CH. BALLURAM GODARA GOVT. GIRLS COLLEGE, SRI GANGANAGAR

Course Outcomes, Programme Outcomes and Programme Specific Outcomes 2018-2019

S. No.	PROGRAMME CODE	PROGRAMME NAME	DISCIPLINE	COURSE OUTCOME	PROGRAMME OUTCOME	PROGRAMME SPECIFIC OUTCOME
1.	B.Com.	BACHELOR OF COMMERCE (B.Com.)	Commerce	The course makes the students aware to micro concepts of commercial and analytical skills. They will understand the financial accounting rule and procedures. Rules of Direct and Indirect Taxes (Income tax and GST) in details. Business Administration courses allows students to learn the management fundamentals and practices. Banking and Business Economics makes them aware with the banking and insurance sector workings and learn the fundamental principles of economics.	The programme helps the student understand marketing strategies, entrepreneurship, banking system, economic theories, taxation rules and accounting procedure	By the end of the programme the students are competent for business, banking jobs, accountant, tax consultants, office jobs and other competitive exams.
2.	B.SC	BACHELOR OF SCIENCE (B.SC)	Science	The course contents are designed to provide exposure to the core subjects and equip the students for higher education. The students will develop understanding About natural and applied sciences. Bachelor program in science consist of physical and life science. Physical sciences encompass Physics, Mathematics and Chemistry. Physical science courses are designed to understand the physical properties of the surroundings. Life Science includes Botany and Zoology. Botany and Zoology courses enable students to understand the various life processes and their applications.	The programme helps in the understanding of fundamental concepts, theories, practical applications and objective conclusions. It helps in developing scientific attitude and the logical thinking in dealing day to day problems.	The insistence is on skills in the laboratory, competence, understanding of phenomenon, sustainable development areas and interdisciplinary areas of science courses. The students are competent for various jobs and professional and competitive exams by the end of the program.
3	B.A.	BACHELOR OF ARTS (B.A.)	ARTS	The B.A. programme is a combination of three elective courses opted over a wide range. Each course has been designed keeping in mind knowledge, skills, human values and social issues of relevance. Bachelor's degree in Arts includes subjects from Social Sciences group and Humanities. Social sciences, subjects that deal with the functioning of society and its institutions and are often data driven and quantitative. Economics, Geography, History, Home Science, Political Science, Sociology represents the social sciences. Social Science courses enhance analytical skills to social phenomena in order to understand human behavior. Make students to understand the role of individuals and institutions within the context of society. Students learn to make distinction between empirical and other methods of inquiry also Understand the diversity of human experience and thought, individually and collectively. Application of knowledge and skills to contemporary problems and issues. Philosophy, languages and literature (English, Hindi, Sanskrit and Punjabi), Music are recorded in Humanities group. Since Humanities courses employ critical and analytic thinking. These courses introduce students to the diversity and creativity of human experience. Develop critical and independent thinking about the surroundings among the students. Literature and language courses enhance students' ability to communicate effectively. Students Explore and get to know outstandingly influential works of various known intellectuals.	The programme has been designed with the objective of imparting the best of subject knowledge along with basic computer knowledge and language competency.	The insistence is on extensive knowledge to fight competitive exams and pursue higher studies. A curriculum design emphasizes human values and subject competence. Prepare the students for competitive exams.

