the students will be capable enough to comprehend the reason behind such a huge diversity of animals and reason out why two animals are grouped together or remain separate due to similarities and differences which exist at many levels along with ecological, environmental and cellular inputs.
- The Degree courses will enable students to go for higher studies like Masters and Ph.D in Zoology and Allied subjects.

Course outcomes:

The student at the completion of the course will be able to:

- Understand the structure and function of all the cell organelles.
- Know about the chromatin structure and its location.
- To be familiar with the basic principle of life, how a cell divides leading to the growth of an organism and also reproduces to form new organisms.
- How one cell communicates with its neighboring cells?
- Understand the basic principles of genetics and how genes (earlier called factors) are inherited from one generation to another.
- Understand the Mendel's laws and the deviations from conventional patterns of inheritance.
- Comprehend how environment plays an important role by interacting with genetic factors.
- How to detect chromosomal aberrations in humans and study the pattern of inheritance by pedigree.
- To develop a deep understanding of structure of biomolecules like proteins, lipids and carbohydrates.
- How simple molecules together form complex macromolecules.
- To understand the thermodynamics of enzyme catalyzed reactions.
- Mechanisms of energy production at cellular and molecular levels.
- To understand systems biology and various functional components of an organism.
- To explore the complex network of these functional components.
- To comprehend the regulatory mechanisms for maintenance of function in the body.
- A detailed and conceptual understanding of molecular processes *viz.* DNA to trait.
- A clear understanding of the processes of central dogma *viz.* transcription, translation *etc.* Underlying survival and propagation of life at molecular level.
- Understanding of how genes are ultimately expressed as proteins which are responsible for the structure and function of all organisms.
- Learn how four sequences (3 letter codons) generate the transcripts of life and determine the phenotypes of organisms.
- How genes are regulated differently at different time and place in prokaryotes and eukaryotes.
- Understand the principles of genetic engineering, how genes can be cloned in bacteria and the various technologies involved in it.
- Know the applications of biotechnology in various fields like agriculture, industry and human health.
- To have an in depth understanding about Immune System & its mechanisms.
- Get introduced to DNA testing and utility of genetic engineering in forensic sciences.

- Get introduced to computers and use of bioinformatics tools.
- Enable students to get employment in pathology/Hospital.
- Take up research in biological sciences.
- demonstrate comprehensive identification abilities of non-chordate diversity
- explain structural and functional diversity of non-chordate
- explain evolutionary relationship amongst non-chordate groups
- Get employment in different applied sectors
- Students can start their own business i.e. self employments.
- Enable students to take up research in Biological Science.
- Demonstrate comprehensive identification abilities of chordate diversity
- Explain structural and functional diversity of chordates
- Explain evolutionary relationship amongst chordates
- Take up research in biological sciences.
- Understand that by biological evolution we mean that many of the organisms that inhabit the earth today are different from those that inhabited it in the past.
- Understand that natural selection is one of several processes that can bring about evolution, although it can also promote stability rather than change.
- Understand how the single cell formed at fertilisation forms an embryo and then a full adult organism.
- Integrate genetics, molecular biology, biochemistry, cell biology, anatomy and physiology during embryonic development.
- Understand a variety of interacting processes, which generate an organism's heterogeneous shapes, size, and structural features.
- Understand how a cell behaves in response to an autonomous determinant or an external signal, and the scientific reasoning exhibited in experimental life science.
- Complexities and interconnectedness of various environmental levels and their functioning.
- Global environmental issues, their causes, consequences and amelioration.
- To understand and identify behaviours in a variety of taxa.
- The proximate and ultimate causes of various behaviours.
- About the molecules, cells, and systems of biological timing systems.
- Conceptualizing how species profitably inhabit in the temporal environment and space out their activities at different times of the day and seasons.
- To interpret the cause and effect of lifestyle disorders contributing to public understanding of biological timing.
- To understand the importance of wildlife conservation.

DEPARTMENT OF B.ED

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE , GONDA (U.P)

BACHELOR OF EDUCATION

- **PROGRAMME OUTCOMES**
- **PROGRAMME SPECIFIC OUTCOMES**
- **COURSE OUTCOMES**

PROGRAMME OUTCOMES (POS)

At the end of the Programme the student teacher will be able:

- PO-1: to be empowered in subject content and pedagogy.
- PO 2 To develop an understanding of the contemporary Indian Society, with special reference to education.
- PO 3 to be able to interact with children from diverse socio economic and diverse back grounds.
- PO 4 to be able to use learner centered teaching methods as such and with modification in future.
- PO 5 to develop an understanding of paradigm shift in conceptualizing disciplinary knowledge in school curriculum,
- PO 6 to identify the challenging and overcoming gender inequalities in school, classroom, curricula, textbook, social institutions, etc.
- PO 7 to create sensitivity about language diversity in classroom and its role in teaching learning process
- PO 8 to enable student-teachers to acquire necessary competencies for organizing learning experiences,
- PO 9 to develop competencies among student-teachers to select and use appropriate assessment strategies for facilitating learning,

- PO 10 to engage student-teachers with self, child, community and school to establish close connections between different curricular areas,
- PO 11 to enable student-teachers to integrate and apply ICT in facilitating teaching-learning process and in school management,
- PO 12 to systematize experiences and strengthening the professional competencies of student teachers
- PO 13 to provide first-hand experience of all the school activities

PROGRAMME SPECIFIC OUTCOMES (PSOS)

At the end of the programme, the student:

- PSO 1 recall and recognize some educational terminology, educationists, psychologists, some basic concepts, definitions of education, learning, teaching etc.,
- PSO 2: Understand basic concepts and ideas of educational theory.
- PSO 2 Build understanding and perspective on the nature of the learner, diversity and learning.
- PSO 3 Comprehend the role of the systems of governance and structural – functional provisions that support school education.
- PSO 4 Develop understanding about teaching, pedagogy, school management and community involvement.
- PSO 5 Build skills and abilities of communication, reflection, art, aesthetics, theatre, self-expression and ICT.
- PSO 6 applies the knowledge in the course of teaching in the schools.
- PSO 7 applies various methods, strategies and approaches while teaching a lesson.
- PSO 8 uses the techniques learnt during the programme in the profession.
- PSO 9 Synthesize new methods, strategies, theories on the basis of the knowledge gained during the programme.
- PSO 10 appreciates the contributions of philosophers, educationists and sociologists for the development of educational theory and practice.
- PSO 11 uses the ICT widely in all spheres of educational theory and practice

- PSO 12 appreciates the role of ICT in making the educational more reachable, making the concepts easy, catering to the needs of the individual learning at their own pace.

- PSO 13 develops the skill in both micro-teaching and macro teaching.

COURSE OUTCOMES FOR B.ED. (2-YEARS)

Tittle	Course Outcomes
Knowledge and Curriculum	**Course Outcomes:** • After completion of the course, student-teachers will be able to: • CO1 Conceptualize the meaning and different perspectives of curriculum. • CO2 Understand the epistemological, sociological and the psychological bases of curriculum development. • CO3 Understand the different types of curriculum with respect to their main orientation and approaches. • CO4 Compare and analyze the NCF over the years with respect to their foundation, Considerations, concerns, priorities and goals. • CO5 Understand linkage among curriculum framework and critical issues, which directly and indirectlyare related with learning • CO6 Analyse curriculum framework, in the light of learners'need and understand.
Psychology of Learning and Development	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1 Understand children of different ages by interacting & observing them in diversified social, economic and cultural context rather than through an exclusive focus on psychological theories of child development. • CO2 Study of childhood, child development and adolescence. • CO3 Understand learning as divergent process. • CO4 Make aware about the importance of healthy liking and preventing disease. • CO5 Introduce psychological traits of learners. • CO6 Become health aware & sensitize about mental and physical health.
Educational Technology and ICT	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1 understand the nature and scope of educational technology and also about the various forms of technology • CO2 know the systems approach in Education and its

	components • CO3 familiar with the steps involved in the construction of programmed learning • CO4 describe the concept of ICT in education and appreciate the scope of ICT for improving the personal productivity and professional competencies • CO5 acquaint with different approaches of ICT integration in education
Educational Administration, Management and Environmental Education	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1 To acquaint the student teacher with the concept of Educational Administration and Management • CO2 To enable the student teachers to understand the role of different bodies of central and state governments in Education. • CO3 To enable the student teachers to understand the role of Principal in school management. • CO4 To enable the student teachers to understand the importance of environmental Education. • CO5 Concept of classroom management its characteristics and strategies
Assessment Of Learning and Action Research	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1 Acquire knowledge of assessment and evaluation • CO2 Develop understanding of process of summative and formative evaluation • CO3 Understand the concept of continuous and comprehensive evaluation. • CO4 Develop skills to use statistics in Educational Evaluation • CO5 To help students prepare an action research proposal based on their understanding of the process of action research.
Contemporary India and Education: Concerns and Issues	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1 Understand the influenced of socio-political forces of the time education. • CO2 Understand the characteristic features, strengths and weaknesses of ancient. • CO3 medieval, British and contemporary system of Education in India. • CO4 Understand the contribution of various major committees and commissions on education set up from time to time; • CO5 Appreciate the development of Indian education in the post-independence era.

