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# S.D.COLLEGE, MUZAFFARNAGAR
## Department of Chemistry

**PROGRAMME OUTCOMES ,**
**PROGRAMME SPECIFIC OUTCOMES**
**& COURSE OUTCOMES**

### PROGRAM: Master of Science (Chemistry)-Two Year (Semester System)

| **Department of Chemistry** | **After successful completion of Two year Post Graduate Degree Program in M.Sc. (Chemistry) student-** |
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| PROGRAM OUTCOMES | PO1-To become familiar with different branches of chemistry like analytical, inorganic, organic, physical, environmental, biochemistry, and spectroscopy.<br><br>PO2-Students will also learn to apply their knowledge and laboratory skills for careers as professionals in various industries and academic and research institutions. |
| PROGRAM SPECIFIC OUTCOMES | PSO1-Think critically and analyze chemical problems.<br>PSO2- Present scientific and technical information resulting from laboratory experimentation in both written and oral formats.<br>PSO3. Work efficiently and safely in a laboratory environment<br>PSO4. To use technologies / instrumentation to gather to analyze the data.<br>PSO5. Use the power of computer in applications in chemistry.<br>PSO6. Work in teams as well as independently.<br>PSO7. Apply modern methods of analysis to chemical systems in a laboratory setting. |

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| Year | Semester | | |
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| 1 | I | Course-I | **Inorganic Chemistry I** |
| | | COURSE OUTCOMES | To help them to learn the stereochemistry and bonding in main group compounds, metal ligand equilibrium in solution, reaction mechanism of transition metal complexes and metal-ligand bonding. |
| 1 | I | Course-II | **Organic Chemistry I** |
| | | COURSE OUTCOMES | To develop skills in the identification of nature of bonding in organic molecules, stereochemistry, and reaction mechanism: structure and reactivity, aliphatic nucleophilic substitution and aliphatic electrophilic substitution. |
| 1 | I | Course-III | **Physical Chemistry I** |
| | | COURSE OUTCOMES | To help them to learn advance quantum chemistry and thermodynamic. |
| 1 | I | Course-IV | **Computer forChemists** |
| | | COURSE OUTCOMES | To develop the skills in the area of knowledge of introduction to computers and computing, computer programming in FORTRAN/C/BASIC |
| 1 | II | Course-V | **Inorganic Chemistry II** |
| | | COURSE OUTCOMES | To develop the knowledge about electronic spectra and magnetic properties of transition metal complexes, metal pi complexes, metal clusters, and nuclear chemistry. |
| 1 | II | Course-VI | **Organic Chemistry II** |
| | | COURSE OUTCOMES | Todevelop the knowledge about aromatic electrophilic substitution, aromatic nucleophilic substitution, free radical reactions, addition to carbon carbon multiple bonds, addition to carbon hetero multiple bonds, elimination reactions and pericyclic reactions. |
| 1 | II | Course-VII | **Physical Chemistry II** |
| | | COURSE OUTCOMES | To develop the knowledge about chemical thermodynamics, surface chemistry and electrochemistry |
| 1 | II | Course-VIII | Group Theory Spectroscopy and Diffraction Methods & solid State |
| | | COURSE OUTCOMES | Understanding the facts and theories relating to the rates at which chemical reactions occur in the gas phase, liquid phase and on surfaces is the objective of this course. Students will be able to gain knowledgeon group theory, spectroscopy, diffraction me thods and solid state on successful completion of this course |
| 2 | III | Course-IX | **Photochemistry** |
| | | COURSE OUTCOMES | To help the students gain knowledge in the field of photochemical reactions. |

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| 2 | III | Course-X | **Spectroscopy** |
| | | COURSE OUTCOMES | To develop the knowledge about inorganic spectroscopy and organic spectroscopy. |
| 2 | III | Course-XI | **Analytical Chemistry** |
| | | COURSE OUTCOMES | To develop the knowledge about classification of analytical methods, errors and evaluation, radiochemical methods, thermal methods of analysis, chromatographic techniques, electro analytical techniques and atomic adsorption spectroscopy and flame photometry. |
| 2 | III | Course-XII | **Bio-Organic Chemistry** |
| | | COURSE OUTCOMES | To develop the knowledge about boorganic compounds and chemistry |
| 2 | IV | Course-XIV | **Environmental Chemistry** |
| | | COURSE OUTCOMES | To develop the knowledge about environment, hydrosphere, soils, atmosphere, industrial pollution and environmental toxicology. |
| 2 | IV | Course-XV | **Organic Synthesis** |
| | | COURSE OUTCOMES | To develop the knowledge about organometallic reagents, oxidation, reduction, rearrangements and metallocenes, nonbenzenoid aromatic and polycyclic aromatic compounds. |
| 2 | IV | Course-XVII | **Polymer Chemistry** |
| | | COURSE OUTCOMES | To help the students know about basics of polymer, characterization, structure and properties of polymer, polymer processing, and properties of commercial polymers. |
| 2 | IV | Course-XVIII | **Chemistry of natural products** |
| | | COURSE OUTCOMES | To help students know about natural products and their applications. |

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# S.D. COLLEGE, MUZAFFARNAGAR
## DEPARTMENT OF COMMERCE

SESSION : 2023-2024

### PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES

**PGM-01: Master of Commerce (M.Com.)**

## PROGRAM: MASTER OF COMMERCE

| Department of Commerce | After successful completion of two year Post Graduate degree program in M.Com. student should have- |
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| PROGRAM OUTCOMES | **PO1:** To acquaint with conventional as well as contemporary areas in the discipline of Commerce<br>**PO2:** The students can work in different domains like Accounting, Taxation, HRM,Economics, Banking and Administration and For conducting business, accounting and research practices<br>**PO3:** To well versed in national as well as international trends and to understand role of regulatory bodies in corporate and financial sectors |

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| | **PO4:** To provide in-depth understanding of all core areas specifically Advanced Accounting, International Accounting, Management, Security Market Operations and Business Environment, Business Economics,Research Methodology and Tax planning. |
| **PROGRAM SPECIFIC OUTCOMES** | **PSO1:** Acquaint the students with the practical approach of indirect taxes and direct tax<br>**PSO2:** Application of financial management accounting in decision making<br>**PSO3:** Techniques of accounting as per the requirement and accounting procedure<br>**PSO4:** To well versed in national as well as international trends in marketing<br>**PSO5:** Aware about principles and functions of strategic management.<br>**PSO6:** Understanding the legal issue to corporate sector Advance and detailed knowledge of operation research and research methodology |
| **Course-I** | **Management Concept and Organisation Behaviour (0730101) 1 sem** |
| **COURSE OUTCOMES** | CO1- To develop employability skills among the students.<br>CO2- To build up the conceptual, analytical, technical and managerial skills of student's efficient office organization and records management<br>CO3-Technical skills among the students for designing and developing effective means to<br>manage records, consistency and efficiency of work flow in the administrative section of an organization will be developed |
| **Course-II** | **Corporate Tax Planning and Management (0730102) 1sem** |
| **COURSE OUTCOMES** | CO1- The course aims at to provide students in depth knowledge of laws and accounts relating to Income-Tax.<br>CO2- Students will know how to file the income tax return<br>CO3- The students may able to make proper tax planning for their own business. |
| **Course-III** | **Statistical Analysis (0730103) 1sem** |
| **COURSE OUTCOMES** | CO1- To understand the different concept of population and sample and to make students familiar with Calculation of various types of averages and variation.<br>CO2- To learn the applications of different statistical tools in business.<br>CO3- To use regression analysis to estimate the relationship between two variables and to use frequency distribution to |

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| | make decision.<br>CO4- To understand the techniques and concept of different types of index numbers |
| **Course-IV** | **Research Methodology (0730104) 1sem** |
| **COURSE OUTCOMES** | CO1- Learners are expected to demonstrate an understanding of research methodologies.<br>CO2- Identify the overall process of designing a research study from its inception to the report stage.<br>CO3- Imbibe data collection, analysis, and interpretation and presentation skills at par with globally accepted standards.<br>CO4- It provides a solid foundation for development of rational problem-solving skills and analytical thinking that can last throughout their education and subsequent professional careers. |
| **Course-V** | **Marketing Management (0830101) 2sem** |
| **COURSE OUTCOMES** | CO1-Students will be able to identify the scope and significance of Marketing In Domain Industry<br>CO2-Students will be able to examine marketing concepts and phenomenon to current business events In the Industry.<br>CO3-Students will be able to coordinate the various marketing environment variables and interpret them for designing marketing strategy for business firms<br>CO4-Students will be able to illustrate market research skills for designing innovative marketing strategies for business firms.<br>CO5-Students will be able to practice marketing communication skills relevant to the corporate world |
| **Course-VI** | **Customer Relationship Management(0830105) 2sem** |
| **COURSE OUTCOMES** | CO1- 1. Understanding CRM Concepts: Students will be able to define and explain the concepts of CRM, its importance, and its applications in business.<br>CO2-Students will be able to identify and analyze customer needs, expectations, and behaviors to develop effective CRM strategies.<br>CO3-Developing CRM Strategies: Students will be able to develop and implement CRM strategies to build and maintain strong customer relationships.<br>CO4-Understanding Customer Lifecycle: Students will be able to explain and analyze the customer lifecycle, including customer acquisition, retention, and loyalty.<br>CO5- Analyzing Customer Data: Students will be able to collect, analyze, and interpret customer data to inform CRM decisions. |

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| **Course-VII** | **Financial Management (0830103) 2sem** |
| **COURSE OUTCOMES** | CO1- Financial management design to expose the students to the financial issues of determining the monetary resources needed by a business, the mix of these resources, the sources and uses of funds, the benefits, risk and cost associated with different types of resources and financing.<br>CO2- Provide an in- depth view of process in financial management of the firm.<br>CO3- Improving students' understanding of the time value of money and the role of financial manager in current competitive business scenario.<br>CO4- Enhancing student's ability in dealing with short term day to day working capital decision and also long-term dealing, which involves major capital investment decisions and raising long term finances. |
| **Course-VIII** | **Indirect Taxes GST & Custom Law (0830102) 2sem** |
| **COURSE OUTCOMES** | CO1- To enable the students to learn the concepts indirect tax and GST from the pre-GST period to post- GST period.<br>CO2- To understand the importance of indirect taxes (GST) in the Indian and global economy and its contribution to the economic development.<br>CO3- To comprehend the principles of taxations, objectives of taxes and its impact, shifting and incidence process of indirect taxes in the market orientated economy.<br>CO4- To understand the implications of GST on the taxable capacity consumers, dealers and of the society at large and its changes. |
| **Course-IX** | **Course: Research Methodology (0338002) 3sem** |
| **COURSE OUTCOMES** | CO1- Learners are expected to demonstrate an understanding of research methodologies.<br>CO2- Identify the overall process of designing a research study from its inception to the report stage.<br>CO3- Imbibe data collection, analysis, and interpretation and presentation skills at par with globally accepted standards.<br>CO4- It provides a solid foundation for development of rational problem-solving skills and analytical thinking that can last throughout their education and subsequent professional careers. |
| **Course-X** | **Strategic management (0338003) 3sem** |
| **COURSE OUTCOMES** | CO1- Understand various perspectives and concepts in the field of Strategic Management<br>CO2- Understand the principles of strategy formulation, implementation and control in organizations. |

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| | CO3- Demonstrate effective application of concepts, tools & techniques to practical situations for diagnosing and solving organizational problems.<br>CO4- Students will be able to demonstrate capability of making their own decisions in dynamic business landscape.<br>CO5- Describe major theories, background work, concepts and research output in the field of strategic management. |
| **Course-XI** | **Operation Research (0338001) 3sem** |
| **COURSE OUTCOMES** | CO1- Identify and develop operational research models from the verbal description of the real system.<br>CO2- Understand the mathematical tools that are needed to solve optimization problems.<br>CO3- Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained and translate solutions into directives for action.<br>CO4- Develop mathematical skills to analyse and solve transportation problems, network problems, arising from a wide range of applications. |
| **Course-XII** | **Managerial Economics (438001) 4sem** |
| **COURSE OUTCOMES** | CO1- Apply the economic way of thinking to individual decisions and business decisions.<br>CO2- Understand the different approaches to theories of firm, Demand estimation and, costs of production and how they affect short and long run decision.<br>CO3- Derive the equilibrium conditions for cost minimization and profit maximization.<br>CO4- Understand economies of scale, diseconomies of scale, Expansion Path and Ridge Line, and how each affects the cost of production. |
| **Course-XIII** | **Human Resource Management (438006) 4sem** |
| **COURSE OUTCOMES** | CO1-To impart / develop the understanding of concept of human resource management and its significance in organizational context.<br>CO2-To enable the students to deal with contemporary HR issues.<br>CO3-To integrate the knowledge / concept of HR to take optimum decision.<br>CO4-To demonstrate/ strategic issues and strategies required to select and develop HR. |
| **Course-XIV** | **Industrial Relations & Labour Laws (438007) 4sem** |
| **COURSE OUTCOMES** | CO1-The students will be elaborate the concept of Industrial relational.<br>CO2-The students will be able to illustrate the significance |

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| | and role of trade union in industrial setup.<br>CO3-The student will be able to identify the major causes & impacts of industrial dispute and dispute settlement procedure.<br>CO4- The students will be able to summarise and apply the provision of various labour laws |

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# S.D.COLLEGE, MUZAFFARNAGAR
## Department of Economics

PROGRAM OUTCOMES , PROGRAM SPECIFIC OUTCOMES &COURSE OUTCOMES

**Program: Master of Arts (Economics)-Two Year (Semester System)**

| **Upon successful completion of two year Post Graduate Degree Program in MA-Economics student should have-** | |
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| **PROGRAM OUTCOMES** | PO1- The understand the General equilibrium, economic efficiency and market failure.<br>PO2- The students learn & understand the interprets macro-economic issues such as money, foreign exchange, inflation and deflation.<br>PO3- Understand the concepts of Differentiation and Economic Application of Mathematics in Economic<br>PO4- The students also learn and understand Human Development Index (HDI), Physical Quality life Index (PQLI) and Sustainable Development Goals (SDG).<br>PO5- The students should be able to understand the various aspects of fiscal policy and debt management.<br>PO6- The students learn and understand the issue related to market structure, firms motivation and conducts, productivity and efficiency.<br>PO7- The students will be able to understand the import and export policies.<br>CO8- Understand the environment policies in India. |
| **PROGRAM SPECIFIC OUTCOMES** | **PSO1**-Prepare students to develop critical thinking to carry out investigation about various socio-economic issues objectively while bridging the gap between theory and practice.<br>**PSO2**- Equip the students with skill to analyse problems, formulate an hypothesis evaluate and validate results and draws reasonable Conclusions thereof.<br>**PSO3**-Prepare students to develop own thinking /opinion |

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| | | | regarding current national or international policies and issues.<br>**PSO4-**Prepare students for pursuing research or careers that provides employment through entrepreneurship and innovative methods.<br>**PSO5-**Understanding the basic assumptions in various economic theories and enhance capabilities of developing ideas based them.<br>**PSO6-**Prepare and motivate students for research studies-economic specially by developing questionnaire, collecting primary data through field surveys.<br>**PSO7-** Motivate students in preparing for various competitive examinations, NET, SET, Indian Economic Services etc. by developing or gaining value addition day by day by giving assignments by following a routine or developing discipline / concentration etc. |
| **Year** | **Semester** | **Course-I** | **Micro Economics- I** |
| **1** | **I** | **COURSE OUTCOMES** | CO1- The students are familiarized and acquainted with basic concepts of Microeconomics such as Laws of demand and supply and elasticity etc. so that she / he can comprehend them and familiarize with day today happenings.<br>CO2- The students learn and understand the concepts of consumer behaviour like cardinal utility and ordinal utility analysis.<br>CO3- The understand the General equilibrium, economic efficiency and market failure.<br>CO4- To develop an advanced theoretical understanding of consumer behaviour and decision-making.<br>CO5- To develop a theoretical understanding of Strategic behaviour of economic agents. |
| **1** | **I** | **Course-II** | **Macro Economics -1** |
| | | **COURSE OUTCOMES** | CO1- Understand the national income, calculation methods of national income, and concepts related to National Income.<br>CO2- Understand the concept of factors determines national income such as consumption, saving and investment.<br>CO3- The students learn & understand the interprets macro-economics issues such as money, foreign exchange, inflation and deflation.<br>CO4- Develop an understanding the interrelationships among the various macroeconomic variables and the way they impact upon the working of the economy as a whole, thereby determining the course of the economy.<br>CO5- Gain in depth knowledge about Keynesian vs Monetary Policy Formulations as well as the theoretical justification of such policies, together with the effectiveness of alternative policies with respect to the policy goals. |
| **1** | **I** | **Course-III** | **Quantitative Methods:** |
| | | **COURSE** | CO1- Understand the concepts with the help of mathematical methods. |

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| | | **OUTCOMES** | CO2-Understand the concepts of Differentiation and Economic Application of Mathematics in Economic Theory such as Revenue, Cost, Demand, Supply function and Elasticities.<br>CO3- The students will learn about the simple tool and techniques.<br>CO4- The students should be able to understand the basic concept of sampling and probability.<br>CO5- The students should be able to understand the concept of Frequency Distribution and Hypothesis Testings. |
| **1** | **I** | **Course - IV** | **Course Title : Labour Economics:** |
| | | **COURSE OUTCOMES** | CO1- Understand the role of labour in economic development.<br>CO2- Learn about the methods of recruitment and placement and the role of employment service organization.<br>CO3- Understand the Rationalization and Industrial disputes and Industrial peace.<br>CO4- The students should be able to understand the issues pertaining to the labour market, wage theories, employment policies, trade unions and collective bargaining in the economy. |
| **1** | **II** | **Course-V** | **Course Title : Micro Economics- II** |
| | | **COURSE OUTCOMES** | CO1- Students will be familiar with the various theories of distribution like rent, wages, interest, profit etc.<br>CO2- Students will learn about various theories of welfare and neo-welfare economics like Pareto optimum, Calder-compensation theory, Bergson's social welfare theory, and Arrow's probability theory etc.<br>CO3- Students will learn about external diseconomies and diseconomies, problems of market failures, etc.<br>CO4- The students are familiarized and acquainted with basic concepts of Microeconomics such as Laws of demand and supply and elasticity etc. |
| **1** | **II** | **Course-VI** | **Course Title : Macro Economics -II** |
| | | **COURSE OUTCOMES** | CO1- Understand the classical and Keynesian approach of demand for money.<br>CO2- Understand the functions of RBI and commercial banks.<br>CO3- The students learn the theories of trade cycles.<br>CO4 students learn the recent developments in macro economics as rational Expectations. |
| **1** | **II** | **Course-VII** | **Course Title : Economics of Growth and Development** |
| | | **COURSE OUTCOMES** | CO1-The students are familiar with various concepts and theories of Growth and Development and also various measurement of development with special reference to India.<br>CO2- The students learn and wholestand the basic requirement of economic growth and various circle of poverty.<br>CO3- The students should be able to understand the classical growth models and Neo-classical growth models.<br>CO4-The students learn and understand about the poverty, income inequality and sustainable development.<br>CO5-The students also learn and understand Human Development Index (HDI), Physical Quality life Index (PQLI) and Sustainable Development Goals (SDG). |

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| 1 | II | Course-VIII | **Course Title : Industrial Economics and Entrepreneurship:** |
| | | **COURSE OUTCOMES** | CO1- Understand the concept of Industrial Economics and industrialization.<br>CO2- Understand the different form of Industrial Organization.<br>CO3- The students learn and understand the issue related to market structure, firms motivation and conducts, productivity and efficiency.<br>CO4- Understand the entrepreneurship development programme and institutes in India. |
| 2 | III | Course-IX | **Course Title : Public Economics :** |
| | | **COURSE OUTCOMES** | CO1- The overall outcome of the course is the development of an understanding of public sector financial resources.<br>CO2 - The students learn about the Public goods, Private goods and Market failure.<br>CO3- The student will be familiar with the concept of Public Expenditure, Public Revenue and Indian Tax Systems.<br>CO4- Acquaintance with the phenomenon of externality and the role of government.<br>CO5- An understanding of the mechanics of Government Budget.<br>CO6- Familiarity with the different aspect of Fiscal Federalism.<br>CO7- The students should be able to understand the various aspects of fiscal policy and debt management. |
| 2 | III | Course-X | **Course Title : International Economics:** |
| | | **COURSE OUTCOMES** | CO1- The students learn about the classical or Neo-classical trade models.<br>CO2- The students also learn about the relevance of Ricardo's model.<br>CO3- The students will acquire knowledge on the importance of trade in economic growth and development.<br>CO4- The students will be familiar with the Heckscher Ohlin theorem.<br>CO5- The students should be able to understand the concept of balance of payment and capital and revenue account of a country.<br>CO6- The students will learn about various instruments of trade policies and about the costs and benefits of imposition of tariff and about the advantages.<br>CO7- The students should be able to understand the import and export policies. |
| 2 | III | Course-XI | **Course Title : Financial Institutions and Market** |
| | | **COURSE OUTCOMES** | CO1- Learn the basic concept of Monetary and Financial Market in Indian Financial Market.<br>CO2- Understand the role of Financial market and institutions.<br>CO3- Understand the money and capital market, organization, structure and reforms in India.<br>CO4- Learn the basic concept of non-banking financial institution.<br>CO5- Understand the functions and working of SEBI, IRDA, |

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| | | | STOCK EXCHANGE.<br>CO6- Understand the features, structure, types and growth of commercial, cooperative, central bank and banking institutions. |
| **2** | **III** | **Course-XII** | **Power point Presentation and Viva- Voce** |
| | | **COURSE OUTCOMES** | CO1 - The students learn and understand the Procss of creation of PPT and its presentation .<br>CO2- Students can be get special knowledge of any concern topic as human capital , Health and environment related issues .<br>CO3- Students will be develop ICT and communication Skill. |
| **2** | **IV** | **Course-XIII** | **Course Title : Indian Economy:** |
| | | **COURSE OUTCOMES** | CO1- The students are instructed to:<br>Understand the basic characteristics of Indian Economy.<br>CO2- Understand the development issues of Indian Economy.<br>CO3- Understand the importance, causes and impact of population growth and its distribution.<br>CO4- The students learn the natural resource, population, unemployment, human resource, and problem of agricultural labourers etc.<br>CO5- The students will be familiar with the industrial development in India and Industrial Policy.<br>CO6- The students should be able to understand the concept of Agricultural New Strategy and Policies and Agriculture Credit. |
| **2** | **IV** | **Course-XIV** | **Course Title : Demography:** |
| | | **COURSE OUTCOMES** | CO1- To orient the students with the positive aspects of population and how it can help in the Economic Development of the Nation.<br>CO2- To orient the students with various Quantitative and Qualitative aspects of Population and various demographic techniques.<br>CO3- To expose the students to recent concepts and developments in Demography.<br>The students will be able to understand the concept of migration and urbanization |
| **2** | **IV** | **Course-XV** | **Course Title : Environmental Economics:** |
| | | **COURSE OUTCOMES** | The students are instructed to:<br>CO1- Understand the basic concept of environment and economy.<br>CO2- Understand the sustainable development, environmental impact assessment $CO_2$ global and local environmental concerns.<br>CO3- Understand that environmental problem is not the problem of a single country or region but a global problem / issue.<br>CO4- Understand the environment policies in India.<br>CO5- Acquaint with some basic concept of environmental economics along with the solution of the environmental problems. |