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4.	BSC HOME SCIENCE	BACHLOR OF HOME SCIENCE (BSC.HS.)	SOCIAL SCIENCE	Home Science is a science-oriented, multidisciplinary subject which encompasses the multifarious activities that occur in families, households, and communities. Over years, the discipline has evolved and expanded to encompass activities and services of relevance, not only to the micro contexts of the family and community, but also to the macro context of the larger society. Home Science is both multidisciplinary and interdisciplinary in its context encompassing the five major disciplines of Family Resource Management, Foods and Nutrition, Textiles and Clothing, Human Development, and Extension and Education. Each discipline has one or more specific areas of specialization.	Deliver quality tertiary education through learning while doing. • Reflect universal and domain-specific values in Home Science. • Involve, communicate and engage key stakeholders. • Preach and practice change as a continuum. • Develop the ability to address the complexities and interface among of self, societal and national priorities. • Generate multi-skilled leaders with a holistic perspective that cuts across disciplines. • Instill both generic and subject-specific skills to succeed in the employment market. • Foster a genre of responsible students with a passion for lifelong learning and entrepreneurship. LOCF: HOME SCIENCE 14 • Develop sensitivity, resourcefulness and competence to render service to families, communities, and the nation at large. • Promote research, innovation and design (product) development favouring all the disciplines in Home Science. • Enhance digital literacy and apply them to engage in real time problem solving and ideation related to all fields of Home Science. • Appreciate and benefit from the symbiotic relationship among the five core disciplines of Home Science – Resource Management, Food Science and Nutrition, Textiles and Clothing, Human Development and Family Studies and Extension and Communication	On completion of the specific programme(Regular and Honours Degree in Home Science) following are the outcomesexpected from students: I. Describe and analyze the discipline of Home Science as a holistic field of study covering multiple facets and requirements of human beings in day to day living, for example, achievement of appropriate milestones in personal development; awareness, need and use of family resources; access to adequate nutrition for wholesome development; clothing fundamentals and advances; and effective strategies for community extension and communication. II. Demonstrate skills/talents and proficiency in specialized areas of study. III. Demonstrate proactive networking in specific areas of study involving significant stakeholders including professionals, researchers, and public service personnel. IV. Address concern for the community (urban, rural and tribal) with genuine sensitivity and dedicate transferable knowledge and research findings for the benefit of the community. V. Develop sensitivity, resourcefulness, and competence to render service to enhance development of individuals, families, communities, and the nation at large. VI. Manifest a wide range of knowledge regarding sources of data (information) collection and transfer enabling exchange of ideas and notions; access to resources including e-resources and libraries; trends in knowledge gaining and transfer (teaching- learning processes); techniques of skill acquisition and understanding existing basic issues related to the disciplines in Home Science and methods to resolve and ratify them. VII. Demonstrate interest in engaging in active need based, innovative and community-oriented LOCF: HOME SCIENCE 15 research using appropriate methods, collect and process data and present evidence-based solutions and defend arguments related to the field of research in Home Science. VIII. Analyze and apply research findings for the use of societal needs and contribute to nation building strategies. IX. Demonstrate inclination toward acquiring knowledge and doing in-depth studies on allied subjects of Home Science, for instance Ergonomics in Resource Management; Chemistry in Textiles and Clothing. X. Demonstrate abilities involved in acting as proactive agents of change in promoting the discipline of Family and Community Sciences. XI. Explore and decide upon viable avenues of self-employment and entrepreneurship plus career options in different facets of Home Science disciplines. XII. Demonstrate ethical values in scholarship and social applications.

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5	M.A. (Geography)	Master of Arts (M.A.)	Geography	The number of courses across this programme in geography equips the student with all the aspects of physical, cultural, social, political, urban, economic, agricultural, industrial geography. Physical Geography course enable students to learn major physical features of the Earth and the ability to locate examples of Earth's major physical features on a map. Courses dealing with quantitative methods allow them to use quantitative methods used by geographers and their ability to use statistical software to solve geographic problems. After learning GIS course students demonstrate knowledge of the foundations and theories of geographic information systems (GIS) and use the tools and methods of GIS. Courses related with environment and resource management enable students to demonstrate their knowledge of the role that geography can play in analyzing resource / environmental degradation and improving resource / environmental management. Urban and regional planning courses enable students to learn how effective land management influences the utility of the land. Water management courses make students to learn the methods of conservation and management of water resources including legal, economic, political and societal factors and the evaluation of attempts to manage water resources.	The master's programme in geography covers an extensive area of structure land dynamic geomorphology. Economic, Political, Agricultural thought, Industrial, Urban, Regional Geography. Weekly seminar for students of post graduate, practical in cartography, surveying and levelling, remote sensing and GIS and its application in the field of geography provides students a platform for learning laboratory work and map work.	The programme specific outcomes are of immense help to students and opens up opportunities for urban, regional planning and development, assess man, nature relationship, earn knowledge on recent space technologies, acquire expertise in survey works, prepare map of different themes, have in-depth knowledge in physical geography. Prepare students for various jobs like that of a town planner, cartographer, GIS expert and for various competitive exams like RPSC, UPSC NET SET GATE.
6	M.A. (Sociology)	Master Of Arts (M.A.)	Sociology	The content of the course will develop 'sociological insight' for understanding behavior, social roles, interactions among and everyday life practices of human beings. Make them understand the interactions of human beings with the larger society. They will be able to observe societies, their functioning (both one's own society and other societies) as an outsider that reduces biasness and helps to address issues effectively. They will be able to develop perspectives in viewing the society and its functioning (both at the micro and macro level). The students will be able to understand the functioning of various social institutions and how it fabricates unequal realities for people. They will understand other cultures, their way of life, elicit views of others and develop and practice 'cultural relativism' as part of their life. Understand and compute basic statistical calculations necessary for social science, which in turn help students to analyses social phenomena.it inculcates critical thinking and analyzing skills.	The programme outcomes of sociology encourage. Theoretical perspectives and methodology of social research .it also helps in the knowledge of Indian social system, rural societies set up in India, and advance sociological theories. The students gain knowledge about social psychology, criminology and sociological statistics Urban sociology, Comparative Sociology, movements in sociology, sociology of law, Sociology of Health.	The specific outcome of the programme includes create understanding, acquainting the students with industrial, political, sociology of religion, social anthropology. The program will enable students to understand the scope, models, and aspects of economic development along with socio economic planning in social management, will be able to equip them to develop their own personality in the society. government department to equip the students to develop the process of interaction in day to day and everyday working life. enable students to pursue career in social management, Government departments. Prepare the students for many competitive exams like RPSC, UPSC NET SET GATE.