	• CO6 Understand the critical issues of contemporary system of education in India.
Pedagogy of Hindi	**उद्देश्य:-** • CO1. हिन्दी शिक्षण के लिए सम्बन्धी योग्यताओं का विकास करना। • CO2. भावी शिक्षकों में हिन्दी भाषा शिक्षण की कुशलताओं का विकास करना। • CO3. आधुनिक शिक्षण विधियों के उचित प्रयोग के बारे में भावी शिक्षकों को परिचित करवाना। • CO4. हिन्दी शिक्षण में सहायक सामग्री के निर्माण और प्रयोग की योग्यता का विकास करना। • CO5. भावी शिक्षकों में मूल्यांकन क्षमता का विकास करना।
Pedagogy of English	**Course Outcomes:** • After completion of the course, student-teachers will be able to:- • CO1.Develop a good understanding of the basic concepts in second language teaching. • CO2.Teach basic language skills as listening, speaking, reading and writing and integrate them for communicative purpose. • CO3.Critically review and use appropriately different approaches to and methods of teaching English assecond language. • CO4 Prepare lesson plans on different and prescribed aspects of English as second language. • CO5.Choose, prepare and use appropriate audio-visual teaching aids for effective teaching of English. • CO6.Use various techniques of testing English as second language and develop remedial and conductteaching
Pedagogy of Sanskrit	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1. hone the skill of Lesson Planning at the Secondary level. • CO2. understand and organize co-curricular activities for teaching of Sanskrit • CO3. get acquainted with the methods of teaching Sanskrit. • CO4. develop the skills of preparing and using effectively the instructional materials for the teaching of Sanskrit. • CO5. get acquainted with Principles of preparing Curriculum for Sanskrit. • CO6. develop diagnostic and remedial measures through Evaluation in teaching Sanskrit.

Pedagogy of Physical Science	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1. Develop a broad understanding of physical science. • CO2. Develop teaching competencies related to physical science at secondary level. • CO3. Become effective teachers in order to perform desired role as a physical science teacher. • CO4. Familiarize themselves with the type of audio visual aids, techniques and methods of teaching required for teaching of physical science. • CO5. Evaluate students performance and provide remedial teaching.
Pedagogy of Mathematics	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1. Understand and appreciate the uses and significance of Mathematics in daily life. • CO2. Learn various approaches of teaching Mathematics and to use them judiciously. • CO3. Learn the methods of providing instruction for the classroom. • CO4. Organise curricular activities. • CO5. Appreciate activities to develop aesthetics of Mathematics • CO6. Update their knowledge of content in mathematics
Pedagogy of Biological Science	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1. Develop a broad understanding of biological science. • CO2. Develop teaching competencies related to biological science at secondary level. • CO3. Become effective teachers in order to perform desired role as a biological science teacher. • CO4. Familiarize themselves with the type of audio visual aids, techniques and methods of teaching required for teaching of biological science. • CO5. Evaluate students performance and provide remedial teaching
Pedagogy of History	**Course Outcomes:**

	After completion of the course, student-teachers will be able to:- • CO1.Understand the concept, nature and scope of History • CO2.Understand the nature of history as continuous process of development and change. • CO3.Understand the aims objectives of teaching history at different levels of the secondary stage. • CO4.Prepare unit plans, lesson plan and its related teaching aids. • CO5.Understand the spirit and applying different methods and techniques of teaching history at thesecondary stage. • CO6.Evaluate his pupils methodically at the different levels of secondary stage
Pedagogy of Geography	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1.Understand the modern concept of Geography • CO2.Prepare yearly plan, unit plan, and lesson plan for different classes. • CO3.Prepare maps and charts to illustrate the contents of different classes and use them effectively. • CO4.Apply appropriate methods and techniques of teachings of particular topics at different levels. • CO5 . Arrange field trips and local surveys. • CO6 .Prepare achievement test and diagnostic test, administration of the test, analysis of results and make suggestion for remedial teaching
Pedagogy of Civics	**Course Outcomes:** • After completion of the course, student-teachers will be able to:- • CO1.Refresh the knowledge of student teacher regarding the meaning and importance of civics. • CO2.Establish co-relation of civics with other school subjects

	• CO3.Apply appropriate methods in teaching particular topics at different level. • CO4.Select and use relevant teaching aids. • CO5.Clarify particular concepts, trends, principles, methods etc. with the help of correlation to similarcontent or situation. • CO6.Develop skills and abilities for organizing school activities related to the subject.
Pedagogy of Economics.	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1.Refresh the knowledge about the meaning. Importance, nature, scope and aims of Economics. • CO2.Acquaint with the aims, objectives and value-outcomes through teaching of Economics. • CO3.Organize group-activities and project and to use various instructional strategies and methods foreffective teaching of the subject. • CO4.Establish correlation of Economics with other school-subjects • CO5.Develop necessary skills to use various teaching aids, (Particularly locally available material aids). • CO6.Develop appropriate attitude towards the subjects and country‘s economic
Pedagogy of Home Science.	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1.Understand the nature and importance of Home Science and its correlation with other subjects. • CO2.Understand aims and objectives of the subject. • CO3.Realize the essential unity between laboratory work and theoretical background of the subject. • CO4.Analyze school syllabus of the subject in relation to its applicability to practical situation andadaptability of the curriculum to local needs. • CO5.Utilize effectively the instructional material in teaching Home Science.

	• CO6.Construct test items to measure objectives belonging to various cognitive levels.
Pedagogy of Commerce	**Course Outcomes:** After completion of the course, student-teachers will be able to:- • CO1.Develop an understanding and use concept mapping and curricular elements in Financial . • CO2.Develop the ability to plan Curriculum in Financial Accounting at senior secondary level. • CO3.Undertake Critical appraisal of existing Financial Accounting curriculum at senior secondarystage prescribed by RBSE / CBSE • CO4.Know the qualities of text book of Financial Accountancy. • CO5.Develop necessary skills to prepare and use various instructional/learning methods andMedia Integration. • CO6.Develop the ethics & Professional growth of a Financial Accounting teacher.

Prof. Shyam Bahadur Singh

Head of Department

Department of B.Ed

DEPARTMENT OF MATHEMATICS

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE, GONDA

Programme- B.Sc. (Mathematics)

Programme Outcome:

PO1: It is to give foundation knowledge for the students to understand basics of mathematics including applied aspect for the same.

PO2: It is to develop enhanced quantitative skills and pursuing higher mathematics and research as well.

PO3: Students will be able to develop solution-oriented approach towards various issues related to their environment.

PO4: Students will become employable in various govt. and private sectors

PO5: Scientific temper in general and mathematical temper in particular will be developed in students.

Programme Specific Outcome:

PSO1: Student should be able to possess recall basic idea about mathematics which can be displayed by them.

PSO2: Student should have adequate exposure to many aspects of mathematical sciences.

PSO3: Student is equipped with mathematical modeling ability, critical mathematical thinking, and problem-solving skills etc.

PSO4: Student should be able to apply their skills and knowledge in various fields of studies including, science, engineering, commerce and management etc.

Course Code: B030101T
Course Title: Differential Calculus & Integral Calculus

Course outcomes:

CO1: The programme outcome is to give foundation knowledge for the students to understand basics of mathematics including applied aspect for developing enhanced quantitative skills and pursuing higher mathematics and research as well.

CO2: By the time students complete the course they will have wide ranging application of the subject and have the knowledge of real valued functions such as sequence and series. They will also be able to know about convergence of sequence and series. Also, they have knowledge about curvature, envelope and evolutes and trace curve in polar, Cartesian as well as parametric curves.