S.D. COLLEGE, MUZAFFARNAGAR
Department of English

Programme Outcomes , Programme Specific Outcomes and Course Outcomes

of

Master of Arts (English)

| Department of English | After successful completion of two year Post Graduate degree program in MA-English student should have- |
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| PROGRAM OUTCOMES | PO1- Attained profound expertise in discipline<br>PO2- Acquired Ability to function in multidisciplinary domains<br>PO3- Attained ability to exercise Research Intelligence in investigations and innovations<br>PO4- Learnt Ethical Principles and be committed to Professional Ethics.<br>PO5- Incorporated self-directed and life-long learning.<br>PO6- Obtained ability to manoeuvre in diverse contexts with Global Perspective.<br>PO7- Attained maturity to respond to one's calling |
| PROGRAM SPECIFIC OUTCOMES | PSO1-Students should be familiar with the representative literary, cultural texts of any age regardless of its historical and geographical context.<br>PSO2-Should be able to apply critical and theoretical approaches to reading and analysis of literary texts in multiple genres.<br>PSO3-Appreciate literature.<br>PSO4-Students will comprehend linguistics as well as translation afterexposure to literary texts of varied range.<br>PSO5-Students will be able to perceive various aspects creatively andcritically and will be able to interpret any piece of writing.<br>PSO6-Demonstrate an advanced knowledge of the subject, including the knowledge of literary history, |

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| | genre criticism, literary theory, critical theory and research methodology.<br>PSO7-Exhibit knowledge of journalism and mass communication and writing for media.<br>PSO8-Use the communication skills and rhetorical skills while writing essays, articles, and project reports.<br>PSO9-Respond to literature aesthetically and critically as informed readers.<br>PSO10-Appreciate and analyse gender relations and gender-oriented writing.<br>PSO11-Evaluate and judge works available in translation.<br>PSO12-Apply linguistic theories in the teaching of English, depending on the learner needs.<br>PSO13-Helps the students learn the evolution of language and the politics<br>PSO14-Enhances critical thinking of students<br>PSO15-Cultivates language skills of students by introducing them to structuresof language through a wide variety of literary works.<br>PSO16-Hones the writing skills of students and they learn the conventions of<br>academic writing<br>PSO17-Instils a critical perspective with which students approach the disciplines.<br>PSO18-Introduces different literary periods and trends of each of these periods.<br>PSO19-Introduces works written by different sections of people(gender, racial and ethnicminorities) and makes the students give critical responses from different perspectives. |
| Course-I | Literature from Chaucer to Milton<br>After the completion of the course students should be able to- |
| Course Outcomes | CO1-Understand the dominant themes in English drama during Elizabethan period and deal with English language version of the time in depth.<br>CO2-Comprehend the symbolic language and different motifs that writers of the period used, with the focus to be on Shakespeare's works.<br>CO3-Deal with the historical characteristics of 16th and the beginning of 17th centuries that are |

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| | represented in literary works of the period.<br>CO4-Highlight the major playwrights of the period like Marlowe, Dekker, Beaumont, Ben Jonson, and Fletcher along with Shakespeare.<br>CO5-Develop ability to deal with different types of plays of the period like miracle plays, interludes, and morality plays.<br>CO6-Develop a deep understanding for Shakespeare's way of writing, style and language, in comedies, tragedies, romances and problem plays.<br>CO7- Be able to demonstrate characteristics of Renaissance in Elizabethan drama in terms of language, style, form and theme.<br>CO8- Be able to extract the universal themes and human conditions tackled in works of Elizabethan drama. |
| Course-II | Literary Theory and Cultural Studies<br>After the completion of the course students should be able to- |
| Course Outcomes | CO1- To instil in the students a theory basis.<br>CO2-To make the students analyse and interpret literature<br>CO3-To enhance the critical thinking of students by introducing to them a bunch of literary and political theories.<br>CO4-To make them know the evolution of literary theories<br>CO5- Define representative literary and cultural texts in diverse contexts.<br>CO6-Interpret the critical ideas, values and themes in the literary texts.<br>CO7-Apply critical and theoretical approaches to the literary pieces of the past and present.<br>CO8-Write analytically in different formats like essays, reviews and research papers etc.<br>CO9-Evaluate literary texts and write critical views about the text.<br>CO10-Help students judge literary works in an unbiased and dispassionatemanner as taught by the masters.<br>CO11-Strengthen and develop analytical and logical thinking. |

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| Course-III | Shakespeare<br>After the completion of the course students should be able to- |
| Course Outcomes | CO1- Acquire and display a first-hand knowledge of major dramas of Shakespeare<br>CO2- Understand and appreciate Shakespearean themes, style and diction.<br>CO3- Study Shakespearean dramas and appreciate the aesthetics in them.<br>CO4. Develop critical comprehension of the technical aspects of drama as a genre.<br>CO5. Review the works of Shakespeare through the lens of socio-cultural and political lens of the time.<br>CO6. Critical analyse the corpus of Shakespeare's work by applying twentieth century critical theories<br>CO7. Explain the relevance of Shakespeare's work with reference to contemporary age. |
| Course-IV | Research Methods and Materials in English<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1-Search for the theory of Research in their research<br>CO2-Practice suitable colloquy & methods for their research<br>CO3-Use rationale & empirical tactics in Literary Research<br>CO4-Look for working devices of Literary Research in their research report<br>CO5-Go along with the frame work of the thesis & methodology & solicit it in the documentation. |
| Course-V | Literature from Restoration to 1798<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1-Analyse English literary tradition from King Charles II to the beginning of the age of Romanticism.<br>CO2-Describe and discuss poems from John Milton to Wordsworth.<br>CO3-Distinguish literary texts that reflect the socio-cultural and political interest of the period. |

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| | CO4-Demonstrate the different literary cultures in relation to the drama. |
| Course-VI | Romantic Literature<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1-Discuss and demonstrate an understanding of the concept and significance of nature in Romantic poetry.<br>CO2- Distinguish between reason and imagination<br>CO3-Identify the predominance of imagination in Romantic Literature.<br>CO4- Recognize the presence of Gothic element in Romantic Literature.<br>CO5- Demonstrate an understanding of the spiritual interpretation of nature and its educative power as depicted by the Romantic Poets.<br>CO6- Correlate the major movements of the World like the French Revolution and American War of Independence and their associated ideologies with the evolution of the Romantic Age and literature in Britain. |
| Course-VII | Victorian Literature<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1-Demonstrate an informed understanding of the English literature of the Victorian period across a number of genres and sub-genres.<br>CO2- Demonstrate knowledge of some of the major literary, cultural and historical issues that mattered to the writers of the period.<br>CO3- Define Victorian Compromise and its relevance with respect to literature.<br>CO4- Demonstrate a developing sense of the different forms of writing in this period and a growing capacity to analyse them critically.<br>CO5- Demonstrate a critical understanding of how the Victorian past is understood and imagined in contemporary culture.<br>CO6- Identify and discuss Victorian literature in relation to a range of contexts including Victorian anxieties about modernity, madness, sexual |

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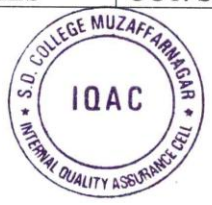
| | transgression and disease. |
| Course-VIII | American Literature<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1-Analyse American prose as an expression of individual or communal values within social, political and cultural perspectives of different periods in American literature.<br>CO2-Demonstrate American literary movements through verses of the American writers.<br>CO3-Trace the development of characteristic styles of expression through American fiction.<br>CO4-Define the diverse dramatic styles or forms that existed though the ages in America. |
| Course-IX | English Phonetics and Linguistics<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1- Demonstrate basic insights into the sound system of English<br>CO2- Discuss central analytic concepts in phonetics and phonology.<br>CO3 - Use this knowledge to analyze linguistic material<br>CO4- Demonstrate Command over relevant linguistics concepts and vocabulary<br>CO5- Express themselves in correct academic English<br>CO6- Apply an understanding of Air stream mechanism and organs of speech and articulation for correct pronunciation.<br>CO7- Differentiate between Dialects and Registers of Language |
| Course-X | 20th Century British Poetry<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1. Show acquaintance with new literatures of |



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| | Britain in the early decades of 20th century.<br><br>CO2. Discuss about the modernist canon founded on Ezra Pound's idea of 'make it knew'<br><br>CO3. Correlate the historical background including the socio-cultural and political changes in 20th century with literary movements.<br><br>CO4. Write about literary criticism and innovative techniques introduced by the writers of 20th century.<br><br>CO5. Identify the characteristics of Modern Poetry.<br><br>CO6. Demonstrate acquaintance with the works of Modern Poets like Eliot, Yeats, Auden, Spender, Heaney and Larkin etc.<br><br>CO7. Write about Modernism and correlate the aftermaths of the World Wars with Modern Literature.<br><br>CO8. Critically examine the effects of revolutions like Russian Revolution on Modern British literature. |
| Course-XI | English Language Teaching and English in India<br>After the completion of the course students should be able to- |
| | CO1-Students understand the diversity of the language techniques.<br>CO2-Show awareness of the theories of Language Learning like Cognitive,Behaviourist etc.<br>CO3-Become aware of Language Lab, English Language course materials, Bridgecourse, Remedial Course, Communicative English Course.<br>CO4-Become aware of LSRW, CALL DVDs, CDs and machine assisted learning<br>CO5-Orientation to various practices in teaching poetry, prose, drama and pronunciation. |
| Course-XII | Modern English Grammar and Usage<br>After the completion of the course students should be able to- |
| | CO1-Heighten their awareness of correct usage of English grammar in writing and speaking |

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| | CO2-Improve their speaking ability in English both in terms of fluency and comprehensibility<br>CO3-Give oral presentations and receive feedback on their performance<br>CO4-Increase their reading speed and comprehension of academic articles<br>CO5-Students will improve their reading fluency skills through extensive reading<br>CO6-Students will enlarge their vocabulary by keeping a vocabulary journal. |

| Course-XIII | 20th Century British Fiction, Drama and Prose<br>After the completion of the course students should be able to- |
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| COURSE OUTCOMES | CO1-Understand the Concepts of Modernism, Symbolism and Surrealism.<br>CO2-Introduce Poets of the Century W.B. Yeatsand T.S.Eliot.<br>CO3-Develop an understanding of the Novels ofmodern writers like D.H.Lawrence.<br>CO4-Focus on Virginia Woolf and other very powerful writers of the century.<br>CO5-Evaluate the famous play wrights of the century.<br>CO6-Analyse modern works from the political, historical andsociological perspectives.<br>CO7-Know the trend of the writing of this period.<br>CO8-Get acquainted with the poems, prose and drama of the period and analyse them in the light ofthe trend of the period.<br>CO9-Understand how politics of the time influenceliterary works and vice versa. Gives insight into the major issues related to the social and cultural contents of the age |

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| | CO10-Recognize and analyse poetry in terms of different schools of poetry<br>CO11-Interpret different genres of drama like comedy, tragedy, farce and melodrama.<br>CO12-Perceive trends that prevailed in writing 20th century drama.<br>CO13-Comprehend the development of 20th century fiction and elements of fiction- style, narrative forms and point of view. |
| Course-XIV | Indian Literature in English<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1-Have an understanding of the various shades of Indian writings in English with its movements and artistic nuances.<br>CO2- Understand the historical background, its influence on thedevelopment of the writings.<br>CO3- Appreciate the Indian contribution to literature in English.<br>CO4- To compare and appreciate the literary works of Indian writers andbroaden the horizon of understanding.<br>CO5- Understand the issues raised by diaspora movements, post colonialism andemergence of modern India.<br>CO6- Gain knowledge of various literary movements and writers.<br>CO7- Analyse and appreciate the "Indianness" of the writers whichmakes their writing unique. |
| Course-XV | Translation Studies<br>After the completion of the course students should be able to- |
| COURSE OUTCOMES | CO1. Display knowledge and understanding of Indian Aesthetics. |

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| | CO2. Critically analyse the Indian texts translated into English and compare them to the original texts.<br><br>CO3. Show acquaintance with major Greek writers and their literary productions.<br><br>CO4. Show acquaintance with Plato's concept of Mimesis and his criticism of Poetry.<br><br>CO5. AnalyseAbhijnanShakuntalam by Kalidasa in the light of Indian Aesthetics. |

# S.D. COLLEGE, MUZAFFARNAGAR

## Department of Geography

**PROGRAMME OUTCOMES ,**
**PROGRAMME SPECIFIC OUTCOMES**
**& COURSE OUTCOMES**

**PROGRAM: Master of Arts (Geography)-Two Year (Semester System)**

| Year | Semester | Course No, POs PSOs & COs | Upon successful competition of MA (Geography) program students will be able- |
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| | | **PROGRAM OUTCOMES** | PO1: Compare and contrast the theories, philosophies, and concepts in the discipline of geography, including unifying themes of spatial patterns and structures, the interrelationship between people and places, and the interactions between nature and society.<br>PO2: Demonstrate an advanced understanding of and ability to differentiate among the various methodologies used in geographic research.<br>PO3: Acquire, analyse, evaluate, interpret and critique geographic data and/or research. |
| | | **PROGRAM SPECIFIC OUTCOMES** | PSO1: Communicate mastery of geographic data, theories, philosophies, and concepts inoral, written, and visual forms, with ethical engagement and respect for diversity ofindividuals, groups, and cultures.<br>PSO2: Identify and assess how geographic concepts apply in the workplace and ineveryday life to solve real-world problems. |
| **1** | **I** | **Course-I** | **GEOMORPHOLOGY** |
| | | **COURSE OUTCOMES** | CO1-Nature and scope of Geomorphology and fundamental concepts of uniformitarianism multicyclic and polygenetic evolution of landscapes.<br>CO2-Interior of the earth and movements of plates.<br>CO3-Epeirogenic and orogenic earth movements and forces of crustal instability, isostasy, Fold, Fault, Earthquake and Vulcanicity.<br>CO4-Exogenic Processes and Concept of gradation.<br>CO5-Landscape evaluation models of WM Davis, Penck and LC King.<br>CO6-Dynamics of fluvial, glacial, Aeolian, and karst processes and resulting land forms complexities in geomorphological processes.<br>CO7-Applied geomorphology — hydro-geomorphology, urban geomorphology, environmental geomorphology, geomorphic |

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| | | | hazards and mitigation measures, Regional Geomorphology of — Siwalik Hills of U.P., Ganga Yamuna Doab of U.P. |
| 1 | I | Course-II | **HISTORY OF GEOGRAPHICAL THOUGHT** |
| | | **COURSE OUTCOMES** | CO1-Meaning, philosophy and purpose of Geography. Geography as a social science and natural science. Concepts in the philosophy of geography — distributions, relationships, interactions, areal differentiation and spatial organization.<br>C02-Geography in the ancient and medieval period: Contribution of Greek and Roman Geographers- Character of Geography in medieval period- the Dark Age, the Arabic period and the Renaissance period.<br>CO3-Geography in the modern period: Contribution of German, French, Russian, British and American Schools.<br>CO4-Dualisms in geography and myth and reality of dualism.<br>CO5-History and Development of Geographical Thought in India |
| 1 | I | Course-III | **ADVANCED GEOGRAPHY OF INDIA (PHYSICAL & REGIONAL )** |
| | | **COURSE OUTCOMES** | CO1-Making of India through Geological Time and Physical Divisions of India. Unit<br>CO2-Drainage System and Watersheds, Hydrology and Water Balance, Climate Characteristics, Mechanism of Indian Monsoon, Climatic Regions of India.<br>CO3-Soil Resource & Conservation, Problem of Soil Erosion, Problem of deforestation, Forest Resources and their Conservation, Types of Soils and Natural Vegetation, Resource Regions of India.<br>CO4-Different Schemes of Physiographic Regionalization of India, their bases and Comparative Studies.<br>CO5-Detailed case Studies of Uttarakhand Himalayas and Gangetic Plain with respect to their Geology, Structure, Relief, Drainage and Physiographic Divisions. |
| 1 | I | Course-IV | **NATURAL RECOURSE MANAGEMENT** |
| | | **COURSE OUTCOMES** | CO1-Concept, models and approaches to natural resource management<br>CO2-Problems of resource utilization and population pressure.<br>CO3-Use and misuse of Resources in Global and Indian scenario<br>CO4-Historical background and future prospects of various resources.<br>CO5-Conservation and management of resources > Resource appraisal and policy models towards better management and conservation of resources.<br>CO6-Concept of Sustainable resource and resource development and its application. |
| 1 | I | Course-V | **STATISTICAL TECHNIQUES IN GEOGRAPHY** |
| | | **COURSE OUTCOMES** | CO1-Types of profiles and Slope Analysis.<br>CO2-Use of statistical technique in Geography.<br>CO3-Techniques of Mappings Drainage density, flow diagrams, population mapping.<br>CO4-Fieldwork and data processing techniques. |
| 1 | II | Course-VI | **CLIMATOLOGY AND OCEANOGRAPHY** |
| | | **COURSE** | CO1-Nature and scope of climatology and its relationship with |

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| | | **OUTCOMES** | meteorology. Composition and structure of the atmosphere. Insolation and Heat Budget. Green House Effect. Distribution of Temperature and Pressure. Planetary wind system. Jet Streams and Monsoon mechanism.<br>CO2-Humidity and Precipitation. Acid Rain, Air Masses and Fronts, Origin of Cyclones, Anti-cyclones and Thunder storms and their effects. Ocean atmospheric interaction: El Nino and La Nina Phenomenon.<br>CO3-Climatic classification of Koeppeh and momthwaite, Major-climates of the worldtropical, temperate, desert and mountain climate. Climate changes and Global warming. |
| **1** | **II** | **Course-VII** | **Geography of Rural Settlement** |
| | | **COURSE OUTCOMES** | CO1-Nature, scope, significance and development of rural settlement geography.<br>CO2-Approaches to rural settlement geography. Rural-urban continuum Definition and characteristics of rural settlements in the fringe areas and sparsely settled areas.<br>CO3-Distribution of Rural settlements: size and spacing of rural settlements. Nearest Neighbour Analysis.<br>CO4-Types, forms and Patterns of rural settlements: cause and effect, Classification of rural settlements, Rural service centres, their nature, hierarchy and functions, rural-urban fringe — structure, characteristics and functions.<br>CO5-Social issues in rural settlements: poverty, housing and shelter, depreciation and inequality, empowerment of women ,healthcare, rural-urban interaction.<br>CO6-Environmental issues in rural settlements: access to environmental infrastructure, water supply, sanitation, drainage, health hazards. Unit-V : Cultural landscape elements in rural settlements in different Geographical environments with special reference to India; House types and field patterns, Origin evolution, size, socio, spatial, structure of India village. Rural development planning in India. |
| **1** | **II** | **Course-VIII** | **Advanced Geography of India (Socio-economic)** |
| | | **COURSE OUTCOMES** | CO1-Agricultural system and technological problems of Indian agriculture, developments. agrarian reforms, green revolution achievements and shortcomings, need of 2nd green revolution, Agro-climatic regions of India. Regionalization of agriculture in India, Crop combination regions of India, Food production and population growth.<br>CO2-Energy in India- Conventional and Non-conventional power resources, regional setup of Hydro and Thermal Power stations, locational patterns and analysis of coal & petroleum resources, govt. policies and conservation of energy resources.<br>CO3-Analysis of Agro-Based (Sugar), Forest Based (Paper & Pulp) and Mineral based industries (Iron & Steel), Industrial regions of India, Modes of transport, their significance and development, the pattern of foreign trade.<br>CO3-Socio-economic implications of explosive growth of population, distribution and density of population, population resource regions, trends of urbanization, urban regions, population problems and policies.<br>CO4-Basis of Economic Regionalization macro, meso and micro |

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| | | | regional division of India, economic regionalization in India, Detailed study of the meso-regions of GreatPlains-their inter-regional disparities with reference to agricultural. Human Resource development. |
| **1** | **II** | **Course-IX** | **REGIONAL PLANNING AND DEVELOPMENT** |
| | | **COURSE OUTCOMES** | CO1-Regional concept in geography, Concept, Nature and Scope of Regional Planning., Changing concept of the region from an inter-disciplinary view-point, Concept of space, area and locational attributes. Types of region: Formal and functional; Uniform and Nodal, Single purpose and Composite regions in the context of planning; Regional hierarchy.<br>CO2-Physical regions, Planning regions of India, Regional divisions according to variations in levels of socio-economic development; Special purpose regions-river valley regions, Metropolitan regions, Problem regions — hilly regions, Tribal regions, Regions of drought and floods.<br>CO3-Approaches to Delimitation of different types of regions and their utility in planning. Planning process — Sectoral, Temporal and spatial dimensions; Shortterm and Long term perspectives of planning.<br>CO4-Regional development strategies — Concentration vs. Dispersal, Case studies for plans of developed and developing countries, Regional plans of India.<br>CO5-Concept of Multi-level planning; Decentralized planning; Panchayati Raj System,role and relationship of Panchayati Raj Institutions (Village Panchayat,Panchayat Samiti and Zila Parishad) and administrative structure (Village, Block and District). Regional development in India, Problems and Prospects. |
| **1** | **II** | **Course-X** | **ADVANCED CARTOGRAPHY (PRACTICAL)** |
| | | **COURSE OUTCOMES** | CO1-Definition, Scope and Development of Modern Cartography. Classification of Map. Map as a Data Model. Tools of Map Making. Lettering and Symbolization of Maps. Techniques of Map making. Computer Assisted Cartography.<br>CO2-Graphical Presentation of Statistical Data: Graphs and Diagrams, Construction of Climograph, Ergograph, Hythergraph,Wind Rose.<br>CO3-Compound Pyramid Diagram, Circle and Spherical Diagram, Dispersion and Scatter Diagrams.<br>CO4-Distribution Maps: Types and Methods of drawing thematic maps, Choroschematic, Chorochromatic, Choropleth, Isopleth.<br>CO5-Map Projections: Properties, classification and choice of map projections. Mathematical construction of Sinusoidal, Mollweide, International and Gall's Projections. |
| **2** | **III** | **Course-XI** | **RECENT ISSUES IN GEOGRAPHY** |
| | | **COURSE OUTCOMES** | CO1-Recent Conceptual Development in Geography; Philosophical Issue — PcsitiAsm, Behaviouralism, Phenomenology, Idealsirn, Existentialism and Humanistic Geography, Spatial Justice, Radicalism & Postmodernism.<br>CO2-Recent Methodological Development in Geography: Quantitative Revolution and use of Statistical Techniques, Use of Hardware and Software Technologies in data analysis and |

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| | | | mapping, use of models and paradigms in geography.<br>CO3-Use of Technologies in Geography: Remote Sensing technique and Geographical Information System (GIS) and Global Positioning System (GPS),<br>CO4-Scientific Methods in Geographical Research; Hypothesis Testing, Problem Solving approach in Geography, Project Formulation and Project Evaluation Techniques.<br>CO5-Recent Issues in Indian Geography; Post Colonialism and Indian Geography, Trends of Geographical Researches in India, Prospects of Professional Opportunities in Geography, Future of Indian Geography, Problems, Perspectives and Prospects. |
| **2** | **III** | **Course-XII** | **INTERDISCIPLINARY RESEARCH METHODS AND TECHNIQUES** |
| | | **COURSE OUTCOMES** | CO1-Conceptual Foundation of Research: Meaning and types of research, Objectives and motivation of research, Concepts of pure and applied research, Scientific approach to geographic research, Basic components of research, Defining a research problem, Construction of research design, Hypothesis formulation.<br>CO2-Sampling Techniques and Selection of Geographic variables: Aims of Sampling, Basic components of sampling methods, Nature of Geographic data, Continuous and discrete data. Level of measurements: Various scales, Data transformation; its process and methods.<br>CO3-Data Collection: Methods of field observation, Role of field methods in geographic studies, Techniques for primary data collection, Preparation of questionnaires. Data collection from secondary sources. Tabulation and Data analysis.<br>CO4-Cartographic analysis of data. Techniques of data representation by quantitative maps. Hypothesis testing. Basic principles and procedures of Correlation, significance of statistical analysis and interpretation of data.<br>CO5-Drafting of the research report, Quantitative & Qualitative interpretations, Writing manuals (Arranging themes, maintaining coherence, cross comparison concluding, referencing noting etc.). Proof marks & marked proof, Size scale and Types of report, Organization and Designing of report, Evaluating a report. |
| **2** | **III** | **Course-XIII** | **ECOLOGY AND ENVIRONMENT** |
| | | **COURSE OUTCOMES** | CO1-Ecology and Environment, Geography as Human Ecology Conceptual background. The Environment — meaning, structure and types, Man Environment Relationship, Perception of Environment.<br>CO2-Ecology: meaning and its relation with Geography, Ecosystem: Kinds and functions, food chains, food structure webs, Structure and trophic levels, Energy flow and nutrient cycles, Major Biomes of the World.<br>CO3-Geographical aspects of major environmental problems: Natural hazards- floods, drought, landslides, Earthquakes and Cyclones, Man-induced hazards — Rapid urbanization, transport development, Agricultural development, Big dams.<br>CO4-Environmental Pollution concept and types of pollution, Ecological impact of pollution, its environmental concerns, the green house effects, Global warming and ozone depletion, Environmental Policy and Legislation. |