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7	M.A. (History)	Master Of Arts (M.A.)	History	The course content main focus is on the stages of growth in human civilizations, evolution of social systems.it focuses on an extensive understanding of the medieval history imparts moral values from reading of historical concepts. They would be able to know their glorious past and would be able to form a logical connection between the present and the past. They would therefore, be able explain much of the present social practices and would precisely know the proper context of their present existence. They would also learn how to trace back known historical facts.	The masters in history furnishes the student with all necessary course content related to civil services and competitive exams. The content designed covers Twentieth Century world, Cultural Profile of India.	The specific Outcomes focus on the detailed history of India and Socio-Economic Life and Institutions of Medieval India from Earliest Times to 1200A.D. The Special Papers like Elements of Indian Archaeology and Epigraphy, Indian Art and Architecture also adept the students for number of direct job opportunities and for all competitive exams, State and Central levels.
8	M.A. (Hindi)	Master Of Arts(M.A.)	Hindi	The course makes students capable to identify dialects, classifications, literary trends, theories and discourses. Understanding the origin of Hindi language and its literature. Understanding the role played by the poets of Bhakti cult in literature and society. The students develop cultural consciousness, they develop art of analyzing the writings.	It covers a range of areas including history of literature, modern poetry, medieval, ancient period literature, and prose poetry literature, drama, essay, comparative Indian literature and lok-sahitya.	The specific outcomes of the programme are designed to provide the best of knowledge related to science of language and Hindi language. It also ensures specialized study of prominent writes and in-depth study of indigenous Rajasthani literature, The Hindi Masters programme prepares the students for teaching positions and also for jobs related to translations. Prepare the students for many competitive exams like RPSC, UPSC NET SET GATE.

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9	M.A. (English)	Master of Arts (M.A.)	ENGLISH	The students master command over the language, grammar, basic concepts, Editing Styles, to express themselves effectively in a variety of forms. The students get trained in writing book reviews that prepare them in publishing work. They learn to analyze literary texts critically. Support interpretive claims about a variety of texts. Use research to assist in problem solving. Demonstrate knowledge of the history or culture of the English language.	The programme helps the students learn the evolution of language, enhances critical thinking of students, cultivates language skills by introducing them to structures of language, hones the writing skills of students instills a critical perspective with which students approach the disciplines, introduces works written by different sections of people (gender, racial and ethnic minorities) and makes the students give critical responses from different perspectives. Introduces different literary periods and trends of each of these	The programme specific outcome emphasises the study of literary theory exposes students to a wide range of writing from India, British, American and Anglophone traditions. It helps students explore how writers use the creative resources of language-in fiction, poetry, nonfiction prose, and drama-to explore the entire range of human experience. Students gain an understanding of the relations between culture, history and texts. It helps students to prepare for competitive exams. They are provided with job opportunities as a lecturer, anchor, magazine / newspaper editor, writer, P.R, copywriter, social service, librarian.
10.	M.A. (Political Science)	Master of Arts. (M.A.)	POLITICAL SCIENCE	The students after passing out will have familiarity with different approaches to the study of politics and an ability to apply these to contemporary collective and political problems and political behavior. They will develop an ability to formulate and construct logical arguments about political phenomena and an ability to evaluate these through empirical and theoretical methods an understanding of how political institutions emerge, how they operate, how they interact with their external environment, and how they shape individual and collective behavior knowledge of basic factual information about politics within an area of specialization including political behavior, comparative politics, international relations, political theory and methodology. Comprehend the basic structures and processes of government systems and/or theoretical underpinnings. Analyze political problems, arguments, information, and/or theories. Apply methods appropriate for accumulating and interpreting data applicable to the discipline of political science.	The students will gain knowledge about Administrative Principles and Theories. They will understand Political Theory, Indian Government and Politics, Political Theory, Gandhian Political Thought. The aim of the program is to enhance their knowledge related to international laws, foreign policies, theory and practice of federalism, state politics in India, Research methodology, Indian political thought, comparative politics, international politics, administrative principles and theories.	The Program specific outcome for the post graduate students is that they will be assessing the social issues from the political perspective. Understanding the core intellectual traditions in political thought and apply their central tenets to contemporary political problems and issues. They will be having insight of the wide variety of positions and will use analytical skills to understand civic social and environmental challenges. The students will get prepared for many competitive exams like RPSC, UPSC NET SET GATE.