CO3: The main objective of the course is to equip the student with necessary analytic and technical skills. By applying the principles of integral he learns to solve a variety of practical problems in science and engineering.

CO4: The student is equipped with standard concepts and tools at an intermediate to advance level that will serve him well towards taking more advance level
course in mathematics.

Course Code: B030102P
Course Title: Practical

Course outcomes:

CO1: The main objective of the course is to equip the student to plot the different graph and solve the different types of equations by plotting the graph using different computer software such as Mathematica /MATLAB /Maple /Scilab/Maxima etc.
CO2. After completion of this course student would be able to know the convergence of sequences through plotting, verify Bolzano-Weierstrass theorem through plotting the sequence, Cauchy's root test by plotting n^{th} roots and Ratio test by plotting the ratio of n^{th} and $(n + 1)^{th}$ term.
CO3. Student would be able to plot Complex numbers and their representations, Operations like addition, subtraction, Multiplication, Division, Modulus and Graphical representation of polar form.
CO4: Student would be able to perform following task of matrix as Addition, Multiplication, Inverse, Transpose, Determinant, Rank, Eigenvectors,
Eigenvalues, Characteristic equation and verification of the Cayley-Hamilton theorem, Solving the systems of linear equations.

Course Code: B030201T
Course Title: Matrices and Differential Equations & Geometry

Course outcomes:

CO1: The subjects of the course are designed in such a way that they focus on developing mathematical skills in algebra, calculus and analysis and give in depth knowledge of geometry, calculus, algebra and other theories.
CO2: The student will be able to find the rank, eigen values of matrices and study the linear homogeneous and non-homogeneous equations. The course in differential equation intends to develop problem solving skills for solving various types of differential equation and geometrical meaning of differential equation.
CO3: The subjects learn and visualize the fundamental ideas about coordinate geometry and learn to describe some of the surface by using analytical geometry.
CO4: On successful completion of the course students have gained knowledge about regular geometrical figures and their properties. They have the foundation for higher course in Geometry.

Course Code: B030202P
Course Title: Practical

Course outcomes:

CO1: Student would be able to perform following task of matrix as Addition, Multiplication, Inverse, Transpose, Determinant, Rank, Eigenvectors, Eigenvalues, Characteristic equation and verification of the Cayley-Hamilton theorem, Solving the systems of linear equations.
CO2: Students will be enabled to formulate Differential Equations for various Mathematical models.
CO3: Students can solve first order non-linear differential equation and linear differential equations of higher order using various techniques
CO4: Students will be able to apply these techniques to solve and analyze various mathematical models.

Course Code: B030301T
Course Title: Algebra & Mathematical Methods

Course outcomes:

CO1: Group theory is one of the building blocks of modern algebra. Objective of this course is to introduce students to basic concepts of Group, Ring theory and their properties.
CO2: A student learning this course gets a concept of Group, Ring, Integral Domain and their properties. This course will lead the student to basic course in advanced mathematics and Algebra.
CO3: The course gives emphasis to enhance students' knowledge of functions of two variables, Laplace Transforms, Fourier Series.
CO4: On successful completion of the course students should have knowledge about higher different mathematical methods and will help him in going for higher studies and research.

Course Code: B030401T
Course Title: Differential Equations & Mechanics

Course outcomes:

CO1: The objective of this course is to familiarize the students with various methods of solving differential equations, partial differential equations of first order and second order and to have qualitative applications.
CO2: A student doing this course is able to solve differential equations and is able to model problems in nature using ordinary differential equations. After completing this course, a student will be able to take more courses on wave equation, heat equation, diffusion equation, gas dynamics, non-linear evolution equation etc. These entire courses are important in engineering and industrial applications for solving boundary value problem.
CO3: The object of the paper is to give students knowledge of basic mechanics such as simple harmonic motion, motion under other laws and forces.
CO4: The student, after completing the course can go for higher problems in mechanic such as hydrodynamics, this will be helpful in getting employment in industry.

Course Code: B030402P

Course Title: Practical

Course outcomes: The course will enable the students to-

CO1: Formulate, classify and transform partial differential equations into canonical form.
CO2: Solve linear and non-linear partial differential equations using various methods.
CO3: Apply these methods in solving some physical problems.

Course Code: B030501T
Course Title: Group and Ring Theory & Linear Algebra

Course outcomes:

CO1: Liner algebra is a basic course in almost all branches of science. The objective of this course is to introduce a student to the basics of linear algebra and some of its applications.
CO2: Students will be able to know the concepts of group, ring and other related properties which will prepare the students to take up further applications in the relevant fields.
CO3: The student will use this knowledge in computer science, finance mathematics, industrial mathematics and bio mathematics. After completion of this course students appreciate its interdisciplinary nature.

Course Code: B030502T
Course Title: Number Theory & Game Theory
Course outcomes:

CO1: Upon successful completion, students will have the knowledge and skills to solve problems in elementary number theory and also apply elementary number theory to cryptography.
CO2: This course provides an introduction to Game Theory. Game Theory is a mathematical framework which makes possible the analysis of the decision-making process of interdependent subjects. It is aimed at explaining and predicting how individuals behave in a specific strategic situation, and therefore help improve decision making.
CO3: A situation is strategic if the outcome of a decision problem depends on the choices of more than one person. Most decision problems in real life are strategic.
CO4: To illustrate the concepts, real-world examples, case studies, and classroom experiments might be used.

Course Code: B030502T
Course Title: Graph Theory & Discrete Mathematics

Course outcomes:
CO1: Upon successful completion, students will have the knowledge of various types of graphs, their terminology and applications.
CO2: After Successful completion of this course students will be able to understand the isomorphism and homomorphism of graphs. This course covers the basic concepts of graphs used in computer science and other disciplines. The topics include path, circuits, adjacency matrix, tree, coloring. After successful completion of this course the student will have the

knowledge graph coloring, color problem, vertex coloring.
CO3: After successful completion, students will have the knowledge of Logic gates, Karnaugh maps and skills to proof by using truth tables. After successful completion of this course students will be able to apply the basics of the automation theory, transition function and table.
CO4: This course covers the basic concepts of discrete mathematics used in computer science and other disciplines that involve formal reasoning. The topics include logic, counting, relations, hasse diagram and Boolean algebra. After successful completion of this course the student will have the knowledge in Mathematical reasoning, combinatorial analysis, discrete structures and Applications.

Course Code: B030502T
Course Title: Differential Geometry & Tensor Analysis

Course outcomes:
CO1: After Successful completion of this course, students should be able to determine and calculate curvature of curves in different coordinate systems.
CO2: This course covers the Local theory of Curves, Local theory of surfaces, Geodesics, Geodesics curvature, Geodesic polars, Curvature of curves on surfaces, Gaussian curvature, Normal curvature etc.
CO3: After Successful completion of this course, students should have the knowledge of tensor algebra, different types of tensors, Riemannian space, Ricci tensor, Einstein space and Einstein tensor etc.

Course Code: B030601T
Course Title: METRIC SPACES & COMPLEX ANALYSIS
Course outcomes:

CO1: The course is aimed at exposing the students to foundations of analysis which will be useful in understanding various physical phenomena and gives the student the foundation in mathematics.
CO2: After completion of this course the student will have rigorous and deeper understanding of fundamental concepts in Mathematics. This will be helpful to the student in understanding pure mathematics and in research.
CO3: Students will be able to know the concepts of metric space, basic concepts and developments of complex analysis which will prepare the students to take up further applications in the relevant fields.

Course Code: B030602T
Course Title: Numerical Analysis & Operations Research

Course outcomes:

CO1: The aim of this course is to teach the student the application of various numerical technique for variety of problems occurring in daily life. At the end of the course the student will be able to understand the basic concept of Numerical Analysis and to solve algebraic and differential equation.
CO2: The main outcome will be that students will be able to handle problems and finding approximated solution. Later he can opt for advance course in Numerical Analysis in higher Mathematics.

CO3: The student will be able to solve various problems based on convex sets and linear programming. After successful completion of this paper will enable the students to apply the basic concepts of transportation problems and its related problems to apply in further concepts and application of operations research.

Course Code: B030603P Course Title: Practical

Course outcomes:

The main objective of the course is to equip the student to solve the transcendental and algebraic equations, system of linear equations, ordinary differential equations, Interpolation, Numerical Integration, Method of finding Eigenvalue by Power method (up to 4×4), Fitting a Polynomial Function (up to third degree).