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| | | | CO5-Ecological basis of environmental Management — Concept, need and approaches, Indian and International efforts for environmental conservation and management: Environmental problems and programmes in India. Environmental Impact Assessment (ETA) of River Valley Projects like Tehri Hydro and Narmada Valley (Sardar Sarovar) Projects, National Parks. |
| **2** | **III** | **Course-XIV** | **ADVANCED GEOGRAPHY OF UTTAR PRADESH** |
| | | **COURSE OUTCOMES** | CO1-Locational Set-up of Uttar Pradesh in India and its changing map. Relief and Physical Divisions, Structure, Drainage, Ground Water Resource, Soils and their types, Climate and Climatic regions and vegetative cover.<br>CO2-Problems Related to Over Utilization of Natural Resources in Uttar Pradesh: Usar and Sodic soils formation and soil erosion, Under ground water scarcity, Depletion of forest cover and wild life, Surface Water Resource Utilities, Drinking Water and Power Shortage, Flood and drought affected parts.<br>CO3-Spatio- Temporal Trends of Agricultural production, Development of Irrigational facilities including canals and dams, Agricultural Productivity and Crop-Combination regions, Power Generation and its distribution in different sectors of economy, Agro-Processing industry and their problems with special reference to sugar industry.<br>CO4-Human Resource Development in Uttar Pradesh: Demographic and Religious composition (Density, Rural-Urban distribution of Population, Sex-ratio,S/C/ SIT population, Literacy and trend of urbanization),occupational Structure and Poverty Eradication programmes initiated. Accessibility and Transport infrastructural gaps.<br>CO5-Planning for Balanced Development: Planning for sustainable development including health, education, drinking water, Emerging Political Issues and Voting Behaviour in General elections and Policy of the State Government for Balanced regional development. |
| **2** | **III** | **Course-XV** | **ADVANCED SURVEYING (PRACTICAL)-** |
| | | **COURSE OUTCOMES** | CO1-Prismatic Compass Surveying (Mathematical Techniques for Closed Traversing), Interpolation of Contours by Indian Clinometer, Sextant measurement (Vertical and Horizontal), Telescopic Alidade, Dumpy Level<br>CO2-Elements of Photographic System; types, scales, Calculation and Measurement of scale and height on Air photo. Numbering of Photographs Air Photo interpretation : shape, size pattern, tone, texture, shadows etc. Photo Mosaics and their comparison with topographical maps.<br>CO3-Scope of Remote sensing, Development of Remote sensing, stages in remote sensing data acquisition, electromagnetic radiation and electromagnetic spectrum, Interaction of EMR with Earth's surface features, and atmosphere .Types and characteristics of platforms, Sensors, Sensors resolutions and application, remote sensing data products, Indenting of remote sensing data in India.<br>CO4-Definition and development of GIS, computer environment for GIS, Spatial Data : Elements of spatial data; raster and vector data structures, Database Management Systems; GIS Application |

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| | | | : GIS in Land Information System, Urban Management, Environmental Management. Use of GPS in data generation and mapping. |
| **2** | **IV** | **Course-XVI** | **POPULATION GEOGRAPHY** |
| | | **COURSE OUTCOMES** | CO1-Population Geography: Scope and Objectives, development of Population Geography as a field of specialization- Population Geography and Demography-sources of population data, their level of reliability, and problems of mapping of population data.<br>CO2-Population distribution: density and growth — theoretical issues, Classical and modern theories in population distribution and growth, World patterns and their determinants, India, population distribution, density and growth profile, Concepts of under population and over population.<br>CO3-Population composition: age and sex, family and households, literacy and education, religion, caste and tribes, rural and urban, urbanization, occupational structure, population composition of India.<br>CO4-Population dynamics: Measurements of fertility and mortality, migration, national and international patterns, India's population dynamics, Demographic Research Methods.<br>CO5-Population and development: population- resource regions and levels of population and socio-economic development, population policies in developed and less developed countries, Human Development Index and its components, India's population policies, population and environment, implications for the future. |
| **2** | **IV** | **Course-XVII** | **AGRICULTURAL GEOGRAPHY** |
| | | **COURSE OUTCOMES** | CO1-Nature, scope, significance and development of agricultural geography. Approaches to the study of agricultural geography: Sources of agricultural data.<br>CO2-Determinants of agricultural land use-Physical, cultural. Land holding and land tenure systems. Selected agricultural concepts and their measurements; cropping pattern, crop concentration, intensity of cropping, degree of commercialization, diversification and specialization, efficiency and productivity, crop combination regions and agricultural development. Zero Budget Natural Farming, Organic Farming, Cellular Agriculture: Definition, History, Methods, Benefits'. Green Revolution- its impact and consequences.<br>CO3-Theories of agricultural location based on several multi-dimensioned factors: Von Thunen's theory of agricultural location and its recent modifications.<br>CO4-Agriculture in India- Land use and shifting cropping pattern. Regional pattern of productivity in India. Green Revolution, White Revolution, Food deficit and food surplus regions; nutritional index. Specific problems in Indian agriculture and their management and planning. Agricultural Policy in India.<br>CO5-Contemporary issues; Food, nutrition and hunger, food security, drought and food security, food aid programmes; environmental degradation, role of irrigation, fertilizers, insecticides and pesticides, technological know-how. Employment in the agricultural sector: landless laborers, women, children, occupational health and agricultural activities. Land, |

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| | | | reforms, and use policy and planning. |
| **2** | **IV** | **Course-XVIII** | **URBAN GEOGRAPHY** |
| | | **COURSE OUTCOMES** | CO1-Nature and Scope of urban geography, different approaches and recent trends in urban geography, attributes of urban places during ancient, medieval and modern period, Bases and process of urbanization and development, Urban growth and theories. Central Place Theory of Christaller and Losch. Theories of Perroux and Boudeville.<br>CO2-Urban economic base: Basic and non-basic functions, concept of dualism, colonial and postcolonial structure, metropolitan city and changing urban function; role of informal sector in urban economy. Classification of urban settlements on the basis of size and function and its methods.<br>CO2-Organization of urban Space: urban morphology and landuse structure, city core, commercial, industrial and residential area; core-country variations; city-region relations, urban expansion, umland and periphery, Urban Primacy, Rank Size Rule.<br>CO3-Contemporary urban issues: urban poverty, urban renewal, urban sprawl, slums; transportation, housing, urban infrastructure; environmental pollution; air, water, noise, solid waste, urban crime.<br>CO4-Urban policy and planning, Development of small and medium sized towns, city planning, green belts, garden cities, urban policy, contemporary issues in urban planning globalization and urban planning |
| **2** | **IV** | **Course-XIX** | **GEOGRAPHY OF RURAL SETTLEMENTS** |
| | | **COURSE OUTCOMES** | CO1-Nature, scope, significance and development of rural settlement geography.<br>CO2-Approaches to rural settlement geography. Rural-urban continuum Definition and characteristics of rural settlements in the fringe areas and sparsely settled areas.<br>CO3-Distribution of Rural settlements: size and spacing of rural settlements. Nearest Neighbour Analysis.<br>CO4-Types, forms and Patterns of rural settlements: cause and effect, Classification of rural settlements, Rural service centres, their nature, hierarchy and functions, rural-urban fringe — structure, characteristics and functions.<br>CO5-Social issues in rural settlements: poverty, housing and shelter, depreciation and inequality, empowerment of women ,healthcare, rural-urban interaction.<br>CO6-Environmental issues in rural settlements: access to environmental infrastructure, water supply, sanitation, drainage, health hazards. Unit-V : Cultural landscape elements in rural settlements in different Geographical environments with special reference to India; House types and field patterns, Origin evolution, size, socio, spatial, structure of India village. Rural development planning in India. |
| **2** | **IV** | **Course-XX** | **DISSERTATION** |
| | | **COURSE OUTCOMES** | CO1-A short research paper or dissertation gives students hands on experience of how research is done.<br>CO2-Gives experience of how research is planned, how data is |

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| | | | collected and processed to reach at conclusion.<br>CO3-Dissertation helps students in further research and develops basic understanding of research. |

## PROGRAM: BACHELOR OF GEOGRAPHY

| हिन्दी विभाग | एम०ए० ;हिन्दी छात्र) में दो साल के स्नातकोत्तर डिग्री कार्यक्रम के सफल समापन के बाद- |
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| **पाठ्यक्रम के परिणाम** (PROGRAM OUTCOMES) | PO1- हिन्दी के विद्यार्थियों को हिन्दी गद्य तथा हिन्दी पद्य का समेकित अध्ययन करना अपेक्षित है। अध्ययन की इस प्रक्रिया में उन्हें हिन्दी साहित्य के आदिकाल से लेकर आधुनिक काल तक की विविध विचारधाराओंए परिस्थितियोंए प्रवृत्तियोंए कवियों तथा उनकी रचनाओं की जानकारी आवश्यक है। साथ ही सभी युगों के नामकरणए काल विभाजन के संदर्भ में कौन-कौन से बिन्दुओं को ध्यान में रखा गया तथा किन आधारों पर नामकरण किया गया इसकी जानकारी भी होनी चाहिए। इन्हीं सब आवश्यकताओं को ध्यान में रखते हुए हिन्दी साहित्य के इतिहास के पाठ्यक्रम का अध्ययन आवश्यक है।<br>च्2ण् हिन्दी के आदिकालीन काव्य की पृष्ठभूमि में अपभ्रंश का बड़ा योगदान है। आदिकालीन काव्यए प्रबंधए मुक्तक आदि अनेक काव्य रूपों में रचा गया है। इसकी अभिव्यंजना अपभ्रंशए अवहट्ठ तथा देशीभाषा में की गई है। इस साहित्य ने परवर्ती कालों को प्रभावित करने में सक्रिय तथा सक्षम भूमिका का निर्वाह किया है। अतःपरवर्ती काल के साहित्य का अध्ययन किए बिना इस काल के साहित्य का मूल्यांकन नहीं किया जा सकता। पूर्वमध्यकालीन साहित्य लोकजागरण और लोकमंगल से परिपूरि था। इसने भारत की भावनात्मक सांस्कृतिक परम्परा को सुरक्षित रखने में महत्त्व पूर्ण भूमिका का निर्वहन किया। उस समय के साहित्य में भाषा तथा कला के सौंदर्य को परखने तथा समाज और संस्कृति को जानने के लिए आदिकालीन व भक्तिकालीन कविता का अध्ययन आवश्यक है।<br>च् 3ण् नाटक साहित्य की महत्त्वपूर्ण तथा प्राचीन विधा है। आचार्य भरत के नाट्यचिन्तन से लेकर आधुनिक भारतीय तथा पाश्चात्य नाट्यचिन्तन के प्रसिद्ध चिन्तकों का अध्ययन नाटक के स्वरूप को समझने के लिए आवश्यक है। नाटक यथार्थ एव कल्पना के मेलजोल से विलक्षण रूप धारण कर द्रष्टा एवं पाठक दोनों को मनोरंजन तो प्रदान करता ही है साथ ही साथ अपने साध्य में दृश्य होने के कारण रंगमंच से भी सीधे जुड़ा हुआ है। हिन्दी नाटक में ऐतिहासिकता के साथ-साथ जीवन की विसंगतियों और विद्रूपताएँ भी दृष्टिगत होती हैं। इन सबको जानने-समझने के लिए इस विधा का अध्ययन आवश्यक है।<br><br>च् 4ण् आज हिन्दी का प्रयोग साहित्यए सृजनात्मक लेखन के साथ-साथ कार्यालयए पत्रकारिताए कम्प्यूटर तथा अनुवाद के क्षेत्र में भी अधिकाधिक हो रहा है। कार्यालयी |

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| | हिन्दी की संरचना साहित्यिक हिन्दी तथा सृजनात्मक हिन्दी से अलग है। इसी प्रकार इन्टरनेट तथा अनुवाद में हिन्दी का स्वरूप अलग है। हिन्दी के इन विविध रूपों का अध्ययन करना हिन्दी के आधुनिक स्वरूप को जाननेए समझने के लिए आवश्यक है। इस प्रक्रिया में कार्यालयी हिन्दी के औपचारिक लेखन के स्वरूप का अध्ययन अपेक्षित है। साथ ही अनुवाद के विविध रूपए प्रक्रिया एव प्रविधि तथा उनके क्षेत्रों की विस्तृत जानकारी देना उक्त पाठ्यक्रम का उद्देश्य है।<br>च्च 5ण् जीवन के इहलौकिक पक्ष का संज्ञान भी महत्त्वपूर्ण हैए क्योंकि पारलौकिकता का द्वार यहीं से खुलता है। जहाँ मानव हृदय की मूलप्रवृत्ति हैए वहीं श्रीति उसे मनोवांछित अभिव्यंजना देती है। हिन्दी साहित्य का रीतिकाल इन्हीं मनोवृत्तियों से जुड़ा हुआ है। तद्युगीन परिस्थितियों के कारण प्रेम के श्रृंगारिक रूप की संपृक्ति बढ़ी। जीवन के मधुरपक्ष को भी अच्छे से समझाना उक्त पाठ्यक्रम का उद्देश्य है।<br>च्च 6ण् हिन्दी गद्य की विधाओं में कहानी एवं उपन्यास सर्वाधिक विकसित तथा लोकप्रिय है। सम्प्रति उसने शास्त्र का रूप धारण कर लिया हैए अतः विभिन्न प्रसिद्ध उपन्यासकारों तथा कहानीकारों की प्रसिद्ध रचनाओं द्वारा उपन्यास तथा कहानी के स्वरूपए इतिहासए प्रमुख शैलियों की विस्तृत जानकारी देना उक्त पाठ्यक्रम का उद्देश्य है।<br>च्च 7ण् हिन्दी साहित्य में निबंध व व्यंग्य विधा का महत्वपूर्ण स्थान रहा है। इसके अध्ययन से विद्यार्थी को निबंध तथा व्यंग्य के इतिहास व महत्व से परिचित कराना ही इस पाठ्यक्रम का उद्देश्य है।<br>साहित्य आद्यंत एक भाषिक निर्मिति है। साहित्य के गम्भीर अध्ययन हेतु भाषिक व्यवस्था का सुस्पष्ट एवं सर्वांगीण ज्ञान अपरिहार्य है। भाषा विज्ञान भाषा की वस्तुनिष्ठ अध्ययन प्रणाली के रूप में भाषिक इकाइयों तथा भाषा संरचना के विभिन्न स्तरों पर उनके अंतरसम्बन्धों के विन्यास को आलोकित कर न केवल अध्येता को भाषिक अंतर्दृष्टि देता है अपितु भाषा-विषयक विवेचन के लिए एक निरूपक भाषा भी प्रदान करता है। भाषा वैज्ञानिक आधार पर हिन्दी भाषा का ऐतिहासिक विकासक्रमए भौगोलिक विस्तारए भाषिक स्वरूपए विविध रूपता तथा हिन्दी में कम्प्यूटर सुविधाओं विषयक जानकारी एवं देवनागरी के वैशिष्ट्यए ीपत ज्ञनद और नानकीकरण का विवरण हिन्दी के अध्येता के लिए क्. ब्वससमहत्यंत उपयोगी है। उक्त समस्त जानकारी को प्रदान करना ही ्रंि ितदंहाषा विज्ञान एवं हिन्दी भाषा पाठ्यक्रम का उद्देश्य है।<br>ैच् 1ण् आधुनिक हिन्दी काव्य पुनर्नवा के रूप में नवीन भावभूमि एवं वैचारिक गतिशीलता लेकर अवतरित हुआ। आधुनिकए इहलौकिकताए विश्वजनीनता एवं वैज्ञानिक दृष्टिकोण इसकी प्रमुख विशेषताएं हैं। उपेक्षित विषय भी यहाँ सार्थक एवं प्रासंगिक हो गये हैं। उन्नीसवीं शती के उत्तरार्द्ध से अद्यावधि तक की संवेदनाएँए भावनाएँ एवं नूतन विचार सारणियाँ इसमें अभिव्यक्त हुई हैं। मुकम्मल मनुष्य इसमें अभिव्यंजित हुआ है। विविध |

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| | धाराओं में प्रवाहनान आधुनिक हिन्दी काव्य प्रेरणा और ऊर्जा का अजस्र स्रोत है। अतः संवेदना तथा ज्ञान क्षितिज का विस्तार उक्त पाठ्यक्रम का उद्देश्य है।<br>ै 2ण रचना के वैशिष्ट्य और मूल्यबोध के उद्घाटन के लिए काव्यशास्त्र का ज्ञान अपरिहार्य है। इनसे साहित्यिक समझ विकसित होती है। वह दृष्टि मिलती हैए जिसके आधार पर साहित्य के मर्म और मूल्यवत्ता की वास्तविक ताप रखी जा सके। सामाजिकए सांस्कृतिक परिवेश के साथ रचना का आस्वाद प्राप्त करनेए रचना को उसकी समग्रता से समझते और जानने-परखने की क्षमता उत्पन्न करना ही काव्य शास्त्र का उद्देश्य है।<br>ै 3ण पत्रकारिता आज जीवन-समाज की धडकन बन गई है। सिमटते विश्व में स्नायु तंतुओं के समान काम कर रही है। दैनिक समाचार पत्र से लेकर साप्ताहिकए पाक्षिकए त्रैमासिकए वार्षिक पत्रिकाओंए प्रिंट मीडियाए इलैक्ट्रानिक मिडियाए इंटरनेट आदि में इसका विकसित स्वरूप देखा जा सकता है। साहित्यिकता के साथ साथ रोजगारपरकता की आकांक्षा-पूर्ति करना भी उक्त पाठ्यक्रम का उद्देश्य है।<br>ै 4ण विषय का लेखन और तदुपरान्त तत्सम्बन्धी प्रश्नोत्तर तैयार करनाए उनका शुद्ध वाचन करना उक्त पाठ्यक्रम के अन्तर्गत आते हैं। उक्त पाठ्यक्रम का उद्देश्य विद्यार्थी को साक्षात्कार हेतु तैयार करना है।<br>ै 5ण राष्ट्रीय-चेतना और सांस्कृतिक जागरण की प्रवृत्ति अपनी समस्त शक्ति-सामथ्र्य तथा कतिपय नवीन प्रयोगवादिता के साथ छायावादोत्तर-काव्य में विकसित होती रही। नये मार्ग की अन्वेषी विचारधारा ने प्रयोगवादी काव्य-धारा के रूप में अपने को विकसित किया। विज्ञान ने बौद्धिकता का विकास कियाए फलस्वरूप नये-नये बिम्बए प्रतीक एवं अभिव्यंजना-रूप विकसित हुए। अन्तर्विरोधी स्थितियों के मूल्य-विघटनए तनाव-संक्रमण मोहभंग की स्थिति पैदा कीए जिसकी अभिव्यंजना विविध रूपों में हुई। वर्तमान समस्यायोंए संवेदनाओं को व्यापकता विश्वजनीन हो गई हैं। छायावादोत्तर काल का उद्देश्य इस वैश्विक संदर्भ की जानकारी देना है।<br>ै 6ण हिन्दी आलोचना पाठ्यक्रम का उद्देश्य विद्यार्थी को आलोचना जैसी स्वतन्त्र विधा का विस्तृत परिचय देना है। विद्यार्थी के अन्दर आलोक दृष्टि विकसित कर उसे सफल आलोचक बनाना भी है।<br>ै 7ण कौरवी लोक साहित्य के अध्ययन से विद्यार्थी को भारतीय संस्कृति से प्रत्यक्ष रूप से जोड़ना ही इस पाठ्यक्रम का उद्देश्य है। |
| **पाठ्यक्रम-1** | **हिन्दी साहित्य का इतिहास** |
| पाठ्यक्रम के परिणाम | CO1- उत्तरमध्यकालीन काल के अध्ययन से विद्यार्थी जीवन के इहलौकिक तथा पारलौकिक दोनों पक्षों की मधुरता को समझ सकेंगे।<br>CO 2ण नीति सम्बन्धी दोहों से विद्यार्थी नैतिक शिक्षा प्राप्त कर श्रेष्ठ नागरिक बन सकेंगे।<br>CO 3ण रीतिबद्ध कवियों का अध्ययन कर काव्य के सैद्धांतिक पक्ष समझ सकेंगे। |

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| | CO 4ण भूषण ग्रन्थावली के अध्ययन से तत्कालीन परिस्थितियों से परिचित हो सकेंगे। भारत के वीर राजाओं की वीरता से प्रेरित होंगे। |
| **पाठ्यक्रम.2** | **प्राचीन एवं पूर्वमध्यकालीन काव्य** |
| पाठ्यक्रम के परिणाम | CO1- आदिकालीन साहित्य के अध्ययन से हिन्दी के पूर्व रूप को जानने-समझने में सहायता मिलेगी।<br>CO 2ण लोक-मंगल की भावना से पूरित पूर्वमध्यकाल के साहित् के अध्ययन से विद्यार्थी अपने जीवन में जीवन-मूल्यों को ग्रहण करने हेतु प्रेरित होगा।<br>CO 3ण तत्कालीन साहित्य के माध्यम से तत्कालीन समाज और संस्कृति को समझा जायेगा। |
| **पाठ्यक्रम.3** | **नाटक एवं रंगमंच** |
| पाठ्यक्रम के परिणाम | CO1- भारतीय एवं पाश्चात्य नाट्य-चिन्तन के प्रसिद्ध चिन्तकों द्वारा नाटक और रंगमंच के स्वरूप् को जाना जायेगा।<br>CO 2ण नाटक एवं एकांकी के अन्तर को समझ लिया जाएगा।<br>CO 3ण ष्चन्द्रगुप्तष और ष्अंधायुगष जैसे ऐतिहासिक नाटकों के अध्ययन से तत्कालीन इतिहास को जाना जाएगा।<br>CO 4ण नाटकों तथा एकांकी के अध्ययन से ऐतिहासिक के साथ-साथ उनमें अभिव्यक्त जीवन के अच्छे-बुरे पक्षोंए जीवन-विसंगतियों आदि को जानने का अवसर प्राप्त होगा। |
| **पाठ्यक्रम.4** | **प्रयोजनमूलक हिन्दी** |
| पाठ्यक्रम के परिणाम | CO1- इस पाठ्क्रम के अध्ययन से विद्यार्थी हिन्दी के विभिन्न रूपों से परिचित होगा।<br>CO 2ण कार्यालयी हिन्दी के प्रमुख प्रकार्य का ज्ञान प्राप्त कर सकेंगेए जो रोजगार में सहायक होगा।<br>CO 3ण जन संचार माध्यमों में प्रयुक्त हिन्दी को समझेंगे।<br>CO 4ण कम्प्यूटर का परिचय प्राप्त कर कम्प्यूटर द्वारा हिन्दी में कार्य करने में सक्षम हो सकेंगे।<br>CO 5ण अनुवाद के स्वरूपए क्षेत्रए प्रक्रिया एवं प्रविधि को समझकर अनुवाद के क्षेत्र में भी रोजगार प्राप्त कर सकेंगे। |
| **पाठ्यक्रम.5** | **उत्तरमध्यकालीन काव्य** |
| पाठ्यक्रम के परिणाम | CO1- उत्तरमध्यकालीन काल के अध्ययन से विद्यार्थी जीवन के इहलौकिक तथा पारलौकिक दोनों पक्षों की मधुरता के समझ सकेंगे।<br>CO 2ण नीति सम्बन्धी दोहों से विद्यार्थी नैतिक शिक्षा प्राप्त कर श्रेष्ठ नागरिक बन सकेंगे।<br>CO 3ण रीतिबद्ध कवियों का अध्ययन कर काव्य के सैद्धांतिक पक्ष समझ सकेंगे।<br>CO 4ण भूषण ग्रन्थावली के अध्ययन से तत्कालीन परिस्थितियों से परिचित हो सकेंगे। भारत के वीर राजाओं की वीरता से प्रेरित होंगे। |