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11	M.A. (Music)	Master of Arts (M.A)	Music	The students will gain knowledge on the intricacies of gamakas and nuances of ragas and raga sancharas. Attain knowledge in voice culture and selection of songs to present stage performance they will develop creative music. Expertise in rendering various musical compositions . To gain knowledge about the various Interdisciplinary aspects of Music. Students get knowledge of various kind of musical instruments with special reference to percussion instruments of many countries.	The post graduates will be able to enhance in-depth learning in Traditional System, History of Indian Music, Voice Culture And Philosophy of Music, Psychology Of Music (Vocal), Sound Culture and Philosophy Of Instrumental Music, Psychology of Music (Instrumental).	The graduates of music will gain expertise in areas of music. Qualify for Private music teacher, music therapist, secondary school teacher, television production assistant, programme researcher, arts administrator, editorial assistant, marketing assistant, sound technicians, broadcasting engineers, music venue managers. Understand the applications of music in life. Analyze the relationship between music and health.
12	M.Com. (ABST)	Master of Commerce (M.Com.)	Accountancy & Statistics	To acquaint a student with conventional as well as contemporary areas in the discipline of Commerce. Enable a student well versed in national as well as international trends of accounting. Understand the theoretical framework of accounting and to prepare financial statements, accounting for share capital and debentures, basic concepts in the law of income tax and determine the residential status of different persons, conceptual framework of Cost Accounting; identification of differences between different financial and cost accounting; cost concepts and elements of cost; concept of systematic processing and interpreting the information in quantitative terms to arrive at an optimum solution to business problems, meaning and scope of business research and application of various statistical methods, connect with the genesis of goods and services tax (GST), decipher the constitutional amendment carried out to install GST in India and comprehend the composition and working of GST council, preparation of cost sheet, develop the skill of preparation of trading and profit and loss account and balance sheet using computerized accounting.	The students will be able to understand the concepts of Advanced Accounting, Advanced Cost & Management Accounting, Advanced Auditing, Tax Laws and Planning, Research Methodology and Quantitative Techniques. They will gain knowledge in International Financial Reporting Standards, Goods & Service Government Accounting, Ethics in Accounting, IFRS for Small and Medium- sized Entities (SMEs), Computer Applications in Accountancy and Statistics, Practical Taxation, Advanced Financial Management, Security Analysis and Portfolio Management, Advanced Statistical Analysis, Operations Research Dissertation.	Can pursue research in their chosen areas. For teaching in Schools and Colleges after qualifying requisite tests. For working as data analyst. To work as investment consultants after a brief internship in suitable organizations absorbed in Banking and Insurance sector as executives. Prepare the students for many competitive exams like RPSC, UPSC NET SET GATE.