DEPARTMENT OF MATHEMATICS

SHRI LAL BAHADUR SHASTRI DEGREE COLLEGE, GONDA

Programme-M.Sc. Mathematics (Two years programe)

Programme Specific Outcomes:

1. To develop deep understanding of the fundamental axioms in mathematics and capability of developing ideas based on them.

2. To provide advanced knowledge of topics in pure mathematics particularly in Analysis and Geometry empowering the students to proceed with the area at higher level.

3. To develop understanding of applied mathematics and motivating the students to use mathematical techniques as a tool in the study of other scientific domains.

4. To encourage students for research studies in Mathematics and related fields.

5. To provide students a wide variety of employment options as they can adopt research as a career or take up teaching jobs or can get employment in banking or can go for any other profession.

6. To inculcate problem solving skills, thinking and creativity through presentations, assignments and project work.

7. To help students in their preparation (personal counselling, books) for competitive exams e.g. NET, GATE, etc.

8. To enable the students being life-long learners who are able to independently expand their mathematical expertise when needed.

M.Sc. Final year

Paper-1 Functional Analysis

Course Objective: Banach spaces originally grew out of the study of function spaces. The theory of Banach spaces developed in parallel with the general theory of linear topological spaces. These theories mutually enriched one another with new ideas and facts. A banach space is a vector space with a metric that allows the computation of a vector length and distance between vectors and is complete in the sense that Cauchy sequence of a vectors always converges to a well-defined limit that is within the space.

Course Outcomes:
CO 1: Banach space is a part of functional analysis. Functional analysis is the backbone of modern applied and computational mathematics.
CO 2: Hilbert spaces arise naturally and frequently in Mathematics and Physics typically as infinite dimensional function space.
CO 3: It is used in solving partial differential equations and Fourier analysis, etc.

Paper-2 Dynamics of Rigid Bodies

Course Objectives:
1. To teach students the basic principles underlying the dynamics of rigid bodies in planar and 3D motion.
2. To educate students to identify, formulate and solve problems in rigid body dynamics.
3. To introduce students to the concepts of work-energy and impulse-momentum for rigid body systems.

Course outcomes:
CO 1: Students will have an understanding of Newtonian-Eulerian physics and basic equations underlying kinematics and kinetics of rigid bodies in 2D and 3D motion.
CO 2: Students will acquire an ability to identify and effectively account for kinematic constraints such as rolling and/or sliding, and their kinetic consequences.
CO 3: Students will be able to apply and combine the appropriate principles of Eulerian Physics to the solution of problems.
CO 4: Students will be able to calculate the principal moments of inertia for arbitrary rigid bodies.
CO 5: Students will acquire an understanding of work-energy principles as applied to rigid bodies in 2D and 3D motion.
CO 6: Students will be able to evaluate the kinetic energy of rigid bodies as well as the potential energy associated with gravity.
CO 7: Students will demonstrate an understanding of conservation laws for momentum and energy.

Paper-3 Operation Research

Course Objectives: Operations research is included in M.Sc. classes due to its wide application in our daily life. Operations research is an important course in applied mathematics because it is very useful in Industry, banking, Defense sector, Multinational companies etc to optimize their performance.

Course Outcomes:
CO 1: Due to its applicability in different sectors Operations research becomes very useful course in research field.
CO 2: After studying this course students may do their research work in different topics like Game theory, Job sequencing, Network analysis, dynamical programming etc.
CO 3: Most of the companies hire OR technician to get maximum output of company.

Paper 4: General Relativity and Cosmology

Course Objective: The objective of this paper is to study new theory of gravitation introduce by Albert Einstein in 1915. This theory can be used to solve many rigorous problems of universe.

Course Outcomes:
CO 1: After the completion of this course, the students will be able to understand the beauty of general Relativity theory as a bridge between physics of Universe with their geometry.
CO 2: Application of general relativity to describe the evolution of universe and most of the cosmic problems.
CO 3: Students will be able to know the importance of this theory in solving the problem of Universe with the geometry and geometric structures.
CO 4: The studies of evolution of universe describe the origin, recent scenario and future of our universe.
CO 5: Recent outcomes of cosmological studies predict that our universe is expending and accelerating which further manifest that out universe contains 96% of invisible matter of exotic nature. The recent physics Nobel prize (2019) were awarded in cosmology field.

Paper 5: C.O.V. and Integral Equations

Course Objectives: The objective of course is to solve integral equations of Fredholm and Volterra type.

Course Outcomes:

CO 1: Solve linear Volterra and Fredholm integral equations using appropriate methods.

CO 2: Understand the relationship between integral and differential equations and transform one type into another.

Department of Sociology

Sociology is the study of society, human behaviour, patterns of social relationships, social interaction and culture that surround everyday life. It is a social science that uses various methods of empirical investigation and critical analysis to develop a body of knowledge about social order and social change. Sociology can also be defined as general science of society. While some sociologists conduct research that may be applied directly to social policy and welfare, others focus primarily on refining the theoretical understanding of social processes.

Sociology helps the individuals to understand human society and how social system works. It provides critical insight and perspective to the solution of social problems. It develops an approach to being in the world, a way of life for those who experience reality sociologically – how do they see things, interpret and make sense of social phenomena and social problems besides providing great career options for the youth.

B.A. (SOCIOLOGY)

PROGRAMME SPECIFIC OUTCOMES (PSO)

{ON COMPLETION OF 3 YEARS (VI SEMESTERS) COURSE}

- Introduce students to new concepts of Sociology discipline.
- Enhanced conceptual learning and understanding of the basic concepts used in Sociology.
- Contribute in enriching the vocabulary and scientific temperament of the students.
- Enable the learner to develop keen insights to distinguish between the common-sense knowledge and Sociological knowledge.
- Comprehensive understanding of Indian society.
- Enhanced knowledge of multicultural differences and similarities, different historical experiences, values, norms, and belief systems with specific cultures nationally and globally.

B.A. 1st Year		
Semester I	**Semester II**	
Course 1 (Theory)	Course 1 (Theory)	Course II (Practical)
Introduction to Basic Concepts of Sociology	Society in India: Structure, Organization & Change	Writing skill development on topics of Contemporary Sociological Importance
Course Specific Outcomes		
- Introduce students to new concepts of sociology.	- Introduction to the concepts related to Indian Society.	- To develop writing skills among the students of Sociology.
- Enhance conceptual learning and understanding of basic concepts used in Sociology.	- Make familiar with the Indian Society, its linkage and community with past & present.	- To enhance & inculcate analytical skills among the students.
- Enriching vocabulary and scientific temperament of the students.	- Insights to analyse contemporary Indian society.	- To enrich conceptual vocabulary such that students are equipped with writing style in Sociology.
- Develop keen insights to distinguish between the common sense knowledge and Sociological knowledge.	- Comprehensive understanding of Indian society.	- Presumably beneficial to students who are interested in field of Media, Journalism, Essay Writer, Column Writer, Psephology etc.

B.A. 2nd Year		
Semester III	**Semester IV**	
Course 1 (Theory)	Course 1 (Theory)	Course II (Project)
Social Change and Social Movement in India	Social Problems & Issues of Development in India	Project on Sustainable Society
Course Specific Outcomes		
- Introduce students to concepts of social change & Social Movements.	- Introduce students to the emerging social problems, the concept and issues of development in Indian Society.	- To introduce students to the emerging social problems and the concept and issues of development in Indian society.
- Introduce students to the dynamic aspect and dissension tendencies of society	- To focus upon the deviant and delinquent behaviour, issue of corruption and other disorganizational and structural problems of Indian society.	- Engage students directly in practical knowledge about the conducting research project.
- Critical evaluation to enable students to come out with better suggestions, contributing in cohesion of society.	- Endeavour to make learners aware about the social problems and developmental issues in the Indian society.	- Help learners to know about the issue of sustainability and policies & programmes.