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| **पाठ्यक्रम.6** | **कथा साहित्य** |
| पाठ्यक्रम के परिणाम | CO1- इस पाठ्यक्रम के माध्यम से विद्यार्थी कहानी एवं उपन्यास जैसी सर्वाधिक विकसित एवं लोकप्रिय गद्य विधा के इतिहासए स्वरूप् एवं प्रमुख शैलियों से परिचित होंगे।<br>CO 2ण् प्रसिद्ध कथाकार प्रेमचन्द के उपन्यास ष्गोदानष् से भारतीय किसान के जीवन की समस्याओं से रूबरू हो सकेंगे।<br>CO 3ण् ष्मैला आंचलष् उपन्यास के अध्ययन से आंचलिकता को समझने के साथ-साथ बिहार की स्थानीय बोली के शब्दों की जानकारी प्राप्त होगी।<br>CO 4ण् विभिन्न प्रसिद्ध कथाकारों की प्रासंगिक कहानियों के अध्ययन से विद्यार्थी जीवन-मूल्यों को समझ अपने जीवन के नैतिक पक्ष को सुदृढ़ कर सकेंगे। |
| **पाठ्यक्रम.7** | निबंध व व्यंग्य साहित्य |
| पाठ्यक्रम के परिणाम | CO1- हिंदी साहित्य की विधाओं में कथा-साहित्य व नाट्य साहित्य से इतर सृजनधर्मी रचनाकारों द्वारा लिखित अन्य विधाओं का अध्ययन भी अपेक्षित होगा।<br>CO 2ण् इस प्रश्न पत्र में विद्यार्थियों को निबंध व व्यंग्य के अध्ययन का अवसर प्राप्त होगा |
| **पाठ्यक्रम.** | **भाषा विज्ञान एवं हिन्दी भाषा** |
| पाठ्यक्रम के परिणाम | CO1- विद्यार्थी भाषा का वैज्ञानिक अध्ययन कर पायेगा।<br>CO 2ण् भाषा के अंगोंए हिन्दी भाषा के वर्णों का उच्चारण स्थानए प्रयत्न इत्यादि दृष्टि से सीखेगा।<br>CO 3ण् हिन्दी भाषा के उद्भव और विकास को जानेगा।<br>CO 4ण् हिन्दी के मानकीकरण को जानकर हिन्दी के शुद्ध रूप का लेखन और वाचन करेगा।CO5- हिन्दी की वैज्ञानिक एवं संवैधानिक स्थिति से परिचित होगा। |
| **पाठ्यक्रम.** | **आधुनिक काव्य (छायावाद पर्यंत)** |
| पाठ्यक्रम के परिणाम | CO1- संवेदना तथा ज्ञान क्षितिज के विस्तार हेतु आधुनिक काव्य का अध्ययन अत्यन्त आवश्यक एवं प्रासंगिक है।<br>CO 2ण् उक्त पाठ्यक्र के अध्ययन से विद्यार्थी हिन्दी काव्य की नवीन भावभूमिए वैचारिकताए वैज्ञानिक दृष्टिकोण इत्यादि से परिचित होगा।<br>CO 3ण् सुभद्रा कुमारी चैहानए माखनलाल चतुर्वेदीए रामनरेश त्रिपाठीए बालकृष्ण शर्मा ष्नवीनष् इत्यादि कवियों का काव्य विद्यार्थियों की राष्ट्रीय चेतना को जाग्रत करने में सहायक होगा।<br>CO 4ण् विभिन्न कवियोंए गीतकारों से प्रेरित होकर विद्यार्थी कवि और गीतकार भी बन सकता |
| **पाठ्यक्रम.** | **काव्यशास्त्र** (भारतीय एवं पश्चात्य) |
| पाठ्यक्रम के परिणाम | CO1- काव्यशास्त्र के विभिन्न सिद्धांतों द्वारा विद्यार्थी साहित्यिक समझ विकसित होगी। |

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| | CO 2ण वह दृष्टि मिलेगीए जिसके आधार पर साहित्य के मर्म और मूल्यवत्ता को परखा जा सकेगा।<br>CO 3ण रचना को उसकी समग्रता में समझने और जानने-परखने की क्षमता बढ़ेगी।<br>CO 4ण सामाजिकए सांस्कृतिक परिवेश के साथ रचना का आस्वाद लिया जा सकेगा। |
| **पाठ्यक्रम.** | **पत्रकारिता प्रशिक्षण** |
| पाठ्यक्रम के परिणाम | CO1- पत्रकारिता के विविध क्षेत्रों का ज्ञान होगा।<br>CO 2ण पत्रकारिता के क्षेत्र में करियर बनाने मेंए रोजगार प्राप्त करने में सक्षम बना जा सकता है। |
| **पाठ्यक्रम.** | **प्रस्तुतिकरण एवं मौखिकी** |
| पाठ्यक्रम के परिणाम | CO1- उक्त पाठ्यक्रम से विद्यार्थी लेखन-शैली में सुधार करना सीखेगा।<br>CO 2ण वाचन क्षमता बढ़ेगी।<br>CO 3ण भविष्य में साक्षात्कार देने हेतु प्रशिक्षित हो सकेगा। |
| **पाठ्यक्रम.** | **छायावादोत्तर काव्य** |
| पाठ्यक्रम के परिणाम | CO1- प्रयोगवादी साहित्यकारों के साहित्य संसार का अध्ययन कर विद्यार्थी भी अन्वेषी प्रवृत्ति वाला बनेगा।<br>CO 2ण वर्तमान जीवन में व्याप्त तनावए कुंठाए अकेलापनए अवसाद इत्यादि को साहित्य में प्रयुक्त प्रतीक एवं बिम्बों के माध्यम से सरलता से जानेगा।<br>CO 3ण उक्त पाठ्यक्रम से वैश्विक संदर्भ की जानकारी प्राप्त होगी। |
| **पाठ्यक्रम.** | **आलोचना** |
| पाठ्यक्रम के परिणाम | CO1- विद्यार्थी के अन्दर आलोचना दृष्टि विकसित होगीए जिससे वह रचना का अलौकिक आस्वाद ले पायेगा।<br>CO 2ण स्वयं सफल आलोचक बन पायेगा।<br>CO 3ण हिन्दी के प्रसिद्ध आलोचकों की साहित्यिक मान्यताओं को जानेगा। |
| **पाठ्यक्रम.** | **चतुर्थ- विशिष्ट साहित्य धारा (कौरवी लोक साहित्य)** |
| पाठ्यक्रम के परिणाम | CO1- हिंदी जगत में विद्यमान विभाषाओं में अमूल्य कौर्वेई साहित्य संपदा विद्यमान है इसके संकलन संपादन सर्वेक्षण व प्रकाशन द्वारा ही अपनी मूल राष्ट्रीय संस्कृति को संरक्षित किया जाएगा।<br>CO 2ण कौरवी लोक साहित्य के अध्ययन से हिंदी का जनाधार बढ़ाया जा सकता है। अस्तु, इसके अध्ययन की उपयोगिता निर्विवाद होगी। |
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विद्ययामृतमश्नुते

# S.D.COLLEGE, MUZAFFARNAGAR
## Department of History

**PROGRAMME OUTCOMES ,**

**PROGRAMME SPECIFIC OUTCOMES**

**& COURSE OUTCOMES**

**PROGRAM: M.A. (HISTORY)- TWO YEAR (SEMESTER SYSTEM)**

| YEAR | SEMESTER | COURSE NO. & POS, PSOS AND COS | After successful completion of two year Post Graduate degree program in MA-History student should have- |
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| | | PROGRAM OUTCOMES | PO1-The proposed course provides the basic ideas and concepts of history and historical development of human societies.<br>PO2-The programme has been designed to develop historical outlook to resolve the day today life struggles in the society and the nation and to enhance the capacity of students to understand universal and domain-specific values in History.<br>PO3-The course intends to orient the learner to understand different approaches of history and to promote scientific temper and research oriented innovative study of history.<br>PO4-The course intends to develop critical and scientific approach for better understanding of past events and the present as well. |

S.D. COLLEGE MUZAFFARNAGAR IQAC INTERNAL QUALITY ASSURANCE CELL

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| | | | PO5-The students acquire the thorough knowledge and understanding of the laws of continuity and change. The present was implicit in the past and the past and the future is implicit in the present. |
| | | **PROGRAM SPECIFIC OUTCOMES** | PSO1-The course intends to develop critical and scientific approach for better understanding of past events and the present as well.<br>PSO2-The students acquire the thorough knowledge and understanding of the laws of continuity and change. The present was implicit in the past and the past and the future is implicit in the present. |
| **1** | **I** | **COURSE-I** | **Historiography: Concepts, Methods, Approaches and Tools** |
| | | **COURSE OUTCOME** | CO1-The paper is designed for a better understanding of history and different kind of interpretations of historical events over time.<br>CO2-Students will learn about nature, purpose, scope and different branches of history.<br>CO3-Historiography will develop a critical and scientific approach among students and at the same time they will become familiar with different approaches and different schools of history.<br>CO4-Students will develop a deep insight will be able to examine the historical sources properly. |
| **1** | **I** | **COURSE-II** | **History of Ancient India (From earliest times to Post Harrapan Settlement)** |
| | | **COURSE OUTCOME** | CO1-The paper is designed for a better understanding of Pre-Historical Age in India.<br>CO2-Students will learn about earliest specimen of humans.<br>CO3-The course intends to make students familiar with earliest human settlements during stone age, tool making, hunter-gatherer stage of early men.<br>CO4-They will learn earliest form of agriculture, pottery, rituals<br>CO5-Students will obtain knowledge of archeology which will help them to understand earliest Indian civilizations. |
| **1** | **I** | **COURSE-III** | **History of Ancient India (From Vedic Age to** |

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| | | | **Mauryan Kingdom)** |
| | | **COURSE OUTCOME** | CO1-During Vedic Age foundations of Indian culture and civilization was laid down and ancient Indian wisdom became a guiding force for future generations. Students will obtain knowledge of foundations of Indian Culture<br>CO2-Students will learn early Indian Polity and socio-economic conditions of ancient India.<br>CO3-The course intends to make students familiar with different religious sects and their impact on society.<br>CO4-They will learn about highly centralized administration and imperialism of Mauryans and KautilyaArthshastra as well. |
| **1** | **I** | **COURSE-IV** | **History of Ancient India (From Shunga Dynasty to Rajput Era)** |
| | | **COURSE OUTCOME** | CO1-The period between Mauryas and Guptas India saw political upheavals and succumbed to foreign powers like Kushanas for a short period.<br>CO2-Students will learn about how India once again revived its political power and succeeded in strengthening its culture.<br>CO3-The course intends to make students familiar with south Indian powers like Satvahanas.<br>CO4-They will learn about Classical Age of Guptas and overall development in every sphere. After the Guptas and Harshavardhana, India once again suffered political disintegration and succumbed to invasion of Turks. |
| **1** | **II** | **COURSE-V** | **Socio-Economic and Cultural History of Ancient India** |
| | | **COURSE OUTCOME** | CO1-The paper deals with main features of Socio-Economic and Culture History. Students will be able to learn about Vaarna and Ashram Syestem, Caste System Purusharthas, Sanskaras, position of Shudras and Slaves.<br>CO2-Students will be aware of Indian Knowledge System, Indian Philosophy, and condition of women through the ages.<br>CO3-The course intends to make students familiar |

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| | | | with ancient technique of Agriculture, crops, and land patterns.<br>CO4-They will learn about development of industries, trade and commerce and changes in socio-economic pattern during Feudal Age. |
| 1 | II | COURSE-VI | **History of Modern Europe (1789-1919)** |
| | | COURSE OUTCOME | CO1-The paper covers Ancient regime in France, French Revolution and Napoleonic Era in detail and the students will learn how whole Europe revolted against absolute and tyrant rulers for equality, liberty and fraternity.<br>CO2-Students will acquire knowledge of Napoleonic wars, his reforms, unification of Italy and Germany and decline of Metarnich System.<br>CO3-The course intends to make students familiar with Technical and Industrial revolutions and its impact on Europe and the World.<br>CO4-Finally, they will learn about circumstances in which First World War started and after the war the map of Europe and World witnessed a change. |
| 1 | II | COURSE-VII | **History of Modern Europe (1920-1960)** |
| | | COURSE OUTCOME | CO1-The paper covers four decades history of Modern World from 1920 to 1960 and students will learn changes in international politics between the two World Wars.<br>CO2-This period witnessed so many events like formation of League of Nations for preventing the possibility of war, rise of Fascism and Nazism, Great Economic Depression, second World War and formation of UNO.<br>Students will acquire knowledge about Cold War, Oil Diplomacy, National Movements in Asia, Non-Aligned Movement, and India's Foreign Relation with Super Powers and its neighbors. |
| 1 | II | COURSE-VIII | **Tourism in India** |
| | | COURSE OUTCOME | CO1-The paper covers different aspects of Tourism. History and Tourism are closely related with each other. Due to its glorious past, prosperity, cultural richness, educational institutions, religion and |

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| | | | philosophy India has been most preferred destination of travellers from many parts of the globe.<br>CO2-This paper intends to educate the students about technical as well as historical aspects of Tourism.<br>CO3-Students will acquire knowledge about salient features of Indian Traditions, customs, fairs, religious places, festivals etc.<br>CO4-Students will be aware of Tourism products, Tourism management, Guiding and contribution of tourism in Indian Economy. |
| **2** | **III** | **COURSE-IX** | **History of Medieval India (Till 1526 AD)** |
| | | **COURSE OUTCOME** | CO1-The paper is designed to develop the understanding of India after Turkish invasion and establishment of Muslim rule. Students will learn how Islam and Hinduism influenced each other.<br>CO2-This paper intends to educate the students about territorial expansion of Turkish rulers and different types of theories of kingship and socio-economic and religious policies.<br>CO3-Students will acquire knowledge about salient features of Islamic customs and traditions of different ruling dynasties during Sultanate Period.<br>CO4-Students will be able to understand the role of Bhakti and Sufi saints in bringing the two communities closer and heled in the growth of Indo-Islamic Culture. |
| **2** | **III** | **COURSE-X** | **History of Medieval India (1526 – 1707 AD)** |
| | | **COURSE OUTCOME** | CO1-The paper is designed to develop the understanding of India after the establishment of Mughal rule. Students will learn how Mughal rulers from Babur to Shahjahan created a different atmosphere and adopted a policy of religious towards Hindus.<br>CO2-This paper intends to educate the students about territorial expansion of Mughal rulers, Rajput Policy, Religious Policy, Frontier Policy, socio-economic policies and main features of Mughal Administrative System and beginning of disintegration of empire during the period Aurangzeb<br>CO3-Students will acquire knowledge about |

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| | | | discontentment and uprisings of Jats, Marathas, Satnamis and Bundelas and will be able to understand the debate regarding the downfall of Mughal Empire. |
| **2** | **III** | **COURSE-XI** | **History of Modern India (1707 – 1885)** |
| | | **COURSE OUTCOME** | CO1-The paper is designed to develop the understanding of gradual decline of Mughalduring Later Mughals and expansion and consolidation of European Powers especially in coastal areas.<br>CO2-This paper intends to educate the students about political colonization of India and the administrative reforms from Warren Hastings to lord Ripon.<br>CO3-Students will acquire knowledge about revenue policies, judicial, social and educational reforms and reaction of Indians in the form of local rebellions and Revolution of 1857 which is better known as the First War of Indian Independence. |
| **2** | **III** | **COURSE-XII** | **Power Point Presentation or Viva-Voce** |
| | | **COURSE OUTCOME** | CO1-In this digital age most of the students use Information Communication Technology (ICT) and are trained in Power Point Presentation.<br>CO2-University is responsible for the arrangement of External examiners and the institution decides the dates of Viva-Voce Examinations with the consent of External Examiners. Students are required to submit a project also at the time of Viva-Voce Examination. |
| **2** | **IV** | **COURSE-XIII** | **History of Modern India (1885 – 1950)** |
| | | **COURSE OUTCOME** | CO1-The paper is designed to understand the role of Indian National Congress in Indian Freedom struggle. The students will be able to obtain knowledge about the role of Moderates and the Extremists, role of Muslim League and also the impact of Gandhian Movements.<br>CO2-This paper intends to educate the students about the nature of Peasant and Tribal Movements and also Ambedkar's role in the upliftment of Depressed Classes.<br>CO3-Students will acquire knowledge about Constitutional Development and Government of India Acts, Partition of India and integration of |

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| | | | Princely States by Sardar Patel. |
| **2** | **IV** | **COURSE-XIV** | **Research Methodology** |
| | | **COURSE OUTCOME** | CO1-Historical research is gaining ground rapidly among the students of history and they want to contribute something new to the existing stalk of knowledge. This course is designed to train the students in Research Methodology.<br>CO2-This paper intends to educate the students about the importance of Historical Evidence, Sources, Authenticity of Sources, Criticism of Sources, Causation, Generalisation, Bias and Objectivity etc.<br>CO3-Students will learn the art of Field Surveys, Interviews and Book reviews.<br>CO4-The course is designed to train the students in technical aspects of thesis writing like Chaptalization, Note Taking, Footnotes, Index, Appendix and Bibliography etc. |
| **2** | **IV** | **COURSE-XV** | **Socio-Cultural History of Modern India (1757 – 1947)** |
| | | **COURSE OUTCOME** | CO1-This paper helps the students to understand the structure of Modern Indian Society, the caste System, Position of Women, Property rights, Modern Education System and its impact on society.<br>CO2-The paper deals with Social and Cultural Movements by different Social Organizations like Arya Samaj, Brahm Samaj, Ramkrishan Mission etc. which brought some very important changes in traditional Indian Society.<br>CO3-Students will learn about Agricultural Productions and Techniques, Land Patterns, Colonial Economic Policies and its impact, Drain of Wealth etc. |

## M.Sc NEP MATHEMATICS

### Programme Outcomes (PO's)

**PO1:** Provide opportunities in higher education and development on the professional front. It also gives the opportunity for career advancement in teaching, research, and industries.
**PO2:** Integration of Interdisciplinary thinking and practice.
**PO3:** Analyze a problem, identify and define the computing requirements with respect to organizational factors appropriate to its solution, and plan strategies for their solution.
**PO4:** Design, implement and evaluate information systems, processes, components, or programs and source cost-benefit efficient alternatives to meet desired needs, goals, and contraints.
**PO5:** Deploy and use effective skills, tools, and techniques necessary for information systems practice.
**PO6:** Most importantly, the program inculcates among the students the higher values which enable them to withstand the challenges of life.
**PO7:** Deploy and use effective skills, tools, and techniques necessary for information systems practice.
**PO8:** Effectively communicate about their field of expertise on their activities, with their peer and society at large, such as, being able to comprehend and write effective reports and design documentation.

### Programme Specific Outcomes (PSO's)

**PSO1.** To develop abstract mathematical thinking so that students would be able to apply knowledge of Mathematics, in all the fields of learning, including higher research and its extensions.
**PSO2.** To provide students with knowledge and capability in formulating and analysis of mathematical models of real-life applications/problems.
**PSO3.** To provide comprehensive curriculum to groom the students into qualitative scientifically enriched manpower.
**PSO3.** Carry out development work as well as take up challenges in the emerging areas of the industry.
**PSO4.** To provide students with a knowledge, abilities and insight in Mathematics and computational techniques so that they are able to work as mathematical professional.
**PSO5.** Inspire to crack lectureship and fellowship exams approved by UGC like CSIR – NET and SET/ ISRO/DRDO so that high quality academicians and researchers can be prepared.
**PSO6.** Victorious in getting employment in different areas, such as industries, laboratories, Banks, Insurance Companies, Educational/Research institutions, Administrative positions, since the impact of the subject concerned is very wide.
**PSO7.** Encourage personality development skills like time management, crisis management, stress interviews and working as a team.

## COURSE OUTCOMES ( CO'S)
### M.Sc. I Sem

**Subject: Abstract Algebra**

**CO1.**Ability to solve non-trivial problems based on various concepts in the course.

**CO2.** Determining the connection and transit amid formerly studied mathematics (discrete mathematics) and advanced mathematics (advanced abstract mathematics).

**CO3.** Ability to apply abstract algebra to solve problems in other branches of mathematics and also in other disciplines.

**CO4.** Describing relationship between Abstract Algebra and other courses in mathematics.

**CO5.** Understanding the dependency of results based on earlier results, and thereby developing a correct approach towards life realizing the deep connection among past, present and future. For example, in ring theory, the ring of polynomials over a field is a gift of the division algorithm.

**CO6.** Possessing pre-requisites for pursuing research in Cryptography

**Subject: Real Analysis**

**CO1.** To provide a topological study of real-valued functions.

**CO2.** To study the concepts of convergence and uniform convergence of series and sequence of real-valued functions and their applications.

**CO3.** To provide the methods for finding the maxima and minima values of multivariate real-valued functions with their applications.

**CO4.** To study the concept of integrability of real-valued functions over the closed and bounded interval and their applications in different areas, such as quantum physics.

**CO5.** This course gives a wide study of different concepts of functions of serval variables, such as limit and continuity, differentiability, partial differentiability and integrability.

**CO6.** This course lays a foundation to study other important courses such as functional analysis, complex analysis and differential equations. This course plays a central role to get the employment for the students because it is available with a great importance in the syllabi of different competitive exams

**Subject: Advanced Differential Equation**

**CO1.** The use of the differential equation theory is to solve various types of Mathematical modeling problems.

**CO2.** The use of the differential equation theory is to solve many problems presented in different sciences such as Biology, Chemical sciences and Physics.

**CO3.** The use of this theory is to solve many real-life based problems such as population problem, control problems and networking security problems etc.

**CO4.** This theory can solve many engineering problems such as the exact trajectory path of a rocket or a missile.

**CO5.** Students will be able to formulate and solve differential equations arising from changes in physical world.

**Subject: Research Methodology & Computer Applications**

**CO1:** Design a good quantitative purpose statement and good quantitative research questions and hypotheses.

**CO2:** Explain the epistemological assumptions of qualitative research methods, how to select the appropriate qualitative research method to address a research question, and the criteria for evaluating qualitative research methods
**CO3:** Design and conduct an in-depth interview study, an oral history interview study, a focus group study, ethnography, a qualitative content analysis study, a qualitative case study, and a mixed-method study.
**CO4:** Write a qualitative methods and findings section, as for a qualitative research article.
**CO5.** Design a good qualitative purpose statement and a good central question in qualitative research.

**Subject: Quantitative Aptitude**
**CO1**.For Encourage the interest in Mathematics for other student rather than Science students.
**CO2**. For Cracking the Ist Part of NET Exam and other competitive examinations

**M.Sc. II Sem**

**Subject: Topology**
**CO1:** To show how the theory and concepts grow naturally from idea of distance
**CO2:** Differentiate between functions that define a metric on a set and those that do not.
**CO3:** Use the Banach fixed point theorem to demonstrate the existence and uniqueness of solutions to differential equations
**CO4:** Apply the theory in the course to solve a variety of problems at an appropriate level of difficulty
**CO5:** Metric spaces are vital prerequisites for many mathematics courses including Analysis, Topology, Measure Theory, Complex Analysis etc.
**CO6**: Understand sequentially compact spaces, Countable compactness, BWP and compactness and explain the relation between the three types of compactness in metric spaces.

**Subject: Advanced Complex Analysis**
**CO1.** Know the fundamental concepts of complex analysis.
**CO2.** Prove the Cauchy-Riemann equations and apply them to complex functions in order to determine whether a given continuous function is complex differentiable.
**CO3.** Extend their knowledge to pursue research in this field.
**CO4.**Solve the problems using complex analysis techniques applied to different situations in engineering and other mathematical contexts

**Subject: Mechanics**
**CO1.** To distinguish between inertia frame of reference and non-inertial frame of reference.
**CO2.** To frame the mathematical constraints on the bases of physical restrictions imposed on a system, which simplifies the process of solution of a physical problem.
**CO3.** To understand the mechanics of a system of particles falling under classical mechanics.
**CO4.** To differentiate between Newtonian, Lagrangian, Hamiltonian and Routhian approach of solving a mechanical problem.
**CO5.** To determine the Lagrangian and Hamiltonian of mechanical systems and use these functions to obtain the solutions of even complicated mechanical systems with ease.
**CO6.** To identify the conserved quantities, if any, associated with the mechanical system.

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**CO7.** To apply fundamental conservation principles to analyze mechanical systems.
**CO8.** To use advanced theoretical techniques to solve mechanical problems like use of canonical transformations, variational principles, Hamilton Jacobi theory.
**CO9.** To use Poisson's Brackets and Lagrange's Brackets to solve mechanical problems.

**Subject: Financial Mathematics**
**CO1:** Demonstrate understanding of basic concepts in linear algebra, relating to linear equations, matrices, and optimization.
**CO2.** Demonstrate understanding of concepts relating to functions and annuities.
**CO3.** Employ methods related to these concepts in a variety of financial applications
**CO4.** Apply logical thinking to problem solving in context.
**CO5.** Use appropriate technology to aid problem solving.
**CO6**. Demonstrate skills in writing mathematics

**Subject: Bio Statistics**
**CO1:** Knowledge in Biostatistics - basic concepts, examples and applications of statistical methods in medicine, biology and public health, scale of measurements, statistical populations, sample from population, data collection - sampling methods.
**CO2.** Knowledge in Construction of statistical tables, frequency distribution, construction of frequency tables from raw data, cumulative frequency tables, diagrammatic and graphical representation of data, measures of central tendency, raw and central moments from grouped and ungrouped data, dispersion, skewness and kurtosis.
**CO3.** Knowledge in Attribute - definition and concepts, dichotomy, fundamental set of frequencies, consistency of data, conditions of consistency, independence and association of attributes.
**CO4.** Knowledge in Basic concepts, Scatter diagram, line of regression, correlation coefficient, fitting of regression lines, definition of Spearman's rank correlation coefficient, Kendall's tau, partial and multiple correlation and regression, tests for correlation and regression coefficients, intra-class correlation coefficient, correlation ratio.
**CO5:** Skill in descriptive statistics using software like SPSS and SAS

**Subject: Mathematical Statistics**
**CO1:** Explore the basic ideas about measures of central tendency, dispersion and their applications in other statistical problems.
**CO2:** Explain the different types of discrete and continuous distributions and their utilization.
**CO3:** Tackle big data and draw inferences form it by applying appropriate statistical techniques.
**CO4:** Apply the knowledge of statistical techniques in various experimental and industrial requirements

**Subject: Linear Algebra**
**CO1:** Understand the notion of a vector space and linear transformation and to determine basis and dimension of a vector space.
**CO2:** Understand the concept of linear transformation and to find the range space and null space of the linear transformation

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**CO3:** Find the eigenvectors and Eigen-value of a square matrix and to know diagonalization of the matrix
**CO4**: Compute an orthogonal basis using the Gram-Schmidt process.

**Subject: Data Structure with C**
**CO1.** Understanding a functional hierarchical code organization.
**CO2.** Ability to define and manage data structures based on problem subject domain.
**CO3.** Ability to work with textual information, characters and strings.
**CO4.** Students will be able to develop logics which will help them to create programs, applications in C.
**CO5.** Also, by learning the basic programming constructs they can easily switch over to any other Language in future.

**Subject: Dynamical System**
**CO1.** To introduce students to the basic mathematical skills for the qualitative solving of low dimensional systems of ordinary differential equations in continuous time, including dimensionless forms, phase portraits, and bifurcations.
**CO2.** To provide a brief introduction to the way ordinary differential equation can be used to model, explain and interpret real world problems.
**CO3.** To provide a brief introduction to the theory and concepts that under pin the field of dynamical systems.

**Subject: Vedic Mathematics**
**CO1.** It enables faster calculation as compared to the usual method.
**CO2.** Students will be able to utilize Vedic sutras to enhance their skills for competitive exams and able to solve examinations more efficiently.
**CO3.** It provides an easy and convenient solution to difficult mathematics problems and calculations.
**CO4.** It helps to increase mental concentration.

**M.Sc. III Sem**

**Subject:** Fluid Dynamics
**CO1.** To know, understand and apply the basic concepts of Fluid Mechanics .
**CO2.** To describe the physical properties of a fluid.
**CO3.** To convert physical laws of conservation of mass, momentum, moment of momentum and energy into mathematical equations and apply them to describe the fluid motion.
**CO4.** To frame and describe the flow through potential function and stream function.
**CO5.** To describe the motion of ideal and real fluids with different techniques including complex variable technique.
**CO6.** To understand stress-strain relationship in Newtonian fluids.
**CO7.** To apply Bernoulli equations in their domain of validity for fluid flow rate measurement.
**CO8.** To understand the singularities of the flow field.
**CO9.** To make dimensional analysis and use it to derive the dimensionless numbers.
**CO10.** To link flow behavior with non-dimensional parameters
**CO11.** To apply the similitude concept and set up the relation between a model and a prototype.

**CO12.** To define, describe and apply the basic flow equations, such as the Navies-Stokes equations to evaluate velocity, pressure drop in simple geometries like laminar flows between parallel plates, axial and transverse flows in pipes and flows in annular region produced.

**Subject: Linear Integral Equation**

**CO1.** The use of the differential equation theory is to solve various types of Mathematical modeling problems.
**CO2.** The use of the differential equation theory is to solve many problems presented in different sciences such as Biology, Chemical sciences and Physics.
**CO3.** The use of this theory is to solve many real-life based problems such as population problem, control problems and networking security problems etc.
**CO4.** This theory can solve many engineering problems such as the exact trajectory path of a rocket or a missile.
**CO5.** Students will be able to formulate and solve differential equations arising from changes in physical world.

**Subject: Information Theory**

**CO1.** Apply linear block codes for error detection and correction and design the channel performance using Information theory.
**CO2.** Decide an efficient data compression scheme for a given information source.
**CO3.** Compute entropy and mutual information of random variables.
**CO4.** Understand the relationship of information theoretical principles and Bayesian inference in data modeling and pattern recognition.

**Subject: Advanced Topology**

**CO1:** Define topology on a non-empty set, open, closed, closure, limit point, interior, exterior, and boundary of a set, and explain the relations between these sets.
**CO2:** Explain how to generate a topology from a collection of subsets under certain conditions, and without any conditions.
**CO3:** Explain how a metric generate a topology, and the metrizability problem.
**CO4:** Reconstruct homeomorphism functions between topological spaces
**CO5:** The beauty of the subject is to gain proficiency in dealing with abstract concepts, with emphasis on clear explanations of such concepts to others
**CO6:** A necessary course for employability in research institutions as well as in teaching profession.

**Subject: Mathematical Programming**

**CO1:** The use of Mathematical Programming algorithms for problem solving but also the design of their variants for special problem cases.
**CO2:** The understanding of mathematical structure and properties of fundamental problem classes (e.g., linear, non-linear and integer programming, dynamic programming).
**CO3:** The formulation and solving of problems arising from practical, real-life settings.
**CO4.** To solve problems involving optimization models with integer constraints.
**CO5.** To have deep insight in solving optimization problems which are non-linear.
**CO6.** To distinguish between "single objective" and "multiple objective" functions

**Subject: Difference Equations**

**CO1:** Understand the occurring of difference equations and linear difference equations. Also will be able to solve these equations

**CO2:** Understand the non-linear difference equations and their linearization

**CO3:** Understand the System of difference equations.

**CO4**. Understand the nonlinear difference equations and their systems.

**Subject: Measure and Integration Theory**

**CO1.** Extend their knowledge of Lebesgue theory of integration by selecting and applying its tools for further research in this and other related areas.

**CO2.** Utilize the concepts of derivative, MVTS for vector-valued functions in applications different fields for example management, industry and economics etc.

**CO3.** Apply the knowledge of concepts of functions of several variables and measure theory in order to study theoretical development of different mathematical concepts and their applications.

**CO4.** Utilize the concepts of derivative, MVTS for vector-valued functions in applications different fields for example management, industry and economics etc

**Subject: Number Theory**

**CO1**.Identify the challenging problems in modern mathematics and find their appropriate solutions.

**CO2.** Formulate and prove conjectures about numeric patterns, and produce rigorous arguments centered on the material of number theory, most notably in the use of Mathematical Induction and/or the Well Ordering Principal in the proof of theorems.

**CO3.** Apply the knowledge of Number theory and Cryptography to attain a good mathematical maturity and enables to build mathematical thinking and skill.

**CO4.** Design, analyse and implement the concepts of Diophantine equations for solving different types of problems, for example, sum of two and four squares

**Subject: Advance Numerical Analysis**

**CO1.** Apply their knowledge of computer programming to develop and implement their own computer codes of numerical methods for solving different types of complex problems viz. nonlinear equations, a system of linear equations, interpolation and extrapolation, initial and boundary value problems of ordinary differential equations, etc.

**CO2.** Find the solution of linear and nonlinear equations and solution of differential equations.

**CO3.** Demonstrate understanding of common numerical methods and how they are used to obtain approximate.

**CO4:** Identify the challenging problems in continuous mathematics (which are difficult to deal with analytically) and find their appropriate solutions accurately and efficiently using computer codes.

**CO5**:Identify use of spline interpolation and difference equations in numerical analysis

**Subject: Applied Statistics**

**CO1:** Learn about various procedures of sampling and concept of sampling distribution that will help in statistical inference

**CO2:** Tackle big data and draw inferences form it by applying appropriate statistical techniques.

**CO3:** Will apply ANOVA used to test equality of three or more population means.

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**CO2:** Apply the knowledge of statistical techniques in various experimental and industrial requirements.
**CO4:** Gain knowledge about time series forecasting techniques.
**CO5:** Explain the purpose of index numbers and their applications
**CO6:** Learn how control charts are constructed and how they are used to monitor quality standards.
**CO7:** Gain knowledge about computer fundamentals and learn about different statistical software's

**Subject: Theory of Relativity**
**CO1:** Knowledge in Relativity - basic concepts, examples and applications
**CO2.** Knowledge in classical theory of relativity, Lorentz transformations, Relativistic Mechanics.
**CO3.** Knowledge in Special Relativity in classical Mechanics, Tensor Calculus.
**CO4.** Knowledge in The general theory of relativity, relativistic field equations, Schwarzschild solution, Cosmology, Electrodynamics etc

**Subject: Wavelet Analysis**
**CO1:** Understand the approximation of functions (signals) by frame theory
**CO2:** Use the applications of frames in stable analysis and decompositions of functions
**CO3:** Learn the applications of wavelets in the construction of orthonormal bases by wavelets..
**CO4:** Analyse different types of transforms in term of operators.

**M.Sc. IV Sem**

**Subject: Fuzzy Sets and Its Applications**
**CO1.** This theory helps to solve those problems which are described in linguistic terms.
**CO2.** This theory provides an excellent tool to handle the vagueness in modern science and technology problems such as computer science, economics and medical science.
**CO3.** This theory can be used to make modern systems based on Artificial Intelligence (A.I) and soft computing.
**CO4.** On the basis of this theory many real-life based problems can be solved such as robotics, management etc.
**CO5.** On the basis of the theory be able to apply fuzzy information in decision making.

**Subject: An Introduction to** Functional Analysis
**CO1:** Understand the basics of Functional Analysis.
**CO2:** Determine fundamental groups of some standard spaces like Euclidean spaces and Normed Linear space.
**CO3:** Understand proofs of some beautiful results such as fundamental theorem of Algebra and Hahn Banach , Riesz Fisher theorem.
**CO4:** Understand proofs of beautiful results of Hilbert spaces.

**Subject: An Introduction to R-Programming**

**CO1.** Understanding a functional hierarchical code organization.
**CO2.** Ability to define and manage data structures based on problem subject domain.
**CO3.** Ability to work with textual information, characters and strings.
**CO4.** Students will be able to develop logics which will help them to create programs, applications in R.
**CO5.** Also, by learning the basic programming R constructs they can easily switch over to any other Language in future.

**Subject: Differential Geometry**

**CO1:** Learn about the concepts of curvature, torsion, involutes and evolutes.
**CO2:** Familiarize with several concepts of tangent plane, Helicoids, metric and direction coefficients
**CO3:** Understand the concepts of developable surfaces
**CO4:** Use the several notions of curvatures such as geodesic curvature and Gaussian curvatures

**Subject: Algebraic Topology**

**CO1:** Understand the basics of Algebraic Topology.
**CO2:** Determine fundamental groups of some standard spaces like Euclidean spaces and spheres.
**CO3:** Understand proofs of some beautiful results such as fundamental theorem of Algebra and Hurwitz-uniformization theorem.
**CO4:** Understand proofs of beautiful results of Borsuk's separation theorem.

**Subject: Mathematical Modeling & Simulation**

**CO1:** Apply Simulation and Monte Carlo integration.
**CO2.** Apply different models to population dynamics
**CO3.** Apply inverse transform method and convolution method.
**CO4.** Know Markov Chain Monte-Carlo simulation and Metropolis-Hasting's algorithm.

**Subject: Cryptography and Network Security**

**CO1:** These algorithms are then used for cryptographic key generation, digital signing, verification to protect data privacy, web browsing on the internet, and confidential communication like credit card transactions and emails.
**CO2:** Cryptography achieves several information security-related objectives including confidentiality, integrity, and authentication, and non-repudiation. In this post, we explore what these reveal about cryptography.
**CO3:** Cryptography protects the confidentiality of information.
**CO4:** Confidentiality is a key priority when it comes to cryptography. It means that only people with the right permission can access the information transmitted and that this information is protected from unauthorized access at all stages of its lifecycle.

**Subject: Mathematical Biology**

**CO1.** Relate mathematical notions with biological phenomena.
**CO2.** Solve simple biological problems using discussed models.

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**Subject: File Structure and Data Base Management**

**CO1:** Explain the basic concepts of relational data model, entity-relationship model, relational database design, relational algebra and SQL

**CO2:** Improve the database design by normalization and describe the fundamental elements of relational database management systems

**CO3:** Design ER-models to represent simple database application scenarios and convert the ER-model to relational tables, populate relational database and formulate SQL queries on data.

**CO4:** Familiar with basic database storage structures and access techniques: file and page organizations, indexing methods including B tree, and hashing.

**Subject: An Introduction to Fuzzy Logic, Genetic Algorithm & Neural Networks**

**CO1**. This theory helps to solve those problems which are described in linguistic terms.

**CO2.** This theory provides an excellent tool to handle the vagueness in modern science and technology problems such as computer science, economics and medical science by genetic algorithm, neural network.

**CO3.** This theory can be used to make modern systems based on Artificial Intelligence (A.I) and soft computing.

**CO4**. On the basis of this theory many real-life based problems can be solved such as robotics, management etc.

**CO5.** On the basis of the theory be able to apply fuzzy information in decision making.

**Subject: Advanced Discrete Mathematics**

**CO1:** Analyze logical propositions using truth tables.

**CO2:** Understand the concept of lattice.

**CO3:** Learn about the applications of Boolean algebra in switching theory.

**CO4:** Use the concept of planar graphs, trees and study for their properties.

# DEPARTMENT OF MATHEMATICS

## M.Sc. (Mathematics) (Old Course)

### Program Outcomes

**PO1**:- Students will be able to inculcate and develop mathematical aptitude and the ability to think abstractly in the student.
**PO2:**- The course will develop enhanced quantitative skills for pursuing higher mathematics and research as well.
**PO3:**- Students will be able to communicate mathematical ideas in a lucid and effective manner.
**PO4:**- Students will be able to apply their theoretical knowledge to solve the real life problems, like medical, engineering, defence etc.

### Program Specific Outcomes

**PSO1**:- Students will be able to have a strong foundation in core areas of mathematics; both pure and applied.
**PSO2**:- Students will be able to apply mathematical skills and logical reasoning for problem solving.
**PSO3**:- Students will equipped to communicate mathematical ideas effectively, in writing as well as orally.
**PSO4**:- Students will be able to have knowledge of mathematical modeling programming and computational techniques as required for employment in industry.

## M.Sc. (Mathematics) (Old Course) Semester-I

### Course Outcomes

### Course title: Algebra

**CO1:** This course is a core topic for all disciplines that use in higher mathematics and logic
**CO2:** Students will explore the concepts of Polynomial Rings, Unique Factorization Domain, Euclidean Domain, Principal Ideal Domain, Field Extensions, Einstein's Irreducibility Criterion, Galois Extensions etc.
**CO3:** Throughout the course, advanced core standards are taught and reinforced as the student learns how to apply the concepts in real life situations.
**CO4:** The course will develop in the students to become as sophisticated mathematicians.

### Course title: Real Analysis:

**CO1:** This course is designed to consider theoretical foundations of concept of mathematical analysis, and it's derivative, function of several variables, measure theory and integration that have many important applications in different branches of pure and applied mathematics.
**CO2:** This course will help the students to understand the nature of abstract mathematics.
**CO3:** This course will develop the adequate knowledge in students about the behavior of a function in vicinity of a point.
**CO4:** After the completion of this course, the students will become familiar with these concepts and their fruitful applications.

### Course title: Differential Equation:

**CO1:** This course provides some standard methods for solving first order, second order and higher order homogeneous and non-homogeneous equations.
**CO2:** The students will be able to apply various analytical methods for computing solution of the PDE's
**CO3:** The study of this course will enable the students to understand many physical and natural phenomena like conduction of heat, transmission of electric waves etc.
**CO4:** After completion of this course, students will be able to formulate and solve differential equations arising from changes in physical world.

### Course title: Metric space:

**CO1:** This course will help the students to gain proficiency in dealing with abstract concepts to introduce the theory of metric spaces.
**CO2:** The students will become familiar with the fundamental concepts of continuity, convergence, connectedness and compactness.
**CO3:** The students will be able to understand the theory and concepts that grow from idea of distance
**CO4:** This course of metric space provides foundation to other courses like Topology, Measure theory etc.

## M.Sc. (Mathematics) Semester-II

### Course title: Topology

**CO1:** This course serves to lay the foundation for study in analysis and Geometry.
**CO2:** This course will develop the knowledge of topological ideas and techniques in students.
**CO3**: The students will learn the concept of Continuity, connectedness, compactness etc which have many fruitful applications in real life
**CO4:** This course will enable the students to understand the central results of general topology, sufficient for the main applications in geometry, number theory and analysis.

### Course title: Advanced Discrete Mathematics:

**CO1:** This course will prepare the students to develop mathematical foundations to understand and create mathematical arguments.
**CO2:** The students will be able to understand how lattices and Boolean algebra are used as tools and mathematical models in study of networks.
**CO3:** The students will be able to learn how to work with some of the discrete structures which include sets, relations, functions, graphs etc.
**CO4:** After the completion of this course, the students will be able to relate computing theory with applications and to understand the importance of graph algorithms.

### Course title: Measure and Integration:

**CO1:** This course will help the students to recall algebra of sets, open and closed sets.
**CO2:** The students will be able to understand and analyze the concept of measure and measurable sets.
**CO3:** This course will provide the introduction of Lebesgue measure on the set of real numbers.
**CO4:** On successful completion of this course, students will be able to understand the general concept of measure and how measures may be used to construct integrals.

### Course title: Operations Research

**CO1:** This course will develop the problem solving skills of linear programming problems in students.
**CO2:** The students will be able to understand the problems in inventory and queuing theory which will be helpful for them in dealing with real life problems.
**CO3:** The students will also be able to learn the sequencing theory and game theory.
**CO4:** After completion of this course, the students will be able to relate these concepts with real life situations.

## M.Sc. (Mathematics) Semester-III

## Course title: Numerical Analysis

**CO1:** This course will provide the students with the techniques for finding approximate numerical solutions to the mathematical problems for which exact solutions are unavailable.
**CO2:** The students will be able to apply the knowledge of numerical methods to solve the problems arising in the field of science, engineering and economics.
**CO3:** The students will be able to design, analyze and implement the numerical methods for solving different types of problems such as finding roots of the equation, quadrature and numerical solutions of ordinary differential equations.
**CO4:** The students will be able to gain the practical knowledge, how to apply these numerical techniques to the real world problems.

## Course title: Complex Analysis:

**CO1:** This course provides an understanding of the fundamental concept of complex analysis such as Analytic Functions, Cauchy Riemann Equation, Harmonic Functions etc.
**CO2:** The students will become familiar with the complex variable theory.
**CO3:** The students will learn how complex analysis can be used to evaluate real integrals.
**CO4:** The students will be able to solve the problems using complex analysis techniques applied to different situations in engineering and other mathematical contexts.

## Course title: Mathematical Methods

**CO1:** This course will make the students to understand the theory and applications of integral transforms.
**CO2:** The students will be able to learn how the integral transforms can be used to solve a variety of differential equations.
**CO3:** The students will be able to understand the terminology, scope and applications of Fourier analysis and integral equations to solve problems in mathematics, science and engineering.
**CO4:** After the completion of this course, the students will be able to develop their attitude towards problem solving.

## Course title: Mathematical Methods

**CO1:** This course will enable the students to understand the concepts of probability, moment and cumulant generating function, discrete and continuous distributions, correlation and regression.
**CO2:** The student will be able to learn, apply and interpret different statistical methods to the problems in mathematics and engineering.
**CO3:** This course provides a theoretical background to the students for studying advanced statistical methods.
**CO4:** The students will be able to learn the problem solving skills.

## M.Sc. (Mathematics) Semester-IV

## Course title: Number Theory

**CO1:** This course provides an introduction to the elementary number theory such as division algorithm, G.C.D, Diophantine equation etc.
**CO2:** The students will be able to learn the concept of congruences and different number theoretic functions.
**CO3:** The students will be able to understand how certain number theoretical theorems can be applied within cryptography.
**CO4:** At the end of this course, the students will be able to apply the knowledge of number theory and cryptography to attain a good mathematical maturity and to build mathematical thinking and skill.

## Course title: Fluid Dynamics

**CO1:** This course will develop fundamental knowledge and understanding of the mechanics of fluids at rest and in motion.
**CO2:** The students will be able to learn the concept of fluid with its properties and different types of conservation laws
**CO3:** The students will be able to learn different types of equations of motion, and their applications.
**CO4:** The students will be able to formulate problems encountered in different branches of engineering in mathematical form and arrive at useful solutions.

## Course title: Fuzzy sets and its applications:

**CO1:** The students will be able to understand basic knowledge of fuzzy sets and fuzzy logic.
**CO2:** The students will learn to apply fuzzy inferences and fuzzy information in decision making.
**CO3:** The students will be able to understand the theory of possibility on the basis of evidences.
**CO4:** The students will become familiar with the fuzzy logic technology and will be able to apply the same in real life problems.