B.A. 3rd Year		
Semester V		
Course 1 (Theory)	Course 2 (Theory)	Course III (Practical)
Classical Sociological Thoughts	Research Methodology in Social Sciences	Practical Application of Research Methodology Project Work
Course Specific Outcomes		
- Help students to know about classical contributions of Pioneers of Sociology.	- To make students understand and comprehend the research problems, research techniques.	- Students will learn the basic and useful techniques of research which will be beneficial in exploring the research questions and formulation of Research Design.
- Focus upon the history of Sociology and the intellectual traditions originated during the crisis in Europe and the impact of it had on the structures of society.	- Intends to develop objective as well as subjective enquiry into the areas of Sociological studies.	- The students will learn how to construct schedules, questionnaire and applicability of other research methods.
- Learners will gain theoretical as well as methodological knowledge about the subject.	- Main purpose is to develop scientific and humanistic approach towards the research work in the subject.	

B.A. 3rd Year		
Semester VI		
Course 1 (Theory)	Course 2 (Theory)	Course III (Project)
Pioneers of Indian Sociology	Gender and Society	Field Work/ Case Study/ Project Work
Course Specific Outcomes		
- To enable students to gather knowledge about he esteemed Indian Pioneers of Sociology, who largely used indigenous methodology to understand the Indian society and its complexities.	- The course is gender sensitive and is directed towards engaging students to learn and rethink about the gender issues.	- Introduce students to get themselves engaged in the field work and project work.
- To enable learner to grasp information and knowledge about the approaches and theoretical framework adopted by the Indian Sociologists.	- Introduce students to the core gender issues.	- To equip students with with practical knowledge about the field work and research project.
- Students will know about the History of Sociology in India and Sociological traditions.	- To equip students to come with suggestions which would be directed towards gender equality.	- This will be an empirical learning for those who aspire to become future Social Scientists.

M.A. (SOCIOLOGY)

PROGRAMME SPECIFIC OUTCOMES

{ON COMPLETION OF 2 YEARS COURSE}

- Demonstrate knowledge of a range of facts, terminology, events, and/or methods that social scientists in various disciplines must possess in order to investigate, analyse or give a history of, or predict human, group, or societal behaviour.

- Demonstrate the ability to apply classifications, principles, generalizations, theories, models, and/or structures pertinent to social scientific efforts to organize conceptual knowledge in various fields.

- Demonstrate the ability to reach conclusions/make arguments across a range of social science topics that are tied to a defensible sifting of appropriate evidence relative to the questions involved.

- Demonstrate an understanding and recognition of the diversity of perspectives, cultural understandings, and ways of thinking that others bring to bear on social science questions.

Students should be able to:-

- Distinguish between explanations from an individualistic perspective and a sociological perspective.
- Describe and apply the major sociological theories.
- Demonstrate understanding of the core concepts of sociology (e.g. socialization, culture, deviance, inequality, social institutions, globalization).
- Explore the main methods of sociological research and identify their strengths and weaknesses.
- Understand the basic concepts in Sociology and develop an understanding about macro and micro perspectives in Sociology.
- Comprehend the various features of Indian Society and culture including unity in diversity; Indian social structure and understanding rural, urban and tribal India.

- Develop an understanding of various aspects of doing social science research with focus on methodology; making research proposal, doing fieldwork and report writing.

- Analyse the critical aspects of Sociology of Development and Planning, the development theories and the Planning system for development Understand the characteristics, social structure, institutions and problems of tribal community in India.

- Develop an understanding about various aspects of Industry; Population studies. Understand the philosophical foundations of Sociology and its application Evaluation of Development Policies.

M.A. 1st Year (Previous Year)		
Paper 1 (Theory)	Paper 2 (Theory)	Paper 3 (Theory)
History of Social Thoughts	Social Research Method	Sociology of Development & Planning
Course Specific Outcomes		
- To enable the learners to understand social thought and sociological theories. The founding fathers of sociology and their contribution for the development of sociology as an independent science. - The students will be able to understand some of the distinctive features of sociology as a discipline and the approaches to	- To Introduce Students to the Nature of Scientific Method in Social Science Research. - To give Students the understanding about the Nature of Scientific Method in Social Science Research. quantitative and quantitative and qualitative approach to Research. - To enhance the Research interests and inculcate the Spirit of inquiry among students, who may be motivated to continue higher studies in research, qualitative approach to research and	- To introduction the Concepts, Theories and Factor of Social Change, Socio-economic Framework, the Contemporary Socio-economic Framework of Development in India. - Development in India, Field of Development Planning including Governmental, Non-governmental Agencies. - Concepts of Development and Underdevelopment, Indicators of development; Human development and Economic Growth; Concepts of Social Development, Economic Development, and Sustainable Development and contemporary critical

social theory associated with it. - To aware learners with major classical sociological perspectives and traditions, and the social and historical contexts in which they emerged. - An acquaintance with at least some of the classical sociological texts and the debates to which they have given rise.	promotes towards research. - Understanding Sociology as a science, concepts and steps in research. Differentiate between the Quantitative and Qualitative Research and understand different types of Research Design. Understand the various techniques of Data Collection- Observation, Questionnaire, Interview Schedule; Case Study, Social Survey, Content Analysis. - Describing various types of Sampling. Elaborate on Data Processing and Data Analysis. - Calculation of measures of central tendency – Mean, Median and Mode; Graphic Representation: Bar Graph and Histograms. -Writing research reports.	perspectives on development. - Understanding the role of International Institutions in Development Policies. - Interface between Democracy and People's participation for development. - Describe Development, Migration and Displacement, Rehabilitation and Resettlement. - Role of Civil society, NGOs, SEZs and Sociological evaluation of Five-Year Plans. - To prepare the students for Professional Careers in the Field of Development Planning including Governmental, NGO/ agencies.

M.A. 1st Year	
Paper 4 (Theory)	Paper 5 (Theory)
Indian Society & Culture	Sociological Classics
Course Specific Outcomes	
- To elaborate on perspectives on Indian society. - Understanding Historical Moorings of the Indian Society, Purusharthas, Ashrama Dharma and Four fold Varna System; Impact of Buddhism, Islam and West. - Factors of continuity and change. - Describing Stratification System in India including Caste and Class (Agrarian and Industrial class structure). - Elucidating the problems of Indian Society (rural and urban) Elaborating on social institutions like Marriage, Family and Kinship among various religious communities; Decline of Joint Family System - Causes and Consequences. - Describing the types of Mobility; Open and Closed Models, Factors and Constraints to Social Mobility. Analysing the social change in Modern India especially through the processes of Modernization, Sanskritization, Westernization and De- Sanskritization.	- To conceptualizing the emergence of sociology by focusing on the contributions of the founding figures of the discipline. - To highlight the challenges and the debates of the time and to establish linkages between classical and contemporary sociology. - To make students understand Emile Durkheim in the context of Western Modernity Methodological Contributions, the legacy of Comte an Positivism, Society as sui generis, Social fact, Observation of social facts, Rules of Sociological Method. - The Division of Labour: Definition of Division of labour, social solidarity and cohesion, Mechanical and Organic Solidarity, Systems of law Study of anomie and suicide, shift from psychological to sociological explanations, social Integration. - Theory of Religion, Sacred and profane, Elementary Forms of religious life, the totem, and suicide, forms of Suicide, Religion Legacy of Durkheim/Durkheim today.

M.A. 2nd Year (Final Year)		
Paper 1 (Compulsory)	Paper 2 (Optional)	Paper 3 (Optional)
Advanced Sociological Theory	Social Anthropology	Political Sociology
Course Specific Outcomes		
- To make the students conversant with major sociological perspectives (Functionalist, Conflict & Symbolic Interaction), their theoretical components and their historical evolution. - Students can distinguish between macro level and micro level sociological perspectives, can specify the theoretical components of each perspective, and connect each perspective to their historical and contemporary theorists.	- To introduce scope and branches of Social Anthropology, meaning, characteristics and geographical distribution of Tribes in India. - To describe the concept, characteristics of Culture and Cultural Processes-Diffusion and Evolution. Analyse the social institutions in terms of types and functions. - To Understand Tribal Economy, Religion and Magic. - To analyse Tribal Problems, Law and Justice – Exploitation of Tribes, Land Alienation and Displacement; Problems of Health and Nutrition. - To make students conversant with the Constitutional provisions and measures for Tribal Development in India.	- Students become familiar with the political processes and structures, society and culture, political Ideas and institutions. - Understand the scope and morphology of political sociology with emphasis on Power, Authority and Legitimacy. Forms of power i.e., Charismatic, Traditional and Rational legal. - To make the students understand Parties Functions, pressure groups, sociological implications of dictatorship and democracy. - To understand the political change theories such as circulation of political elites along with Election Revolution. - Students will be capable of leading and participate in discussion.