## Course title: Functional Analysis:

**CO1:** This course will make the students to understand the fundamental concepts of functional analysis and their role in modern mathematics.
**CO2:** The students will be able to learn to apply fundamental theorems from the theory of Normed and Banach spaces.
**CO3:** The students will be able to understand the concept Hilbert spaces.
**CO4:** The students will be able to understand the nature of abstract mathematics and explore the concepts in further details.

# S.D. COLLEGE, MUZAFFARNAGAR

## Department of Physics

## PROGRAMME OUTCOMES , PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES

**PROGRAM: Master of Science (Physics)-Two Years (Semester System)**

| **Department of Physics** | **Two year Post Graduate Degree Program in M.Sc. (Physics)-** |
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| **PROGRAM OUTCOMES** | PO1-To impart high quality education in Physical Sciences.<br>PO2-To prepare students to take up challenges as globally competitive physicists/researchers in diverse areas of theoretical and experimental physics.<br>PO3-To make the students technically and analytically skilled.<br>PO4-To provide opportunity of pursuing high end research as project work.<br>PO5-To give exposure to a vibrant academic ambience.<br>PO6-To create a sense of academic and social ethics among the students.<br>PO7-To prepare them to take up higher studies of interdisciplinary nature |
| **PROGRAM SPECIFIC OUTCOMES** | PSO1-The students will obtain good knowledge in Physical Sciences. They will be trained to Compete national level tests like UGC-CSIR NET, JEST, GATE, etc., successfully.<br>PSO2- They will be prepared to take up challenges as globally competitive physicists/researchers in diverse areas of theoretical and experimental physics.<br>PSO3- They will be technically and analytically skilled enough to pursue their further studies.<br>PSO4- They will have a sense of academic and social ethics.<br>PSO5- They will be capable of taking up higher studies of interdisciplinary nature.<br>PSO6- They will be able to recognize the need for continuous learning and develop throughout for the professional career. |
| **Course-I** | **Mathematical Physics:** |
| **COURSE OUTCOMES** | CO1-Describe differential equation and series solution of ODE.<br>CO2-Knowledge of complex function and evaluation of complex definite integral<br>CO3-Knowledge of transforms and how to use them in solving differential equation.<br>CO4-Students will be able to solve the research problems based on the complex variables and integral of complex functions. |

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| Course-II | Classical Mechanics: |
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| COURSE OUTCOMES | CO1-Describe Newtonian, lagrangian and Hamiltonian mechanics.<br>CO2-Describe the motion in a force field (outral).<br>CO3-Describe transformation and generating functions.<br>CO4- Able to solve the mechanics of dynamical systems using Lagrange's equations of motion for conservative and non-conservative systems through Lagrangian formulation.<br>CO5-Able to understand the variational principle and its application to solve mechanical problems using Lagrangian formulation.<br>CO6-Able to deal with the problem of two bodies moving under the influence of a mutual central force motion. |
| **Course-III** | **Quantum Mechanics:** |
| **COURSE OUTCOMES** | CO1-Knowledge of wave nature of particles and uncertainty principle.<br>CO2-Describe time independent perturbation theory<br>CO3-Knowledge of angular momentum and scattering theory.<br>CO4-Students will be able to understand the physical and mathematical basis of quantum mechanics for non-relativistic systems.<br>CO5-Students will be able to learn mathematical tools needed to develop the formal theory of quantum mechanics.<br>CO6-Students will be able to understand the measurement process in quantum mechanics. |
| **Course-IV** | **Electronic Devices:** |
| **COURSE OUTCOMES** | CO1-Describe conduction mechanism in semiconductor.<br>CO2-Knowledge of diodes (Zener, tunnel etc.) and transistors (BJT & FET)<br>CO3-Describe feedback amplifiers (negative and positive).<br>CO4- To understand the conduction mechanism of elemental and compound semiconductors for designing the electronic components and circuits.<br>CO5- Understanding the basic phenomenon of semiconductors, it can be used for the fabrication of modern devices.<br>CO6- knowledge of semiconductors, junction diodes, transistor biasing, feedback in amplifiers, students may perform better in competitive exams as well as may understand semiconductor and microelectronic Industries. |

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| **Lab Work-1** | CO1-At the end of the laboratory course, each student is expected to understand the basic concepts of electronics/nuclear physics through experiments.<br>CO2-The students will get a better understanding of the concepts studied by them in the theory course and correlate with experimental observations.<br>CO3-The student will gain practical knowledge of designing, assembling, and testing electronics circuits as well as understanding troubleshooting |
| **Research Project-1** | Mini Research project |
| **Course-V** | **Statistical mechanics:** |
| **COURSE OUTCOMES** | CO1-Describe the relationship between thermodynamics and statistical mechanics.<br>CO2-Knowledge of ensembles and Cribb's paradox.<br>CO3-Describe the postulates of quantum statistical mechanics.<br>CO4- Students will be able to calculate the statistical quantities of various systems.<br>CO5-Students will be able to explain the ensemble theory required for macroscopic properties of the matter in bulk in terms of its constituents. |
| **Course-VI** | **Electrodynamics and Plasma Physics:** |
| **COURSE OUTCOMES** | CO1-Describe electrostatic field in matter laplace's equation.<br>CO2-Knowledge of magnetostatic, maxwell's equation and poyr theorem.<br>CO3-Describe plasma, plasma confinement, plasma wave etc.<br>CO3-To develop understanding of field produced by stationary charge distributions in free space, metals and dielectrics in students.<br>CO4-To develop understanding of field produced by steady currents in free space and matter and different behaviour of materials in magnetic field in students. |
| **Course-VII** | **Atomic and Molecular physics:** |
| **COURSE OUTCOMES** | CO1-Describe quantum mechanical treatment of one electron atom and many electrons atom.<br>CO2-Knowledge of molecular spectra and selection rules.<br>CO3-Describe different types of Spectroscopy and spectrometer. |

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| | Develop the ability to conceptually understand the atomic spectra of Hydrogen atoms and similar valence electron atoms.<br>CO4-To understand and interpret the atomic spectra for many electron atoms.<br>CO5-Also, can explain the change in behavior of atoms in external applied electric and magnetic field and corresponding changes in observed spectra.<br>CO6-Gain sufficient understanding of rotational, vibrational, electronic and Raman spectra of molecules.<br>CO7-Develop skill in important material characterization techniques like IR/FTIR, Raman, etc |
| **Course-VIII** | **Nuclear and Particle Physics** |
| **COURSE OUTCOMES** | CO1-Understand basic concept of nucleus and nuclear disintegration.<br>CO2-Understand the salient features of nuclear forces.<br>CO3-Understand the classification of various interaction and conservation law and practical physics.<br>CO4-Students will be more enlightened with the study of nuclear Physics and ready to go for further study.<br>CO5-This course will be useful to understand different aspects of nuclear physics.<br>CO6-This course will give a better insight which will be a good boost for the students. |
| **Lab Work-2** | CO1-At the end of the laboratory course, each and every student is expected to understand the basic concepts of electronics/nuclear physics through experiments.<br>CO2-The students will get a better understanding of the concepts studied by them in the theory course and correlate with experimental observations.<br>CO3-The student will gain practical knowledge of designing, assembling and testing electronics circuits as well as understanding troubleshooting.<br>CO4-The student would be equipped with an in-depth knowledge of Physics that can be applied in higher studies in every field of Physics. |
| **Research Project-2** | Mini Project-2 |

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| **Course-IX** | **Condensed matter physics:** |
| **COURSE OUTCOMES** | CO1-Understand the different concept of different type of solids and structure of solids in three dimensions.<br>CO2-Understand different types of crystal imperfection.<br>CO3-Understand X-ray diffraction and methods to know the structure of solid by different methods.<br>CO4-Explain band theory of solid and effective mass of solid and basic idea about superconductivity meissner effect.<br>CO5-Formulate Weiss theory of ferro, ferri and antiferro magnetic order. |
| **Course-X** | **Nuclear and Particle Physics** |
| **COURSE OUTCOMES** | CO1-Understand basic concept of nucleus and nuclear disintegration.<br>CO2-Understand the salient features of nuclear forces.<br>CO3-Understand the classification of various interaction and conservation law and practical physics.<br>CO4-Students will be more enlightened with the study of nuclear Physics and ready to go for further study.<br>CO5-This course will be useful to understand different aspects of nuclear physics.<br>CO6-This course will give a better insight which will be a good boost for the students. |
| **Course-XI** | **Special paper of electronics I** |
| **COURSE OUTCOMES** | CP1-Explain Op-amplifier and uses in different ways.<br>CO2-Understand various logic gates and CMOS.<br>CO3-Explain different number system and Boolean logic gate theorem and also application of digital logic gates.<br>CO4-Understand the microprocessor. |
| **Course-XII** | **Special Paper of Electronics II** |
| **COURSE OUTCOMES** | CO1-Understand different microwave devices.<br>CO2-Explain different type of modulation such as amplified frequency modulation.<br>CO3-Understand transmission and radiation of signal, telephone lines, cable and radio frequency line. |

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| | CO4-Understand fiber optic communication system. |
| **Lab Work** | CO1-At the end of the laboratory course, each student is expected to understand the basic concepts of electronics through experiments.<br>CO2-The students will get a better understanding of the concepts studied by them in the theory course and correlate with experimental observations.<br>CO3-The student will gain practical knowledge of designing, assembling, and testing electronics circuits as well as understanding troubleshooting.<br>CO4-The student would be equipped with an in-depth knowledge of Electronics that can be applied in higher studies in every field of Electronics |
| **Course-XIII** | **Numerical Methods with Programming** |
| **COURSE OUTCOMES** | CO1- Write arithmetic programs and Perform data handling in the MATLAB environment.<br>CO2-Solve the linear and non-linear algebraic equations, Eigen value problems, curve fitting and numerical solution of ordinary differential equations.<br>CO3-Solve numerical integration & differentiation, curve fitting, Numerical solution of ordinary equations.<br>CO4-The course will impart skills for development of codes/programs required in software development |
| **Course-XIV** | **Physics of Nanomaterials** |
| **COURSE OUTCOMES** | CO1-Students may understand the basics of nano science and fundamental concepts behind size reduction in various properties of materials.<br>CO2-Students may understand the phenomena of size dependence of physical properties.<br>CO3-Students may understand Quantum Confinement in different dimensions.<br>CO4-Students will be able to synthesize the nanomaterials using Top down and bottom-up approaches.<br>CO5-Students will be able to understand the characterization techniques of nano structures. |
| **Course-XV** | **Electronics-Special Paper-III Digital Communication** |

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| **COURSE OUTCOMES** | CO1-Understand the performance of a base band and pass band digital communication system in terms of error rate and spectral efficiency.<br>CO2- Analyze microwave networks and measure their parameters. CO3-Explain the working and application of various microwave devices.<br>CO4-Understand Satellite orbital mechanics and its parameters.<br>CO5-Describe satellite subsystems and design link power budget for satellites. |
| **Course-XVI** | **Electronics-Special Paper-IV (VLSI-Technology)** |
| **COURSE OUTCOMES** | CO1-After completion of course, the students will learn about integrated circuits (ICs) and technology.<br>CO2-Students will understand the theory and experimental background of all the actual processes like; wafer fabrication, doping, and pattern transfer, etc. used in IC fabrication.<br>CO3-Students will also learn about exact deposition of thin films of metal, oxides and photoresists, wet/dry etching, and finally the isolation, interconnection, testing and packaging.<br>CO4-The students will be able to design electronic circuits and devices for semiconductor/microelectronics industry purposes and course will impart skills for direct employability. |
| **Lab Work-II** | CO1-At the end of the laboratory course, every student is expected to understand the basic concepts of electronics through experiments.<br>CO2-The students will get a better understanding of the concepts studied by them in the theory course and correlate with experimental observations.<br>CO3-The student will gain practical knowledge of designing, assembling, and testing electronics circuits as well as understanding troubleshooting.<br>CO4-The student would be equipped with an in-depth knowledge of Electronics that can be applied in higher studies in every field of Electronics. |

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# S.D.COLLEGE, MUZAFFARNAGAR
## Department of Political science

**PROGRAMME OUTCOMES ,**
**PROGRAMME SPECIFIC OUTCOMES**
**& COURSE OUTCOMES**

**COURSE : M.A. (POLITICAL SCIENCE)- TWO YEAR (SEMESTER SYSTEM)**

| PROGRAM OUTCOMES | PROGRAM SPECIFIC OUTCOMES |
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| PO1-: Develop conceptual clarity of major theories and concepts of Political Science and related sub-fields.<br>PO2: Comprehend how power operates at different levels: personal/social/domestic and international and their interconnectedness.<br>PO3: Analyse public policy formulations, implementation, problems, and available public policy choices.<br>PO4: Develop critical thinking, and articulate arguments on key issues of public policy and politics.<br>PO5: Demonstrate competency in basic social science research techniques and methods including qualitative and quantitative methods of research design and techniques | PSO1: Prepare the students to understand the working of the Indian constitution and its operation at the central and state level.<br>PSO2: Make students understand and analyze the operation of power politics at state, national, regional, and global levels<br>PSO3: Give the student career options in higher studies in fields related to public policy, international politics, and law, gender studies, development studies, Environmental and sustainable development, law, and survey research.<br>PSO4: The program prepares the students the undertake research projects/surveys.<br>PSO5: Formulate socially relevant research proposals and presentations. |

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| YEAR | SEMESTER | After completion of two years degree in M.A. (Political science), students will understand- | |
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| 1 | I | COURSE-I | WESTERN POLITICAL THOUGHT |
| | | COURSE OUTCOMES | After the successful completion of this course, the student shall understand comprehend and analysed various aspects and dimensions of the western political thought |
| 1 | I | COURSE-II | CONTEMPORARY POLITICAL THEORY |
| | | COURSE OUTCOMES | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of the contemporary political thought. |
| 1 | I | COURSE-III | RESEARCH METHODOLOGY |
| | | COURSE OUTCOMES | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of the research methodology. |
| 1 | I | COURSE-IV | ANCIENT INDIAN POLITICAL THOUGHT |
| | | COURSE OUTCOMES | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of ancient Indian political thought. |
| 1 | II | COURSE-V | POLITICAL SOCIOLOGY |
| | | COURSE OUTCOMES | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of Political Sociology. |
| 1 | II | COURSE-VI | POLITICAL THINKING SINCE MARX |
| | | COURSE OUTCOMES | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of Political thinking since Marx. |
| 1 | II | COURSE-VII | COMPARATIVE POLITICS |

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| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of Political thinking since Marx. |
| **1** | **II** | **COURSE-VIII** | **INDIAN CONSTITUTIONAL SYSTEM** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of Political thinking since Marx. |
| **2** | **III** | **COURSE-IX** | **PUBLIC ADMINISTRATION** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of Political thinking since Marx. |
| **2** | **III** | **COURSE-X** | **INTERNATIONAL POLITICS** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of Political thinking since Marx. |
| **2** | **III** | **COURSE-XI** | **POLITICS IN INDIA** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of politics in India. |
| **2** | **III** | **COURSE-XII** | **MODERN INDIAN POLITICAL THOUGHT** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of modern Indian political thought. |
| **2** | **IV** | **COURSE-XIII** | **CONCEPT AND ISSUES IN POLITICAL SCIENCE** |

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| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of concepts and issues in political science. |
| **2** | **IV** | **COURSE-XIV** | **POST COLD WAR INTERNATIONAL POLITICS** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of post cold war international politics. |
| **2** | **IV** | **COURSE-XV** | **STATE POLITICS WITH SPECIAL REFERENCE TO U.P.** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of state politics with special reference to U.P. |
| **2** | **IV** | **COURSE-XVI** | **INDIAN ADMINISTRATION** |
| | | **COURSE OUTCOMES** | After the successful completion of this course, the student shall understand comprehend and analyze various aspects and dimensions of Indian administration. |

# S.D. COLLEGE, MUZAFFARNAGAR
## Department of Sanskrit

**PROGRAM: Department of Sanskrit Two Years (Semester System)**

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| **Department of Sanskrit** | **Two year Post Graduate Degree Program in M.A. (Sanskrit)** |
| **Course-I (0710201)** | **वेदोपनिषद्निरुक्तञ्च।:** |
| **अधिगम- उपलब्धय:** | 1. विद्यार्थिनो वैदिकवाङ्मयस्य संस्कृतेश्च ज्ञानं प्राप्स्यन्ति।<br>2. औपनिषदिकसंस्कृतिं प्रति गौरवपूर्णा: भविष्यन्ति।<br>3. वेदोक्तसन्देशै: मूल्यैश्च छात्राणाम् आचरणम् उदात्तं भविष्यति।<br>4. उपनिषदां परिचयं प्राप्स्यन्ति, उपनिषत्सु निहितान् उपदेशान् बोधिष्यन्ति।<br>5. औपनिषदिककर्मसंयमभक्तित्यागपरकभावै: भाविता: भविष्यन्ति।<br>6. वैदिकसूक्तानामध्ययनेन विद्यार्थिन: अध्यात्म-समाज-राष्ट्रविषये जागरिष्यन्ति. |
| **Course-II (0710202)** | **गद्यकाव्यं गीतिकाव्यं चम्पूकाव्यञ्च:** |
| **अधिगम- उपलब्धय:** | 1. विद्यार्थिन: संस्कृतस्य गद्य-पद्यचम्पूविधा: सम्यक् परिचेष्यन्ति।<br>2. संस्कृतगीतिकाव्यस्य सुगेयताया: बोधं प्राप्स्यन्ति।<br>3. छात्राणां काव्येषु प्रयुक्तानां रस-छन्दस्-अलंकाराणाम् अवगमनसामर्थ्यं विकसिष्यति।<br>4. काव्येषु आगतानां सूक्तीनां पठनेन पाठकानां नैतिकं चारित्रिकञ्च उन्नयनं भविष्यति।<br>5. गद्यपद्यचम्पूकाव्याध्ययनेन तेषां शब्दकोशो वृद्धिमेष्यति, सहैव संस्कृतश्लोकानां शुद्धोच्चारणे सस्वरगाने च नैपुण्यमवाप्स्यन्ति।<br>6. पाठ्यविषयस्य तात्कालिकीं संस्कृतिं ज्ञातुं समर्था: भविष्यन्ति। |
| **Course-III (0710203)** | **भारतीयदर्शनम्- न्यायवैशेषिकंसांख्यञ्च** |
| **अधिगम- उपलब्धय:** | 1. विद्यार्थिनः दर्शनसाहित्यस्य परिचयं प्राप्य विविधदर्शनानां वर्गीकरणस्य सामर्थ्यमवाप्स्यन्ति, तेषां मुख्यतत्त्वैश्च परिचिताः भविष्यन्ति ।<br>2. पाठ्यक्रमे निर्धारितप्रकरणग्रन्थेषु निहितानां मुख्यसिद्धान्तानाम् अवधारणानाञ्च आलोचनात्मके विश्लेषणे सक्षमाः भविष्यन्ति।<br>3. दार्शनिकाचार्याणां योगदानमवगमयन्तो विद्यार्थिनो व्यवहारे तेषां |

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| | सिद्धान्तानाम् उपयोगितां परिचेष्यन्ति।<br>4. जीवने दर्शनराद्धान्तानां महत्वमनुभूय सुव्यवस्थिते उन्नते राष्ट्रनिर्माणे कृतधियो भवेयुः। |
| **Course-IV (0710204)** | **शोध-प्रविधिः** |
| **अधिगम- उपलब्धयः** | 1. कः शोधः? किं विधिः शोधस्य? कस्यापि शोधविषयस्य चयनं कथं कुर्यात् शोधार्थी? विषयं चेतुं किं किम् अवधेयं विशेषतया, एतादृशाः बहवः प्रश्नाः, येषां समाधानं शोधकरणाय अपरिहार्यम् ।<br>2. शोधसंबद्धानां विविधग्रन्थानां संकलनं कथं कुतश्च कर्तुं शक्यते इत्यपि ज्ञानं शोधप्रविधिपठनेन भवति।<br>3. संस्कृतशोधस्य पुरातनानां नूतनानां क्षेत्राणां परिचयं प्राप्स्यन्ति ।<br>4. शोधस्य महतां परिज्ञाय छात्राः शोधकार्यार्थं समुत्सुकाः भविष्यन्ति।<br>5. संस्कृतशोधक्षेत्रे संगणक-उपयोगः अतीवसहायकः इत्यपि ज्ञास्यन्ति। |
| **परियोजनात्मकं कार्यम् (0710265)** | 1. विद्यार्थिषु शोधपरा दृष्टिः विकसिष्यति ।<br>2. शोधकार्यं प्रति छात्राणां रुचिर्जागरिष्यति ।<br>3. शोधस्य अनन्ताभिः संभावनाभिः परिचिताः भविष्यन्ति।<br>4. शोधकार्यं प्रति आत्मविश्वास आगमिष्यति विद्यार्थिषु ।<br>5. उत्तमानुसंधानकार्यस्य विविधाभिः विधाभिः सुपरिचिताः भूय उत्कृष्टशोधे संलग्नाः भविष्यन्ति। |
| **Course-V (0810201)** | **संस्कृतमहाकाव्यम्-इतिहासश्चः** |
| **अधिगम- उपलब्धयः** | 1. विद्यार्थिनः संस्कृतमहाकाव्यानां महतीपरम्परायाः ज्ञानं प्राप्स्यन्ति।<br>2. पद्यसाहित्यस्य सुगीतात्मतायाः सौन्दर्यबोधं कर्तुं शक्ष्यन्ति।<br>3. काव्ये निहितानां रस-छन्दस्-अलंकारादितत्त्वानां परिशीलनयोग्यताम् अवाप्स्यन्ति।<br>4. तत्र विद्यमानानां सूक्तीनां सुभाषितवाक्यानाञ्च माध्यमेन विद्यार्थिनां नैतिकी |

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| | चारित्रिकी च उन्नतिर्भविष्यति।<br>5. तेषां शब्दकोषे समृद्धिर्भविष्यति अपि च संस्कृतश्लोकानां शुद्धोच्चारणकौशले निपुणाः भविष्यन्ति।<br>6. सम्बन्धितमहाकाव्यकालस्य सामाजिकसंस्कृतेः परिचयं प्राप्स्यन्ति। |
| **Course-VI (0810202)** | **संस्कृतकाव्यशास्त्रम्** |
| **अधिगम- उपलब्धयः** | 1. विद्यार्थिनः संस्कृतकाव्यशास्त्रस्य प्रमुखग्रन्थानां काव्यशास्त्रकाराणां च परिचयं प्राप्स्यन्ति।<br>2. काव्यस्वरूपं काव्यभेदान् च विज्ञाय काव्यस्य मूलभूततत्त्वानां बोधम् अवाप्स्यन्ति।<br>3. रसस्य समुचितव्याख्यां ज्ञात्वा काव्यरसास्वादननैपुण्यं प्राप्स्यन्ति।<br>4. अलंकाराणां परिशीलनेन विविधकाव्येषु समागतान् अलंकारान् ज्ञातुं शक्ष्यन्ति।<br>5. काव्शास्त्रीय- सिद्धान्तावबोधनेन अस्मिन् विषये शोधकार्यं प्रति रुचिर्जागरिष्यति।<br>6. कवित्वशक्तेः परिष्कारः संवर्धनं च भविष्यति। |
| **Course-VII (0810203)** | **व्याकरण-निबन्धानुवादश्च** |
| **अधिगम- उपलब्धयः** | 1. व्याकरणं समेषां शास्त्राणामाधारभूतम्।<br>2. व्याकरणज्ञानेन अन्येषां ग्रन्थानामध्ययने सौकर्यं भविष्यति।<br>3. विभक्तिज्ञानेन संस्कृतसम्भाषणं सरलं जायते।<br>4. कारकपठनं साहित्यप्रवेशाय आवश्यकम्।<br>5. निबन्धाध्ययनेन कस्मिन्नपि विषये सुदृढाः सूचनाः लभन्ते पठकाः।<br>6. साहित्ये प्रवेशाय अनुवादः आधारस्तम्भः। |

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| | 7. उपपदविभक्तीनां ज्ञानं भाषां सुदृढीकरोति। |
| **Course-VIII (0810204)** | **योग: प्राकृतिक-चिकित्सा च** |
| **अधिगम- उपलब्धय:** | 1. आरोग्यं विना न किमपि सिध्यति 'शरीरमाद्यं खलु धर्मसाधनम्'।<br>2. विद्यार्थिनो योगस्य प्राकृतिकचिकित्सायाश्च सिद्धान्तानां विषये ज्ञास्यन्ति।<br>3. योगविद्यायां प्राकृतिकचिकित्सायाञ्चागता: स्वास्थ्यस्य रोगस्य अवधारणा: सम्यक्तया स्पष्टं कर्तुं शक्ष्यन्ति।<br>4. प्राकृतिकचिकित्सायां वर्णितान् उपचारविधीन् अवगमिष्यन्ति।<br>5. प्रोत्साहक-निवारक-उपचारात्मक- पुनर्वासचिकित्सायां योग-प्राकृतिकचिकित्सायाश्च उपचारात्मकपक्षम् उपयोक्तुं शक्ष्यन्ति ।<br>6. प्रौद्योगिक-क्षेत्रे आयुर्वैदिकचिकित्सकरूपेण,फिटनेस वेलनेस कोच इति नाम्ना प्रसिद्धाम् आजीविकां प्राप्तुं शक्ष्यन्ति। |
| **बृहद्-शोधपरियोजना (सप्तमसत्रस्य पंचमप्रश्नपत्रे कृतस्य कार्यस्य अनुवर्तनम्) (0810265)** | 1. विद्यार्थिषु शोधपरा दृष्टिः विकसिष्यति।<br>2. शोधकार्यं प्रति छात्राणां रुचिर्जागरिष्यति ।<br>3. शोधस्य अनन्ताभिः संभावनाभिः परिचिताः भविष्यन्ति।<br>4. शोधकार्यं प्रति आत्मविश्वास आगमिष्यति विद्यार्थिषु।<br>5. उत्तमानुसंधानकार्यस्य विविधाभि: विधाभि: सुपरिचिता: भूय उत्कृष्टशोधे संलग्ना: भविष्यन्ति। |
| **Course-IX (G-3082)** | **G-3082 सं िहता िनoj (Sanhita, Nirukt)** |
| **अधिगम- उपलब्धय:** | 1. विद्यार्थिन: समृद्धाया: दर्शनसाहित्यपरम्पराया: परिचयं प्राप्स्यन्ति।<br>2. षड्दर्शनपरम्परायां वर्तमानानां वेदान्त-मीमांसा-योगदर्शनानां विशिष्टज्ञानं भविष्यति।<br>3. अनेन अध्ययनेन आध्यात्मिकमूल्यानाम् अवबोध: जागरिष्यति। |

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| | 4. योगशास्त्रस्य आध्यात्मिकीं व्यावहारिकीं च महत्तामवगमिष्यन्ति।<br>5. अस्य ज्ञानस्य महत्त्वं विज्ञाय जीवनं सौकर्येण जीवनाय प्रेरिताः भविष्यन्ति। जीवने सकारात्मक-दृष्टिकोणस्य विकासो भविष्यति। |
| **Course-X (G-3083)** | **p◌िनq◌ापनं ^rनाq◌ापनं तथा का^शाY◌ीयं षट्"q◌ानाि◌न (Dhwani, Vyanjana Sthapan & Kavyashastriy Shat Prasthan)** |
| **अधिगम- उपलब्धयः** | 1. समासाध्ययनं भाषाज्ञानाय अपरिहार्यम्।<br>2. साहित्यबोधे समासज्ञानं साहाय्यं प्रददाति।<br>3. समासाध्ययनं लेखनकौशलं विकासयति, भाषां परिमार्जयति।<br>4. भाषाविज्ञानेन विश्वस्य भाषाणाम् उत्पत्तेः, विकासस्य च इतिहासो ज्ञायते।<br>5. विश्वैक्योत्पादने भाषाविज्ञानं सहायकं भवितुमर्हति। शब्दानां मूल-अर्थावबोधने भाषाविज्ञानमाधारभूतम्। |
| **Course-XI (3084)** | **भाषाि◌वu◌ान सं ◌ृ त^◌ाकरणj (Linguistics & Sanskrit Grammer)** |
| **अधिगम- उपलब्धयः** | 1. विद्यार्थिनः प्रमुखग्रन्थैः ग्रन्थकारैश्च परिचिताः भविष्यन्ति।<br>2. गुणीभूतव्यङ्ग्यं तद्भेदांश्च ज्ञास्यन्ति।<br>3. व्यञ्जनास्थापनायाः सिद्धान्तेषु कतिपयान् सिद्धान्तान् बोधिष्यन्ति।<br>4. के रसदोषाः ? कतिविधाश्च ते ? इति सम्यक् ज्ञास्यन्ति।<br>5. काव्यरचनाकाले अपघातकतत्त्वैः विरताः भविष्यन्ति।<br>6. काव्यभेदैः वैशिष्ट्यैश्च अवगताः भविष्यन्ति। स्वकीयरचनायां गुणालंकाराणां सम्यक् संयोजनं करिष्यन्ति। |
| **Course-XII (G-782)** | "◌ायोि◌गकी एवं मौि◌खकी (Practical and Viva-Voce) |
| **अधिगम- उपलब्धयः** | 1. विद्यार्थिनो वैदिकवाङ्मयस्य संस्कृतेश्च विशिष्टं ज्ञानं प्राप्स्यन्ति। |

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| | 2. वैदिकीं संस्कृतिं भारतीयप्राचीनज्ञानं प्रति गौरवान्विता: भविष्यन्ति।<br>3. वेदोक्तसन्देशै: मूल्यैश्च आचरणस्य उदातता आगमिष्यति।<br>4. वेदाङ्गानां परिचयेन सह विषयवस्तुनो ज्ञानं भविष्यति। वैदिकसूक्तानां माध्यमेन विद्यार्थिनां ज्ञानक्षेत्रं वर्धिष्यते। |
| **Course-XIII (G-4082)** | **भारतीयं दशSनम् (वेदाJ-योग-मीमांसादश:नम्) (Indian Philosophy) (Vedant, Yog & Mimansa Darshan)** |
| **अधिगम- उपलब्धय:** | 1. विद्यार्थिनो रूपकनाट्यशास्त्रयो: विशिष्टं ज्ञानं प्राप्स्यन्ति।<br>2. संस्कृतनाट्यसाहित्यम् विज्ञातुं समर्था: भविष्यन्ति।<br>3. नाटकस्य पारिभाषिकशब्दावल्या: सुपरिचिता: भविष्यन्ति।<br>4. नाटके प्रयुक्तानां रस-छन्दोऽलंकाराणां ज्ञानं लप्स्यन्ते।<br>5. संवादे अभिनये च पाटवम् अवाप्स्यन्ति।<br>6. नूतनपदज्ञानेन विद्यार्थिनां शब्दकोशो वृद्धिमेष्यति। |
| **Course-**XIV (G-4083) | **धमSशाYम् अथSशाYj (Dharm Shastr & Arth Shastr)** |
| **अधिगम- उपलब्धय:** | 1. धर्मशास्त्रस्य अर्थशास्त्रस्य च विविधविषयाणां बोधो भविष्यति।<br>2. विद्यार्थिन: प्राचीनन्यायव्यवस्थाया: राजनीतेश्च परिचयं प्राप्स्यन्ति।<br>3. पाठ्यक्रमानुशीलनेन वर्तमानसमये अस्य ज्ञानस्य उपादेयताया: विषये चिन्तनं कर्तुं शक्ष्यन्ति।<br>4. रामायणस्य सांस्कृतिकं सामाजिकं राजनैतिकं च महत्त्वं ज्ञास्यन्ति<br>महाभारते प्रतिपादितानां धर्म-दर्शनादीनां ज्ञानं भविष्यति । |
| **Course-XV (G-4084)** | **|ा}णं "ाितशा~ं िनgoj (Brahman Pratishakhy & Nirukt)** |
| **अधिगम- उपलब्धय:** | 1. ब्राह्मणग्रन्थेषु वर्णितयागादिपरम्परायाः ज्ञानं भविष्यति ।<br>2. वैदिकव्याकरणस्यस्वराणां च ज्ञानेन मन्त्रोच्चारणं शुद्धं लाभप्रदञ्च भविष्यति। |

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| | 3. विद्यार्थिनः मन्त्राणाम् अर्थावगमनेन निरुक्तं सम्यक् ज्ञास्यन्ति।<br>4. विविधशब्दानां निर्वचनं ज्ञात्वा भाषाविज्ञानपरं नैपुण्यमवाप्स्यन्ति।<br>5. निरूक्तमधीत्य शब्दभण्डारे अपि वृद्धिर्भविष्यति। |

विद्ययामृतमश्नुते

# S.D. COLLEGE, MUZAFFARNAGAR
## DEPARTMENT OF ZOOLOGY

Programme Outcomes ,
Programme Specific Outcomes
& Course Outcomes

of

**PROGRAM: Master of Science (Zoology)-Two Year (Semester System)**

| Year | Semester | Department of Zoology | Two year Post Graduate Degree program in M.Sc. Zoology |
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| | | **PROGRAM OUTCOMES** | PO1-The programme equipped the students with both classical and modern aspects of Zoology in various areas.<br>PO2-It enabled students to cope with the challenges arising out of the complexities and limitations of the biological system.<br>PO3-The students performed various experiments related to water quality analysis and air quality analysis to analyze the level of pollution and take appropriate measures.<br>PO4-The students prepared a collection of different insects by using specific insect collecting techniques and maintained insect boxes as well as insect cabinets.<br>PO5-The students applied their knowledge from the programme to prepare temporary/permanent mounts of animals and tissues to study their anatomical as well as physiological aspects.<br>PO6-The students displayed their creativity through charts, assignments and projects which made them both scholastically as well as innovatively sound.<br>PO7-The students can state the principles, concepts of bionomics of insects, their behaviour patterns, and their applied aspects in pest control and management |

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| | | **PROGRAM SPECIFIC OUTCOMES** | PSO1-The programme helped students in demonstrating the facts and concepts of Entomology, Fish and Fisheries, Parasitology and Endocrinology and Reproductive Physiology.<br>PSO2-The programme helped students to identify and understand disease-producing parasites and related diagnoses and medicines regarding human and animal health.<br>PSO3-The programme helped students to characterize different species of insects, harmful and useful insects and their application in agriculture, human health, veterinary and ecology.<br>PSO4-The programme enabled students to understand life-environment interaction.<br>PSO5-The students could illustrate the intricacies of the subject at the advanced level and develop the skills to opt for research programs.<br>PSO6-The students explored newer areas such as conservation and management of the animal kingdom to save and protect our biodiversity.<br>PSO7-The programme created awareness amongst students about maintaining human health and controlling epidemic diseases.<br>PSO7-The students interacted and suggested farmers for protection of crops from various harmful insects and pests in order to enhance the crop productivity. |
| **1** | **I** | **Course-I** | **Biosystematics and Evolution** |
| | | **Course outcome** | CO1-Taxonomy also known as Systematic biology will help the students to have a broad knowledge of classification, cladogenesis and speciation.<br>CO2-Phylogenetic taxonomy will aid in understanding and reconstruction of the phylogeny of life.<br>CO3-Evolution or evolutionary biology aims to impart the concept of evolutionary thoughts that lead to the evolution of the life on earth from most simple to complex forms along with the mechanism and function of various evolutionary factors and forces<br>CO4-Students will become master in the identification of histological structure, their arrangements, and physiological aspects. |
| **1** | **I** | **Course-II** | **Diversity of Invertebrates** |
| | | **Course outcome** | CO1-Invertebrates are the numerous and widely diverse group of animals from protozoa to Echinodermata.<br>CO2-The course will explain the diversity of invertebrates and comparison of various morphological, physiological phenomenon and adaptations in various phyla. This will help and enable the students to take up the research in life sciences. |

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| | | | CO3-In Economic zoology various types of economically important cultures have been given place to enable the students to be skilled in these and in future can start their own business.<br>CO4-Along with it various types of pest and pest management programmes are also included to impart the broad knowledge and to arm the students to deal with the menace of pests. |
| **1** | **I** | **Course-III** | **Biotechniques and Bioinstrumentation** |
| | | **Course outcome** | CO1-The students at the end of course will have a deep insight into various biotechniques and enable them to apply these in their future researches.<br>CO2-The course is expected to provide sufficient information to enable the students to select a technique that would be appropriate for a particular analysis and would help them to develop a valid and reliable analytical method.<br>CO3-They will also able to start their own biotechniques research labs, a further step towards self- employment. |
| **1** | **I** | **Course-IV** | **Cell and Molecular Biology** |
| | | **Course outcome** | CO1-Explain the structure and functions of cell organelles involved in diverse cellular processes.<br>Comprehend the process of cell signaling and its role in cellular functions.<br>CO2-Have an insight into how defects in the functioning of cell organelles and regulation of cellular processes can develop into diseases.<br>CO3-Learn the advances made in the field of cancer biology and its applications. |
| **1** | **II** | **Course-V** | **Genetics** |
| | | **Course outcome** | CO1-Get an in-depth understanding of the principles and mechanisms of inheritance<br>CO2-Understand the fine structure and molecular aspects of genetic material<br>CO3-Expose the learners to the emerging field of bioinformatics and equip them to take up bioinformatic studies.<br>CO4-Acquire concept behind the genetic disorder, gene mutations, various causes associated with inborn errors of metabolism.<br>CO5-Understand the mechanism of phenotypic expression in Drosophila. |
| **1** | **II** | **Course-VI** | **Biochemistry** |
| | | **Course outcome** | CO1-Upon completion of the course, students should be able to: Gain knowledge and skill in the fundamentals of biochemical sciences, interactions and interdependence of physiological and biochemical processes.<br>CO2-Comprehend the energy source, chemical bonds, principles of thermodynamics, and understand the importance of acid-base balance. |

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| | | | CO3-Attain knowledge of macromolecules such as carbohydrates, protein and fat, their types and significance.<br>CO4-Describe the enzymes, mechanism of enzyme action, and factors affecting the enzyme activity.<br>CO5-Demonstrate foundation knowledge in biochemistry; synthesis of proteins, lipids, nucleic acids, and carbohydrates; and their role in metabolic pathways along with their regulation.<br>CO6-Know about classical laboratory techniques, use modern instrumentation, design and conduct scientific experiments, and analyze the resulting data. |
| **1** | **II** | **Course-VII** | **Biostatistics and Bioinformatics** |
| | | **Course outcome** | CO1- The course will lead to comprehensive understanding of the principles and various practices of biotechnology.<br>CO2- The aim will be to produce the responsible biotechnologists. Bioinformatics is the emerging branch in the field of life science.<br>CO3- The course covers the principles and computational methods used to search and compare the DNA, RNA and proteins cast as biological sequences.<br>CO4- This will also help in the field of evolutionary biology to solve the mystery evolutionary relationship among different species. |
| **1** | **II** | **Course-VIII** | **Mammalian Physiology** |
| | | **Course outcome** | CO1-Understand the mechanisms that work to keep the animal body alive and functioning.<br>CO2-Students are taught the detailed concepts of digestion, respiration, excretion, the functioning of nerves and muscles, cardiovascular, endocrine, and reproductive systems.<br>CO3-Acquire knowledge of neuromuscular coordination and the mechanism of osmoregulation in animals and the endocrine system and their function is attained.<br>CO4-Students will learn about different human systems and their physiological processes to help them understand any abnormalities or diseases caused by metabolic errors.<br>CO5-Understand how animals maintain an internal homeostatic state in response to changes in their external environment. |
| **2** | **III** | **Course-IX** | **Chordata** |
| | | **Course outcome** | CO1-Understand different classes of chordates, level of organization and evolutionary relationship between different subphyla and classes, within and outside the phylum.<br>CO2-Appreciate similarities and differences in life functions among various groups of animals in Phylum Chordata.<br>CO3-Comprehend the circulatory, nervous and skeletal system of chordates.<br>CO4-Know about the habit and habitat of chordates in marine, freshwater and terrestrial ecosystems. |

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| 2 | III | Course-X | **Developmental Biology** |
| | | **Course outcome** | CO1-Understand the process of organogenesis of selected organs, the development of extra-embryonic membranes and the nature and physiology of placenta.<br>CO2-Preparation, direct observation and appreciation of sperm motility and different stages of chick embryo development and placentation of animals.<br>CO3-Describe the general patterns and sequential developmental stages during embryogenesis, and understand how the developmental processes lead to the establishment of the body plan of multicellular organisms.<br>CO4 Discuss the general mechanisms involved in morphogenesis and explain how different cells and tissues interact in a coordinated way to form various tissues and organs.<br>CO5-Know the process of aging leading to interventions that can improve the overall health and quality of life in aged people. |
| 2 | III | Course-XI | **Environmental Biology** |
| | | **Course outcome** | CO1-Understand and appreciate the environment and ecological services of life on earth.<br>CO2-Get a know-how of the abiotic factors of the environment and biogeochemical cycle and intraspecific relationships of animals.<br>CO3-Acquire knowledge of the ecosystem, food chain, energy flow and productivity and understood pond as a model ecosystem<br>CO4-Impart knowledge of habitat ecology, pollution and bioremediation of polluted environment |
| 2 | III | Course-XII | **Animal behaviour** |
| | | **Course outcome** | CO1-By the completion of this course, students will be expected to gain a comprehensive understanding of the behaviour of animals.<br>CO2-They will understand the proximate controls of behaviour including the role ofhormones, the animal's genotype, and the animal's environment in the development of behaviour.<br>CO3-Relate animal behaviour with other subjects such as Animal biodiversity, Evolutionary biology, Ecology, Conservation biology and the Genetic basis of the behaviour.<br>CO4-Gain fundamental knowledge in the concepts of animal behaviour which enable the student toconceptualize learning, communication, migration and biological rhythms. |
| 2 | IV | Course-XIII | **Morphology and taxonomy of insects** |
| | | **Course outcome** | CO1-Understand the general principles of insect taxonomy, insect identification,affinities of different orders of Apterygota and Pterygota with special |

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| | | | reference to Exopterygotes and Endopterygotes.<br>CO2-Acquire knowledge about the detailed classification and district features of different insectsorders.<br>CO3-Develop skills in insect collection, rearing, preservation and maintenanceof the insect museum and publication.<br>CO4-Comprehend the structural organization of insect morphology of different bodyparts and appendages. |
| 2 | IV | Course-XIV | **Anatomy and Physiology of Insects** |
| | | Course outcome | CO1-Comprehend insect physiology, the working mechanism of effector organs as light andsound production in insects.<br>CO2-Understand the neuroendocrine scenario controlling different physiological andmetabolic activities including development and metamorphosis.<br>CO3-Explain the male and female reproductive physiology, their significance andways to develop control and management of insect pests.<br>CO4-Develop a better understanding of embryological studies related to embryonicdynamics. |
| 2 | IV | Course-XV | **Applied Entomology I** |
| | | Course outcome | CO1-Develop a deep understanding pertaining to the origin, evolution, and distribution ofinsects in time and space with special reference to oriental regions.<br>CO2-Understand the impact of environmental conditions on insect biology and the interactions related to host plant selection.<br>CO3-Describe the interaction between insects and its environment along with study ofcomplete ecology related to insect population.<br>CO4-Comprehend the adaptations and factors influencing insect migration.<br>CO5-Develop an understanding of the economic aspects of insect culture and relatedproducts. |
| 2 | IV | Course-XVI | **Applied Entomology II** |
| | | Course outcome | CO1-Develop a better knowledge and understanding of various insect pests affectingcrop production such as pest of sugarcane in West UP and economic importanceanalyzing ETL, pest of cotton, pest of paddy, fruits, vegetables,stored grains.<br>CO2-Acquire a better understanding related to pest forest Entomology and assessmentof the damage with control and management. |

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| | | | CO3-Develop an understanding connected to pests of humans and livestock with theircontrol and management.<br>CO4-Develop an understanding of the natural, conventional, applied as chemical andIPM approach to control and manage pest populations.<br>CO5-Develop a deep understanding related to chemistry, action, and application ofinsecticides with insecticidal resistance, hormonal and pheromonal-based control, andmanagement strategies. |

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# S.D. COLLEGE, MUZAFFARNAGAR
## DEPARTMENT OF COMMERCE (SFC)

SESSION : 2023-2024

**PROGRAMME OUTCOMES, PROGRAMME SPECIFIC OUTCOMES AND COURSE OUTCOMES**

**PGM-01: Master of Commerce (M.Com.)**

## PROGRAM: MASTER OF COMMERCE

| Department of Commerce | After successful completion of two year Post Graduate degree program in M.Com. student should have- |
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| **PROGRAM OUTCOMES** | **PO1:** To acquaint with conventional as well as contemporary areas in the discipline of Commerce<br>**PO2:** The students can work in different domains like Accounting, Taxation, HRM,Economics, Banking and Administration and For conducting business, accounting and research practices<br>**PO3:** To well versed in national as well as international trends and to understand role of regulatory bodies in corporate and financial sectors |

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| | **PO4:** To provide in-depth understanding of all core areas specifically Advanced Accounting, International Accounting, Management, Security Market Operations and Business Environment, Business Economics,Research Methodology and Tax planning. |
| **PROGRAM SPECIFIC OUTCOMES** | **PSO1:** Acquaint the students with the practical approach of indirect taxes and direct tax<br>**PSO2:** Application of financial management accounting in decision making<br>**PSO3:** Techniques of accounting as per the requirement and accounting procedure<br>**PSO4:** To well versed in national as well as international trends in marketing<br>**PSO5:** Aware about principles and functions of strategic management.<br>**PSO6:** Understanding the legal issue to corporate sector Advance and detailed knowledge of operation research and research methodology |
| **Course-I** | **Management Concept and Organisation Behaviour (0730101) 1 sem** |
| **COURSE OUTCOMES** | CO1- To develop employability skills among the students.<br>CO2- To build up the conceptual, analytical, technical and managerial skills of student's efficient office organization and records management<br>CO3-Technical skills among the students for designing and developing effective means to<br>manage records, consistency and efficiency of work flow in the administrative section of an organization will be developed |
| **Course-II** | **Corporate Tax Planning and Management (0730102) 1sem** |
| **COURSE OUTCOMES** | CO1- The course aims at to provide students in depth knowledge of laws and accounts relating to Income-Tax.<br>CO2- Students will know how to file the income tax return<br>CO3- The students may able to make proper tax planning for their own business. |
| **Course-III** | **Statistical Analysis (0730103) 1sem** |
| **COURSE OUTCOMES** | CO1- To understand the different concept of population and sample and to make students familiar with Calculation of various types of averages and variation.<br>CO2- To learn the applications of different statistical tools in business.<br>CO3- To use regression analysis to estimate the relationship between two variables and to use frequency distribution to |