M.A. 2nd Year (Final Year)		
Paper 4 (Optional)	Paper 5 (Optional)	Paper 6 (Compulsory)
Criminology	Rural Sociology	Viva-Voce
Course Specific Outcomes		
- During the study of the theories of criminology, students will do readings on the various theories in criminology to understand why people commit crimes. - To examine the myths surrounding Indian crime leading to a more accurate understanding of criminal behaviour in society. Learning. Students will be able to identify the myths surrounding Indian crime and more accurately understand crime in the society. - To demonstrate the ability to think critically and analytically. Students will demonstrate critical and analytical thinking through class assignments.	- To explain Nature and Scope of Rural Sociology. -Describe Social Structure of Rural Community (Caste, Joint Family, Religion, Jajmani System & Caste Panchayats). - Emerging patterns of rural leadership. -Explain Village Governance during pre- and post-independence; Panchayati Raj System, Antyodya Yojna & IRD, its impact on Rural India. - Social change in Modern India especially through the processes of Modernization, Sanskritization, Westernization and De-Sanskritization. - Students understand the issues related to Rural Community in detail and capable of having scientific approach in collecting and analysing their problems. - Students become capable of giving viable solution to contemporary rural issues.	- Comprehensive Viva-Voce enables a successful student to :- • Demonstrate knowledge in the program domain. • Present his views cogently and precisely. • Exhibit professional etiquette suitable for career progression.

विषय- संस्कृत(स्नातक स्तर)

Programme Outcomes (POs)

- विद्यार्थियों को लेखन, वाचन एवं अध्ययन की दृष्टि से भाषागत दक्षता प्राप्त होगी ।
- सहज एवं स्वाभाविक रूप से भाषागत पारंगता प्राप्त कर उनमें प्रभावशाली अभिव्यक्ति की क्षमता उत्पन्न होगी ।
- आत्मविश्वास से युक्त एवं नेतृत्व क्षमता के धारक होंगे ।
- नैतिक एवं चारित्रिक दृष्टि से मूल्यवान व्यक्तित्वधारी होकर भारतीयता के बोध के साथ वैश्विक नागरिक के रूप में भावी चुनौतियों का सामना करने में सक्षम होंगे ।

Programme Specific Outcomes (PSOs)

- सर्वाधिक वैज्ञानिक भाषा के रूप में संस्कृत भाषा के प्राचीन महत्व एवं उसकी वर्तमान प्रासंगिकता को जानने-समझने योग्य होंगे ।
- संस्कृत साहित्य की विभिन्न विधाओं (गद्य, पद्य, नाटक, व्याकरण इत्यादि) से सुपरिचित होकर संस्कृत मर्मज्ञ बन सकेंगे ।
- संस्कृत व्याकरण के विभिन्न अंगों के ज्ञान द्वारा भाषा के शुद्ध अध्ययन, लेखन एवं उच्चारण माध्यम से अभिव्यक्ति कौशल का विकास होगा ।
- आयुर्वेद, वास्तुशास्त्र, ज्योतिष, नित्यनैमित्तिक कर्मकांड इत्यादि के माध्यम से जीविकोपार्जन के योग्य बनेंगे।
- वैदिक एवं लौकिक संस्कृत साहित्य की समृद्धता एवं तद्निहित नैतिकता व आध्यात्मिकता को अनुभूत कर भारतीय संस्कृति के महत्व को वैश्विक स्तर तक पहुंचाने में सक्षम होंगे।
- धर्म-दर्शन, आचार-व्यवहार, नीति शास्त्र एवं भारतीय संस्कृति के मूल तत्वों को जानकर उत्तम चरित्रवान मानव एवं कुशल नागरिक बनेंगे ।
- समसामयिक समस्याओं के समाधान के रूप में संस्कृत साहित्य में निबद्ध सर्वांगीणता के प्रति शोधपरक दृष्टि का विकास होगा ।

Programme/Class:**Certificate** कार्यक्रम /वर्ग- **सर्टिफिकेट**	Year: **First** वर्ष- **प्रथम**	Semester: I सेमेस्टर – **प्रथम**
विषय- **संस्कृत**		
प्रश्न पत्र कोड-A020101T	प्रश्न पत्र शीर्षक- **संस्कृत पद्य साहित्य एवं व्याकरण**	

Course outcomes: अधिगम उपलब्धि-

- **विद्यार्थी संस्कृत साहित्य का सामान्य परिचय प्राप्त कर काव्य के विभिन्न भेदों से परिचित हो सकेंगे।**
- **वह संस्कृत पद्य साहित्य की सुगीतात्मकता का सौंदर्यबोध कर सकेंगे।**
- **उनमें काव्य में प्रयुक्त रस,छंद,अलंकारों को समझने की क्षमता विकसित होगी।**
- **पद्य में निहित सूक्तियों एवं सुभाषित वाक्यों के माध्यम से उनके नैतिक एवं चारित्रिक उन्नयन होगा।**
- **विद्यार्थियों के शब्दकोश में वृद्धि होने के साथ-साथ वह संस्कृत श्लोकों के शुद्ध और सस्वर उच्चारण के कौशल में निपुण बनेंगे ।**
- **संस्कृत व्याकरण का सामान्य ज्ञान प्राप्त कर उसकी वैज्ञानिकता से सुपरिचित हो सकेंगे ।**
- **संस्कृत वर्णों के शुद्ध उच्चारण कौशल का विकास होगा ।**
- **स्वर एवं व्यंजन के मूल भेद को समझ कर पृथक अर्थावगमन की क्षमता उत्पन्न होगी ।**
- **स्वर,व्यंजन एवं विसर्ग संधि का विशिष्ट ज्ञान एवं उनके अनुप्रयोग का कौशल विकसित होगा।**

विषय- **संस्कृत**	
प्रश्न पत्र कोड-A020201T	प्रश्न पत्र शीर्षक- **संस्कृत गद्य साहित्य,अनुवाद एवं संगणक अनुप्रयोग**

Course outcomes: **अधिगम उपलब्धि-**

- **विद्यार्थी संस्कृत गद्य साहित्य का सामान्य ज्ञान प्राप्त कर, गद्य काव्य के भेदों सुपरिचित हो सकेंगे|**
- **संबंधित साहित्य के माध्यम से उनका नैतिक एवं चारित्रिक उत्कर्ष होगा |**
- **राष्ट्रभक्ति की भावना प्रबल होगी तथा उत्तम नागरिक बनेंगे |**
- **अनुवाद कौशल में वृद्धि होगी |**
- **संस्कृत गद्य के धाराप्रवाह एवं शुद्ध वाचन का कौशल विकसित होगा |**
- **विद्यार्थी संगणक का सामान्य ज्ञान प्राप्त कर, अधिगम क्षमता में वृद्धि हेतु इसका उपयोग कर सकने में सक्षम होंगे।**
- **E-content एवं डिजिटल लाइब्रेरी का उपभोग कर पाने में समर्थ होंगे ।**
- **संस्कृत भाषा और साहित्य के नित-नूतन अन्वेषण को खोज पाने तथा उससे स्व-ज्ञान कोष में वृद्धि कर पाने योग्य होंगे ।**
- **संगणक के प्रयोग के माध्यम से संस्कृत ज्ञान के प्रचार प्रसार एवं आदान-प्रदान करने में कुशल बनेंगे।**
- **पारंपरिक एवं वैश्विक ज्ञान में सामंजस्य बनाकर ज्ञान की अभिवृद्धि करने एवं जीविकोपार्जन के नए मार्ग खोजने का कौशल विकसित होगा।**

Credits: **6**	**Core Compulsory**

Programme/Class: **Diploma** कार्यक्रम /वर्ग- **डिप्लोमा**	Year: **Second** वर्ष- **द्वितीय**	Semester: **III** सेमेस्टर – **तृतीय**
विषय- **संस्कृत**		
प्रश्न पत्र कोड-A020301T	प्रश्न पत्र शीर्षक- **संस्कृत नाटक एवं व्याकरण**	

Course outcomes: **अधिगम उपलब्धि-**

- **संस्कृत नाट्य साहित्य को सामान्य रूप से समझ सकने में सक्षम होंगे ।**
- **नाटक की पारिभाषिक शब्दावली से सुपरिचित होंगे ।**
- **नाटक में प्रयुक्त रस, छंद एवं अलंकारों का सम्यक बोध कर सकेंगे ।**
- **संवाद एवं अभिनय कौशल में पारंगत होंगे ।**
- **नवीन पदों के ज्ञान द्वारा उनके शब्दकोश में वृद्धि होगी ।**
- **भारतीय सांस्कृतिक तत्वों एवं मूल्यों को आत्मसात कर, भारतीयता के गर्व बोध से युक्त उत्तम नागरिक बनेंगे।**
- **व्याकरण परक शब्दों की सिद्धि प्रक्रिया से परिचित हो सकेंगे।**
- **व्याकरण शास्त्र के ज्ञान के माध्यम से शुद्ध वाक्य विन्यास कौशल का विकास हो सकेगा।**

Programme/Class: **Diploma** कार्यक्रम /वर्ग- **डिप्लोमा**	Year: **Second** वर्ष - **द्वितीय**	Semester: **IV** सेमेस्टर - **चतुर्थ**
विषय- **संस्कृत**		
प्रश्न पत्र कोड-A020401T	प्रश्न पत्र शीर्षक- **काव्यशास्त्र एवं संस्कृत लेखन कौशल**	

Course outcomes: **अधिगम उपलब्धि-**

- **विद्यार्थी काव्यशास्त्र के उद्भव और विकास से सुपरिचित होकर काव्य शास्त्रीय तत्वों को समझने में सक्षम होंगे ।**
- **छंद भेद एवं उनके नियमों को समझने में समर्थ होंगे ।**
- **संस्कृत अलंकारों के ज्ञान के माध्यम से काव्य के सौंदर्य का बोध कर सकेंगे ।**
- **कल्पनाशीलता एवं रचनात्मक क्षमता का विकास होगा ।**
- **शब्द ज्ञानकोष में वृद्धि होगी ।**
- **व्याकरण शास्त्र के ज्ञान के माध्यम से शुद्ध वाक्य विन्यास कौशल का विकास हो सकेगा।**
- **विद्यार्थियों में निबंध एवं अनुच्छेद लेखन क्षमता का विकास होगा।**
- **संस्कृत पत्र लेखन कौशल में वृद्धि होगी।**
- **अपठित अंश के माध्यम से विषय वस्तु अवबोध एवं अभिव्यक्ति का कौशल विकसित होगा।**

Credits: **6**	**Core Compulsory**
Max. Marks: 25+75	Min. Passing Marks:
Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P: **6-0-0.**	

विषय- संस्कृत	
प्रश्न पत्र कोड-A020501T	प्रश्न पत्र शीर्षक- **प्रथम प्रश्न पत्र- वैदिक वाङ्मय एवं भारतीय दर्शन**

Course outcomes: अधिगम उपलब्धि-

- वैदिक वाङ्मय एवं संस्कृति का ज्ञान प्राप्त कर सकेंगे।
- वैदिक एवं औपनिषदिक संस्कृति के प्रति गौरव बोध होगा।
- वेदोक्त संदेशों एवं मूल्यों के माध्यम से आचरण का उदात्तीकरण होगा।
- उपनिषद् का सामान्य परिचय एवं निहित उपदेशों का अवबोध होगा।
- औपनिषदिक कर्म संयम भक्ति एवं त्यागमूलक संस्कृति से परिचित होंगे।
- वैदिक एवं औपनिषदिक संस्कृति के प्रति गौरव बोध होगा वैदिक सूक्तों के माध्यम से विद्यार्थियों को तत्कालीन आध्यात्मिक सामाजिक एवं राष्ट्रीय परिदृश्य का निदर्शन होगा।

भारतीय दार्शनिक तत्वों का सामान्य ज्ञान प्राप्त होगा।
दार्शनिक तत्वों में अनुस्यूत गूढ़ार्थ बोध होगा।
दार्शनिक तत्वों के प्रति विश्लेषणात्मक एवं तार्किक क्षमता का विकास होगा।
दर्शन में विद्यमान नैतिक एवं कल्याणपरक तथ्यों से आत्मोत्कर्ष की अभिप्रेरणा प्राप्त होगी।
भारतीय दर्शन में निहित उद्देश्यों एवं ज्ञान को आचरण में समाहित करने हेतु अभिप्रेरित होंगे
गीता ज्ञान रहस्य द्वारा सृष्टि कल्याणार्थ भाव विकसित होंगे।

विषय- **संस्कृत**	
प्रश्न पत्र कोड-A020502T	प्रश्न पत्र शीर्षक- **द्वितीय प्रश्न पत्र - व्याकरण एवं भाषा विज्ञान**

Course outcomes: अधिगम उपलब्धि-

- **भाषा विज्ञान के उद्भव एवं विकास का सामान्य ज्ञान प्राप्त होगा।**
- **संस्कृत भाषा एवं व्याकरण की वैज्ञानिकता का अवबोध होगा।**

- भाषा एवं भाषा विज्ञान की उपयोगिता एवं महत्व से सुपरिचित होंगे।
- ध्वनि के प्रारंभिक एवं वर्तमान स्वरूप एवं ध्वनि परिवर्तन के कारणों के प्रति विश्लेषणात्मक दृष्टि विकसित होगी।
- पदों की सिद्धि प्रक्रिया के माध्यम से शब्द निर्माण की वैज्ञानिकता से परिचित होंगे।
- संस्कृत भाषा के शुद्ध उच्चारण एवं लेखन का कौशल विकसित होगा।

विषय- **संस्कृत**

श्न पत्र कोड-A020601T	प्रश्न पत्र शीर्षक- **प्रथम प्रश्न पत्र - आधुनिक संस्कृत साहित्य**

ourse outcomes: अधिगम उपलब्धि-

- **आधुनिक संस्कृत-कवियों से सुपरिचित होंगे।**
- **नवीन बिम्बविधानों एवं नवीन विषयों का ज्ञान प्राप्त होगा।**
- **आधुनिक संस्कृत-साहित्य के बाल-साहित्य से परिचित होते हुए संस्कृत-शिक्षण की सरलतम विधि के प्रति उन्मुख होंगे।**
- **आधुनिक संस्कृत-साहित्य में विद्यमान नैतिक एवं कल्याणपरक तथ्यों से आत्मोत्कर्ष की अभिप्रेरणा प्राप्त होगी।**
- **आधुनिक संस्कृत-साहित्य में निहित उद्देश्यों एवं ज्ञान को आचरण में समाहित करने हेतु अभिप्रेरित होंगे।**

विषय- **संस्कृत**	
श्न पत्र कोड-A020602T	प्रश्न पत्र शीर्षक- **द्वितीय प्रश्न पत्र (वैकल्पिक) - योग एवं प्राकृतिक चिकित्सा**

ourse outcomes: अधिगम उपलब्धि-

- **भारतीय योग शास्त्र के प्राचीन एवं वैज्ञानिक ज्ञान से लाभान्वित होंगे।**
- **योग शास्त्र के मूलभूत सिद्धांतों को जानकर योग की महत्ता से परिचित होंगे।**
- **योग के वास्तविक स्वरूप के अवबोध द्वारा योग को जीवन में समाहित करने हेतु प्रेरित होंगे।**
- **योग के आसनों के सैद्धांतिक एवं व्यवहारिक दोनों पक्षों को समान रूप से सीख सकेंगे।**
- **योग एवं प्राकृतिक चिकित्सा के अनुप्रयोग द्वारा स्वस्थ समाज का निर्माण कर सकने में समर्थ होंगे**

प्रश्न पत्र कोड-A0206003T	प्रश्न पत्र शीर्षक-तृतीय प्रश्नपत्र (वैकल्पिक) - आयुर्वेद एवं स्वास्थ्य विज्ञान

Course outcomes: अधिगम उपलब्धि-

- भारतीय प्राच्य ज्ञान की अद्भुत देन आयुर्वेद का सामान्य ज्ञान प्राप्त करेंगे।
- मानव स्वास्थ्य एवं रोग निवारण हेतु आयुर्वेद के मूलभूत सिद्धांतों से सुपरिचित होंगे।
- वर्तमान समय में आयुर्वेद की आवश्यकता एवं महत्व से अवगत होते हुए मानव कल्याणार्थ अनुप्रयोग हेतु प्रेरित होंगे।
- अष्टांग आयुर्वेद के ज्ञान द्वारा स्वस्थ जीवनशैली अपनाने हेतु अग्रसर होंगे।