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| | make decision.<br>CO4- To understand the techniques and concept of different types of index numbers |
| **Course-IV** | **Research Methodology (0730104) 1sem** |
| **COURSE OUTCOMES** | CO1- Learners are expected to demonstrate an understanding of research methodologies.<br>CO2- Identify the overall process of designing a research study from its inception to the report stage.<br>CO3- Imbibe data collection, analysis, and interpretation and presentation skills at par with globally accepted standards.<br>CO4- It provides a solid foundation for development of rational problem-solving skills and analytical thinking that can last throughout their education and subsequent professional careers. |
| **Course-V** | **Marketing Management (0830101) 2sem** |
| **COURSE OUTCOMES** | CO1-Students will be able to identify the scope and significance of Marketing In Domain Industry<br>CO2-Students will be able to examine marketing concepts and phenomenon to current business events In the Industry.<br>CO3-Students will be able to coordinate the various marketing environment variables and interpret them for designing marketing strategy for business firms<br>CO4-Students will be able to illustrate market research skills for designing innovative marketing strategies for business firms.<br>CO5-Students will be able to practice marketing communication skills relevant to the corporate world |
| **Course-VI** | **Customer Relationship Management(0830105) 2sem** |
| **COURSE OUTCOMES** | CO1- 1. Understanding CRM Concepts: Students will be able to define and explain the concepts of CRM, its importance, and its applications in business.<br>CO2-Students will be able to identify and analyze customer needs, expectations, and behaviors to develop effective CRM strategies.<br>CO3-Developing CRM Strategies: Students will be able to develop and implement CRM strategies to build and maintain strong customer relationships.<br>CO4-Understanding Customer Lifecycle: Students will be able to explain and analyze the customer lifecycle, including customer acquisition, retention, and loyalty.<br>CO5- Analyzing Customer Data: Students will be able to collect, analyze, and interpret customer data to inform CRM decisions. |

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| **Course-VII** | **Financial Management (0830103) 2sem** |
| **COURSE OUTCOMES** | CO1- Financial management design to expose the students to the financial issues of determining the monetary resources needed by a business, the mix of these resources, the sources and uses of funds, the benefits, risk and cost associated with different types of resources and financing.<br>CO2- Provide an in- depth view of process in financial management of the firm.<br>CO3- Improving students' understanding of the time value of money and the role of financial manager in current competitive business scenario.<br>CO4- Enhancing student's ability in dealing with short term day to day working capital decision and also long-term dealing, which involves major capital investment decisions and raising long term finances. |
| **Course-VIII** | **Indirect Taxes GST & Custom Law (0830102) 2sem** |
| **COURSE OUTCOMES** | CO1- To enable the students to learn the concepts indirect tax and GST from the pre-GST period to post- GST period.<br>CO2- To understand the importance of indirect taxes (GST) in the Indian and global economy and its contribution to the economic development.<br>CO3- To comprehend the principles of taxations, objectives of taxes and its impact, shifting and incidence process of indirect taxes in the market orientated economy.<br>CO4- To understand the implications of GST on the taxable capacity consumers, dealers and of the society at large and its changes. |
| **Course-IX** | **Course: Research Methodology (0338002) 3sem** |
| **COURSE OUTCOMES** | CO1- Learners are expected to demonstrate an understanding of research methodologies.<br>CO2- Identify the overall process of designing a research study from its inception to the report stage.<br>CO3- Imbibe data collection, analysis, and interpretation and presentation skills at par with globally accepted standards.<br>CO4- It provides a solid foundation for development of rational problem-solving skills and analytical thinking that can last throughout their education and subsequent professional careers. |
| **Course-X** | **Strategic management (0338003) 3sem** |
| **COURSE OUTCOMES** | CO1- Understand various perspectives and concepts in the field of Strategic Management<br>CO2- Understand the principles of strategy formulation, implementation and control in organizations. |

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| | CO3- Demonstrate effective application of concepts, tools & techniques to practical situations for diagnosing and solving organizational problems.<br>CO4- Students will be able to demonstrate capability of making their own decisions in dynamic business landscape.<br>CO5- Describe major theories, background work, concepts and research output in the field of strategic management. |
| **Course-XI** | **Operation Research (0338001) 3sem** |
| **COURSE OUTCOMES** | CO1- Identify and develop operational research models from the verbal description of the real system.<br>CO2- Understand the mathematical tools that are needed to solve optimization problems.<br>CO3- Solve linear programming problems using appropriate techniques and optimization solvers, interpret the results obtained and translate solutions into directives for action.<br>CO4- Develop mathematical skills to analyse and solve transportation problems, network problems, arising from a wide range of applications. |
| **Course-XII** | **Managerial Economics (438001) 4sem** |
| **COURSE OUTCOMES** | CO1- Apply the economic way of thinking to individual decisions and business decisions.<br>CO2- Understand the different approaches to theories of firm, Demand estimation and, costs of production and how they affect short and long run decision.<br>CO3- Derive the equilibrium conditions for cost minimization and profit maximization.<br>CO4- Understand economies of scale, diseconomies of scale, Expansion Path and Ridge Line, and how each affects the cost of production. |
| **Course-XIII** | **Human Resource Management (438006) 4sem** |
| **COURSE OUTCOMES** | CO1-To impart / develop the understanding of concept of human resource management and its significance in organizational context.<br>CO2-To enable the students to deal with contemporary HR issues.<br>CO3-To integrate the knowledge / concept of HR to take optimum decision.<br>CO4-To demonstrate/ strategic issues and strategies required to select and develop HR. |
| **Course-XIV** | **Industrial Relations & Labour Laws (438007) 4sem** |
| **COURSE OUTCOMES** | CO1-The students will be elaborate the concept of Industrial relational.<br>CO2-The students will be able to illustrate the significance |

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| | and role of trade union in industrial setup.<br>CO3-The student will be able to identify the major causes & impacts of industrial dispute and dispute settlement procedure.<br>CO4- The students will be able to summarise and apply the provision of various labour laws |

# S D COLLEGE MUZAFFARNAGAR

## Department Of M.Sc.(TEXTILE &CLOTHING)

**PROGRAM OUTCOMES-**

PO1- Students will be understand the current processes and trends, new developments and technological changes in the field of textile and apparel.

PO2- Students will be able to implement the creative designs and evaluate them.

PO3- Students will be able to understand the design details and also able to know the various fabric structure as well as color, weave effects etc.

PO4- Students will be able to understand the textile dyeing and printing processes with ancient and modern techniques.

PO5- Students will be able to understand the manufacturing processes of yarns, fabrics and garments at industrial level.

**PROGRAM SPECIFIC OUTCOMES-**

PSO1- To able to apply creative managerial and technical skills for career and entrepreneurship in the field of apparel and textile.

PSO2- To understand and apply tools and methods of research and statistics for conducting research in the respective subject areas.

PSO3- To able to start their own cloth sewing centers and other handicrafts or handmade crafts related work zone.

PSO4- To prepare the students for life-long independent and reflective learning.

PSO5- To adapt their artistic abilities and knowledge to support their future garment designing or construction related career.

**Semester-IV**

Course -XVI/XVII (DISSERTATION AND SEMINAR/INDUSTRY TRAINING (INTERNSHIP) AND PROJECT REPORT

**COURSE OUTCOMES:**

CO1- To know the practical aspects of technical skills related to apparel and textile industries.

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CO2- Students will be able to prepare a report based on their industrial training.

CO3- To understand the overall processes of garments and home furnishing item's manufacturing in a apparel and textile industry.

CO4- To gain the knowledge about working criteria and job responsibilities of different posts in the textile and apparel Industry.

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# S.D. COLLEGE, MUZAFFARNAGAR

**Department of Home Science (T&C) (SFC)**

**PROGRAMME OUTCOMES ,**
**PROGRAMME SPECIFIC OUTCOMES**
**AND COURSE OUTCOMES**

**PROGRAM: MASTER OF HOME SCIENCE (TEXTILE AND CLOTHING)- TWO YEAR (SEMESTER SYSTEM)**

| Upon completion of the M.Sc Degree Programme students will be able to | |
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| **PROGRAM OUTCOMES** | PO-1 Inculcate scientific temper with human values through higher education.<br>PO-2 Perceive nutritional problems and address technical solutions ethically to support nation's goal for sustainable development.<br>PO-3 Acquire knowledge in Food Science, Nutrition in Health and Disease, Community Nutrition and Food Processing.<br>PO-4 Gain Analytical skills in the field of Food Science, Nutrition, Dietetics, Community Nutrition, Food Processing, Food safety and Quality control.<br>PO-5 Apply the principles of Food Science and Nutrition in tune with the needs of the Institution / Industry / Community/ Entrepreneurship. |
| **PROGRAM SPECIFIC OUTCOMES** | PSO-1 To equip the students with knowledge and confidence for successful career in Hospitals, Food Industries, Fitness Clinics and inter-disciplinary fields PSO-2 To develop professional competency to |

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| | address the needs and problems of society ethically<br>PSO-3 To excel in research and contribute to development of Food Industry and Community<br>PSO-4 To prepare the students for life-long independent and reflective learning<br>PSO-5 To exhibit managerial skills and ability to work in collaborative and multidisciplinary tasks in their profession. | | |
| **Year** | **Semester** | **Course No. & COs** | |
| **1** | **I** | **COURSE-I** | **TEXTILE CHEMISTRY** |
| | | **COURSE OUTCOMES** | CO1-To acquire knowledge about various types of fibres, their structural, physical & chemical properties and their uses etc.<br>CO2-To gain knowledge about fundamentals of spinning process and different finishing process.<br>CO3-To understand about reagents, bleaching agent, role of soap and detergents, various classes of dye etc. |
| **1** | **I** | **Course-II** | **Historic Textile** |
| | | **COURSE OUTCOMES** | CO1-To understand historical perspective of carpets, shawls, brocades etc. their production method and motif used etc.<br>CO2-To acquire knowledge about the historical development of dying, printing and painting techniques.<br>CO3-To gain knowledge about early civilization of different countries and origin of fibres and |

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| | | | textile products from there etc. |
| **1** | **I** | **COURSE-III** | **CLOTHING & FASHION ECONOMICS** |
| | | **COURSE OUTCOMES** | CO1-To understand role of clothing in human life.<br>CO2-To understand the dynamics of fashion and fashion designers.<br>CO3-To gain knowledge about fashion-cycle theories of clothing and fashion. |
| **1** | **I** | **COURSE-IV** | **DYEING &PRINTING:-** |
| | | **COURSE OUTCOMES** | CO1-To understand the theory of dyeing in relation to various classes of dyes and its application. Inculcate awareness of different methods of printing and appreciate the technical advantage of each and develop technical competency in printing with different dyes on different fabrics.<br>CO2-To study the chemicals used in textile processing from sizing to finishing along with the essential properties of raw materials used in their manufacture and study the recent |

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| | | | development in various finishing process.<br>CO3-To inculate awareness of the different methods of printing and appreciate the technical advantage of each. |
| **1** | **I** | **Course-V** | **Practical** |
| | | **COURSE OUTCOMES** | CO1-To understand about reagents, bleaching agent, role of soap and detergents, various classes of dye etc<br>CO2-To understand the theory of dyeing in relation to various classes of dyes and its application. Inculcate awareness of different methods of printing and appreciate the technical advantage of each and develop technical competency in printing with different dyes on different fabrics. |
| **1** | **II** | **Course-VI** | **Fabric Construction & Woven Fabric Analysis** |
| | | **COURSE OUTCOMES** | CO1-To enable students to understand and learn methods of developing fabric by using different fibres, yarns and fabric |

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| | | | making techniques.<br>CO2-To gain knowledge and understanding of fundamental of weaving machinery and processes.<br>CO3-To analyse different weave pattern and learn principles of creating design through weaving. |
| **1** | **II** | **COURSE-VII** | **RESEARCH METHODS & STATISTICS** |
| | | **COURSE OUTCOMES** | CO1-To understand the signification of statistics and research methodology in Home Science research.<br>CO2-To understand the type's tools and methods of research and develop the ability to construct data gathering instruments appropriate to the research design. |
| **1** | **II** | **COURSE-VIII** | **TECHNICAL TEXTILES** |
| | | **COURSE OUTCOMES** | CO1-To gain knowledge about the new generation fibres.<br>CO2-To understand the position of our country as a global leader in technical textiles in order to promote inclusive growth and market development in the textile |

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| | | | sector.<br>CO3-To acquire the knowledge about various segments of technical textiles and their uses at industrial level and in our daily life routine. |
| **1** | **II** | **Course-IX** | **Clothing for Special Needs** |
| | | **COURSE OUTCOMES** | CO1-To understand the fundamentals of Adaptive clothing.<br>CO2-To gain knowledge about the clothing requirements for people with special needs.<br>CO3-To know about the components of apparel.<br>CO4-To know the how various factors affects the clothing choices of a human being. |
| **1** | **II** | **Course-X** | Practical |
| | | **COURSE OUTCOMES** | CO1-To enable students to understand and learn methods of developing fabric by using different fibres, yarns and fabric making techniques.<br>CO2-To analyse different weave pattern and learn principles of creating design through weaving. |
| **1** | **III** | **COURSE-XI** | **TEXTILE TESTING &** |

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| | | | **QUALITY CONTROL** |
| | | **COURSE OUTCOMES** | CO1-To develop and understand the method and technique used to analysis textile fibre, yarn & fabric for end performance.<br>CO2-To acquire knowledge and understanding of various structural properties of textile and relate them to end use fabrics performance and product.<br>CO3-To familiarize student with the different testing equipment, their underlying principles and the international accepted standards, test methods and measurement.<br>CO4-To be able analyze and interrupt the result and predict the general textile behaviour performance.<br>CO5-To develop understanding of importance of quality control in testing. |
| **2** | **III** | **COURSE-XII** | **FASHION MARKETING & MERCHANDISING** |
| | | **COURSE OUTCOMES** | CO1-To develop understanding visual merchandising and its importance in today's consumer market. |

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| | | | CO2-To gain knowledge about the management aspects of retailing. |
| **2** | **III** | **Course-XIII** | **Apparel Design & Construction** |
| | | **COURSE OUTCOMES** | CO1-To import in depth knowledge of style reading, pattern making and garment construction techniques.<br>CO2-To develop and understanding the principles of pattern making and draping.<br>CO3-To understand the buying criteria for different types of fabrics.<br>CO4-To gain knowledge about industrial machines and equipments used for cutting, sewing, finishing and other processes. |
| **2** | **III** | **COURSE-XIV** | **HISTORIC COSTUMES** |
| | | **COURSE OUTCOMES** | CO1-To gain knowledge about ancient civilization and periods of India.<br>CO2-To know about historical dress of different civilization at worldwide.<br>CO3-To import the depth knowledge of historical dresses and their purposes. |
| **2** | **III** | **Course-XV** | Practical |
| | | **COURSE OUTCOMES** | CO1-To familiarize student with |

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| | | | the different testing equipment, their underlying principles and the international accepted standards, test methods and measurement.<br>CO2-To import in depth knowledge of style reading, pattern making and garment construction techniques.<br>CO3-To develop and understanding the principles of pattern making and draping. |
| **2** | **IV** | **COURSE-XVI/XVII DISSERTATION AND SEMINAR / INDUSTRY TRAINING (INTERNSHIP) AND PROJECT REPORT** | CO1-Understand and apply technical writing skill<br>Give the students opportunities to perform a research project within the field of nutrition<br>CO2-Learn the novel concept and ideas of research in terms of nutrition related field<br>CO3-Construct a research project that includes original research, deliberate and well considered methodological choices<br>CO4-Apply the techniques for writing review and research articles<br>CO5-Learn different writing techniques for various journal |

# S.D. COLLEGE MUZAFFARNAGAR

**DEPARTMENT OF HOME SCIENCE (P.G.)**

**(FOODS & NUTRITION)**

**SFC**

**Programme Outcomes, Programme Specific outcomes And Course Outcomes**

**Programme Master of Home Science (Foods & Nutrition)- Two Year (Semester System)**

Upon completion of the **M.Sc. Degree** Programme students will be able to-

**Program Outcomes-**

PO1: Impart the understanding of the concepts of Biochemistry, Food Chemistry and Food Microbiology.

PO2: Enable the students to learn the methods of assessing human nutritional requirements, nutritional assessment and diet planning.

PO3: Apply theoretical concepts in laboratory setting as per standard methods in the above mentioned areas.

PO4: Understands the applications of nutritional sciences in clinical interventions communication for health promotions, food service management, food science and processing.

PO5: to improve understanding and develop skills for planning, management and monitoring of public health nutrition programmes implemented by the government.

PO6: Acquire skills to undertake systematic research in the area of food science, clinical nutrition and public health nutrition.

**Programme Specific Outcomes-**

The program trains students to become professionals who can work as a public health nutritionists, dieticians and food scientists. After completing this program the student will be able to-

PSO1: Assess nutritional status and plan appropriate diets.

PSO2: Use the knowledge of nutritional sciences in clinical interventions and communication for health promotion.

PSO3: Work as a program planners and managers in the field of public health nutrition.

PSO4: Work as a food scientists, quality assurance managers and analysts.

PSO5: Manage a food service establishment.

PSO6: Apply theoretical concepts and practical training for research in the field of food science, clinical nutrition and public health nutrition.

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# SEMESTER-I

**Year-I/Sem.-I (Course-I) Applied Physiology**

**Course Outcomes:** Student will be able to-

CO1: Understand the current state of knowledge about the functional organization of the human body.

CO2: Develop insight of normal functioning of all the organ systems of the body and their interactions.

CO3: Comprehend the pathophysiology of commonly occurring diseases.

CO4: Correlate physiology with various disorders and their pathogenesis.

**Year-I/Sem.-I (Course-II) Geriatric Nutrition and Assessment of Nutritional Status**

**Course Outcomes:** The Student will-

CO1: Become familiar with the prevalence and determinants of nutritional health problems in the elderly population.

CO2: Acquire knowledge about the public health implications of various nutritional problems and the strategies to overcome the same.

CO3: Get acquainted with national/public sector policies and programs for promotion of health and nutritional status of elderly in India.

**Year-I/Sem.-I (Course-III) Food Science**

**Course Outcomes:** The Student will be able to-

CO1: Understand the chemistry of food components like- water, proteins, carbohydrate and lipids.

CO2: Understand basic concepts of new food product development.

CO3: Learn about the food additives that are relevant to processed food industry for shelf life extension, processing aids and sensory appeal.

**Year-I/Sem.-I (Course-IV) Advances in Food Microbiology**

**Course Outcomes:** The Student will be able to-

CO1: Understand the nature of the microorganisms involved in food spoilage, food infections and intoxications.

CO2: Comprehend principles of various preservation and control techniques.

CO3: Understand microbial safety in various food operations.

CO4: Understand the conventional and rapid methods for detection of food borne pathogens and their toxins.

**Year-I/Sem.-I (Course-V) Practical of Food Science + Advances in Food Microbiology**

**Course Outcomes:** The Student will be able to-

CO1: Perform food analysis using advanced techniques including browning reaction time and sensory evaluation.

CO2: Understand the various stages of sugar cookery.

CO3: Prepare different types of egg cookery using various techniques.

CO4: Understand the morphology and structural features of various micro-organisms.
CO5: Comprehend various techniques used for isolation, purification, identification and controlling the growth of microorganisms.
CO6: Assess the microbial safety of personal hygiene, water, milk and other food products.

## SEMESTER-II

### Year-I/Sem.-II (Course-VI) Advanced Nutrition

**Course Outcomes:** The Student will be able to-
CO1: Measure energy expenditure in individuals.
CO2: Assess the protein quality of diets.
CO3: Understand the concept and purpose of nutritional status assessment in community setting.
CO4: Be familiar with the use of indices and indicators for screening and consequent Identification of malnutrition in the community.

### Year-I/Sem.-II (Course-VII) Research Methods and Statistics

**Course Outcomes:** The Student will be able to-
CO1: Demonstrate knowledge of the scientific method, purpose and approaches to research.
CO2: Compare and contrast quantitative and qualitative research.
CO3: Explain research design and the research cycle.
CO4: Prepare key elements of a research proposal.
CO5: Explain ethical principles, issues and procedures.

### Year-I/Sem.-II (Course-VIII) Nutritional Biochemistry

**Course Outcomes:** The Student will be able to-
CO1: Understand the enzymes, their types, enzyme activity and their diagnostic role.
CO2: Have coherent and systemic knowledge on carbohydrate metabolic regulation.
CO3: Understand the lipid metabolism and its regulation.
CO4: Understand the protein metabolism and its regulation.
CO5: Correlate the action of hormones with metabolic regulation.
CO6: Learn the principles of colorimetry and spectrophotometry.

### Year-I/Sem.-II (Course-IX) Community Nutrition and Nutritional Deficiencies

**Course Outcomes:** The Student will be able to-
CO1: Become familiar with the concept of public health aspects of malnutrition and healthcare of the community.
CO2: Understand the causes, consequences and preventive strategies for nutritional problems in the community.
CO3: Comprehend the strategies for improving nutrition and health status of communities.
CO4: Acquire knowledge about the concepts of foods and nutrition security and the various programs for improving food and nutrition security.
CO5: Become familiar with the process of planning & management of public health nutrition programs and Nutrition Surveillance.

**Year-I/Sem.-II (Course-X) Practical of Advanced Nutrition + Nutritional Biochemistry**

**Course Outcomes:** The Student will be able to-

CO1: Acquire skills on preparation of solutions.

CO2: Colorimetric/ Spectrophotometric estimation of biochemical molecules.

CO3: Detect the enzyme activity.

CO4: Understand the concept and purpose of nutritional status assessment in community setting.

CO5: Gain knowledge with regard to understand methods and techniques for assessing nutritional status.

CO6: Understanding the method of estimation of Protein Quality, Ash Content, Moisture Content, Crude Fiber content in food products and principle knowledge of chromatography.

## SEMESTER-III

**Year-II/Sem.-III (Course-XI) Clinical and Therapeutic Nutrition**

**Course Outcomes:** The Student will be able to-

CO1: Understand the importance of nutritional assessment in the care of patients.

CO2: Gain knowledge about causative factors and metabolic changes in various diseases/disorders and the associated principles of diet therapy.

CO3: Learn the principles of dietary counseling.

CO4: Comprehend the rationale of prevention of various diseases/disorders.

CO5: Assess the needs of the patients, plan and prepare diets suitable for patients of different diseases.

CO6: Comprehend types and availability of foods for special dietary uses.

**Year-II/Sem.-III (Course-XII) Institutional Food Administration**

**Course Outcomes:** The Student will be able to-

CO1: Gain expertise to function as a food service manager.

CO2: Develop knowledge in managing various food service systems.

CO3: Understand and manage resources in a food service institution.

CO4: Provide practical experience in managing food material for food service management.

**Year-II/Sem.-III (Course-XIII) Food Processing and Technology**

**Course Outcomes:** The Student will be able to-

CO1: Gain knowledge of methods of processing of different food groups.

CO2: Provide knowledge of methods of preservation of different food groups.

CO3: Ingrain the understanding of post-harvest management of different food groups.

CO4: Gain knowledge of principles of unit operations involved in food processing industry.

CO5: Learn fundamentals of food processing technology and its process through physical and chemical principles.

**Year-II/Sem.-III (Course-XIV) Nutrition for Health & Fitness**

**Course Outcomes:** The Student will be able to-

CO1: Understand concepts of fitness, its assessment and exercises for physical fitness training.
CO2: Function effectively as a sports dietician.
CO3: Exhibit knowledge of the metabolism and bioenergetics of exercise.
CO4: Successfully plan, implement and monitor sports specific diets for athletes through all age group.
CO5: Provide diet and nutritional care in terms of nutrition education, diet plans and counseling special groups of Athletes.

**Year-II/Sem.-III (Course-XV) Practical of Institutional Food Administration + Therapeutic Nutrition**

**Course Outcomes:** The Student will be able to-
CO1: Understand the operations of food service units.
CO2: Develop insight about products and their price in market.
CO3: Develop skills in planning menus for various food service organizations within specific budgets.
CO4: Applications of acquired skills in menu planning and quantity food production.
CO5: Provide dietary counseling to patients with different diseases and disorders.
CO6: Plan and prepare diets suitable for patients of different diseases.

## SEMESTER-IV

**Year-II/Sem.-IV (Course-XVI/XVII) Dissertation& Seminar/Internship& Project Report**

**Course Outcomes:** The Student will be able to-
CO1: Know the practical aspects of collecting data/project work.
CO2: Evaluate, select and use appropriate strategies for reduction analysis and presentation of data collected during research process/project work.
CO3: Suitably illustrate data/insights using various graphical and other methods.
CO4: Prepare a dissertation document/project report based on research process/project work done.