विषय- **संस्कृत**

प्रश्न पत्र कोड-A020605T	प्रश्न पत्र शीर्षक- **पंचम प्रश्न पत्र (वैकल्पिक)- ज्योतिष शास्त्र के मूलभूत सिद्धांत**

ourse outcomes: अधिगम उपलब्धि-

- **भारतीय प्राच्य ज्ञान के प्रति अभिरुचि उत्पन्न होगी।**
- **भारतीय ज्योतिष शास्त्र का सामान्य ज्ञान प्राप्त कर सकेंगे।**
- **ज्योतिष के विभिन्न सिद्धांतों के ज्ञान के माध्यम से विश्लेषण क्षमता जागृत होगी।**
- **पंचांग अवलोकन एवं निर्माण कौशल का विकास होगा**

urse outcomes: अधिगम उपलब्धि-

- विद्यार्थी भारतीय पारंपरिक कर्मकांड एवं सांस्कृतिक मूल्यों से परिचित होंगे ।
- नित्य नैमित्तिक अनुष्ठान विधि को जानकर जीवन को नियमबद्ध एवं आचरणशील बनाने में समर्थ होंगे।
- भारतीय कर्मकांड के प्रामाणिक शास्त्रीय रूप से परिचित होकर उसकी व्यवहारिक उपयोगि जानने योग्य बनेंगे।
- सामान्य अनुष्ठान संपन्न कराने योग्य कुशल और पौरोहित्य कर्म विशारद बनेंगे ।
- आत्मनिर्भर भारत की संकल्पना को साकार करने में सक्षम एवं आत्मनिर्भर बनेंगे।r

GENERAL PROGRAMME OUTCOMES

● विद्यार्थियों को हिन्दी साहित्य एवं भाषा का आधारभूत ज्ञान प्रदान करना।

● विद्यार्थियों को कार्यालयी कार्यों एवं कंप्यूटर का आधारभूत ज्ञान देकर रोजगार हेतु सक्षम बनाना

● साहित्य की विभिन्न गद्य विधाओं के रूप-स्वरूप से परिचित कराकर रचनात्मक लेखन की ओर अग्रसर करना।

● अनुवाद के सिद्धांतों की जानकारी देकर अनुवादक के रूप में तैयार करना, जिससे अर्थार्जन के साथ हिंदीतर दुनिया की ज्ञान सामग्री की हिंदी में उपलब्धता सुनिश्चित हो सके।

● साहित्यशास्त्र एवं आलोचना के अध्ययन द्वारा साहित्य के मर्म की पहचान, मनुष्यता की खोज और रसास्वादन के द्वारा बेहतर समाज का निर्माण करना।

● नागरिक-चेतना एवं राष्ट्रीय भावना के विकास के द्वारा जाति-धर्म-भाषा-भूगोल-लिंग आदि भेदमूलक प्रवृत्ति का परिहार करना

● नए समाज की चुनौतियों का सामना करने में सक्षम बनाना

●भाषा, साहित्य तथा संस्कृति की पारस्परिकता की समझ विकसित करना

● लोक की आधारभूत समझ एवं संपृक्ति के द्वारा लोक मंगल के महान उद्देश्य की प्राप्ति करना

● शोध मानव-सभ्यता एवं संस्कृति के विकास का आधार है. उच्च शिक्षा के प्रथम चरण से ही शोध-संस्कृति से जोड़कर मानव-समाज को अग्रगामी बनाना

PROGRAMME SPECIFIC OUTCOMES

(1) **बी. ए. प्रथम वर्ष प्रथम सेमेस्टर के 'हिन्दी काव्य' प्रश्नपत्र** के अंतर्गत भारतीय ज्ञान परंपरा में हिन्दी साहित्य के विभिन्न कालों के प्रतिनिधि कवियों की कविताओं के विषय में जानकारी देना तथा हिन्दी काव्य के इतिहास की संक्षिप्त जानकारी देकर विद्यार्थियों को हिन्दी कविता के विकास क्रम से अवगत कराना।

(2) **बी. ए. प्रथम वर्ष द्वितीय सेमेस्टर के 'कार्यालयी हिन्दी और कम्प्यूटर' प्रश्नपत्र** के अंतर्गत विद्यार्थियों को कार्यालयी कार्यों की मूलभूत जानकारी प्रदान करना ताकि वे कार्यालय के समस्त कार्यों को सुगमतापूर्वक कर सकें एवं उन्हें कम्प्यूटर का मूलभूत ज्ञान देकर कम्प्यूटर पर हिन्दी में कार्य करने में सक्षम बनाना ताकि वे समुचित रोज़गार प्राप्त कर सकें।

(3) **बी. ए. द्वितीय वर्ष तृतीय सेमेस्टर के 'हिन्दी गद्य' प्रश्नपत्र** के अंतर्गत विद्यार्थियों को हिन्दी गद्य की सभी विधाओं का सम्यक ज्ञान देना तथा उन्हें हिन्दी के प्रतिनिधि उपन्यासकारों, कथाकारों, नाटककारों, एकांकीकारों, निबंधकारों एवं अन्य गद्य विधाओं के लेखकों के महत्त्वपूर्ण प्रदेय से परिचित कराना, ताकि विद्यार्थी इन सभी विधाओं से परिचित हो सकें और इस क्षेत्र में करियर बनाने के इच्छुक विद्यार्थी को इस हेतु तैयार करना।

(4) **बी. ए. द्वितीय वर्ष चतुर्थ सेमेस्टर के 'हिन्दी अनुवाद' प्रश्नपत्र** के अंतर्गत विद्यार्थियों को हिन्दी के साथ-साथ अंग्रेजी की प्रारंभिक जानकारी प्रदान करते हुए उन्हें वैश्विक प्रतिस्पर्धात्मक वातावरण के साथ सामंजस्य स्थापित करने में सक्षम बनाना तथा भारतीय संस्कृति और साहित्य के वैश्विक प्रचार-प्रसार में सहायक बनाना और इस क्षेत्र में करियर बनाने के इच्छुक विद्यार्थी को इस हेतु तैयार करना।

(5) **बी. ए. तृतीय वर्ष पंचम सेमेस्टर के प्रथम प्रश्नपत्र** 'साहित्यशास्त्र और हिन्दी आलोचना' के अंतर्गत विद्यार्थी को साहित्यशास्त्र एवं आलोचना के अर्थ, महत्व और विषय-क्षेत्र से परिचित कराना तथा उन्हें हिन्दी आलोचना के रूप में भारतीय एवं पाश्चात्य काव्यशास्त्र के आधुनिक विकास के विविध रूपों और दिशाओं का साक्षात्कार कराना।

(6) **बी. ए. तृतीय वर्ष पंचम सेमेस्टर के द्वितीय प्रश्नपत्र** 'हिन्दी का राष्ट्रीय काव्य' के अंतर्गत हिन्दी साहित्य एवं सिनेमा की राष्ट्रीय काव्य चेतना से जुड़े कवियों की रचनाओं के माध्यम से विद्यार्थियों में राष्ट्र के प्रति अनुराग जाग्रत करना और उन्हें भारतीय संस्कृति की विशिष्टता और महानता के विविध पक्षों से अवगत कराना और इस क्षेत्र में करियर बनाने के इच्छुक विद्यार्थी को इस हेतु तैयार करना।

(7) **बी. ए. तृतीय वर्ष षष्ठ सेमेस्टर के प्रथम प्रश्नपत्र** 'भाषा विज्ञान, हिन्दी भाषा तथा देवनागरी लिपि' के अंतर्गत विद्यार्थियों को भाषा के अंगों, हिन्दी भाषा के उद्भव तथा विकास और देवनागरी लिपि के स्वरूप की जानकारी कराना एवं उन्हें हिन्दी की वैज्ञानिक एवं संवैधानिक स्थिति से परिचित कराना।

(8) **बी. ए. तृतीय वर्ष षष्ठ सेमेस्टर के द्वितीय प्रश्नपत्र** 'लोक साहित्य एवं लोक संस्कृति के अंतर्गत विद्यार्थियों को भारतीय संस्कृति में जनश्रुति से निर्मित साहित्य के महत्वपूर्ण योगदान से विद्यार्थियों को परिचित कराना तथा लोक संस्कृति के विकास क्रम से विद्यार्थियों को अवगत कराना।