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13	M.Sc. (Botany)	Master of Science (M.Sc.)	Botany	Course Outcome for M.Sc. Botany: 1-Develop a conceptual understanding of principles and importance of Botany. Students would be benefited with knowledge of core subjects like plant diversity, physiology and biochemistry, molecular cytogenetic and application of statistics etc. which are offered in these subjects Modules on analytical techniques, plant tissue culture and photochemistry would make them obtain skills that help in doing research. 2-Learn about practical technique in lab for detail study of plant cell structure, reproduction, anatomy, ecology, breeding procedures for hybridization. Maintain a high level of scientific excellence in botanical research with specific emphasis on the role of plants. Create, select and apply appropriate techniques, resources and modern technology in multidisciplinary way. Practice of subject with knowledge to design experiments, analyze and interpret data to reach to an effective conclusion. 3-They would identify, formulate and analyze the complex problems with reaching a substantiated conclusion. Logical thinking with application of biological, physical and chemical sciences. Learning that develops analytical and integrative problem-solving approaches. 4- Environment and Sustainability: Understand the issues of environmental contexts and sustainable development with respect to assessment, conservation and utilization of floral diversity 5. Use pure culture and selective techniques to isolate fungi, plant pathogens, algae and identify them growing on media. 6. Qualitative and quantitative estimation of the number of floral components by using enumeration and suitable sampling and techniques. 7. Use appropriate plant molecular techniques and use of instrumentation related to it. Practice safe laboratory procedures, using appropriate protective, biosafety and emergency procedures. Documentation and report writing on experimental protocols, results and conclusions, study tours and filed visits etc.	The aim of the program is to enhance students understanding in Biology and Diversity of Algae and Bryophytes, Microbiology, Mycology and Plant Pathology, Cytogenetics, Genetics and Plant Breeding Plant Ecology, Conservation and Evolution, Pteridophytes, Gymnosperms and Palaeo botany, Plant Developmental Biology, Cell and Molecular Biology, Plant Growth and Development, Skill Course Elective 1 Minor Research Project, Plant Tissue Culture and Genetic Engineering, Tools and Techniques in Plant Sciences, Minor Research Project.	The graduates (PSO) of M.Sc. Can pursue career in following areas: Botany Food companies, Arboretum, Forest services, Biotechnology firms, Oil industry, Land Management agencies, Seed and Nursery Companies, Plant Explorer, Conservationist, Ecologist, Environment consultant, Horticulturist, Molecular Biologist, National parks, educational institutions. Prepare the students for many competitive exams like RPSC, UPSC, NET, SET, GATE.

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14	M.Sc. (Zoology)	Master of Science (M.Sc.)	Zoology	The course Outcome for Zoology Developing deeper understanding of key concepts of biology at biochemical, molecular and cellular level, physiology and reproduction at organismal level, and ecological impact on animal behavior. Elucidation of animal-animal, animal-plant, animal-microbe interactions and their consequences to animals, humans and the environment. Development of an understanding of zoological science for its application in medical entomology, apiculture, aquaculture, agriculture and modern medicine. Development of theoretical and practical knowledge in handling the animals and using them as a model organism. To identify a research problem and to formulate a scientific solution.	Biosystematics, Structure and Function of Invertebrates, Ethology and Evolution, Instrumentation and Techniques in Biology, Cell and Molecular Biology, Biostatistics, Developmental Biology, Immunology, Endocrinology, Invertebrate Structure and function, Entomology, Limnology and Fisheries. Students gain knowledge and skill in the fundamentals of animal sciences, understands the complex interactions among various living organisms. Analyze complex interactions among the various animals of different phyla, their distribution and their relationship with the environment. Apply the knowledge of internal structure of cell, its functions in control of various metabolic functions of organisms. Understands the complex evolutionary processes and behavior of animals. Correlates the physiological processes of animals and relationship of organ systems. Understanding of environmental conservation processes and its importance, pollution control and biodiversity and protection of endangered species. Gain knowledge of Argo based Small Scale industries like sericulture, fish farming, butterfly farming and vermicompost preparation. Understands about various concepts of genetics and its importance in human health. Apply ethical principles and commit to professional ethics and responsibilities in delivering his duties. Apply the knowledge and understanding of Zoology to one's own life and work. Develops empathy and love towards the animals. Analyze the relationships among animals and other organisms. Understand the applications of biological sciences in Apiculture, Aquaculture, Agriculture and Medicine. Gains knowledge about research methodologies, effective communication and skills of problem-solving methods.	Program Specific outcome After completing the MSc degree students is able to Purse research in zoology and its applied branches. As a zoologist, comprehensive knowledge of animal sciences, competence to perform the corresponding lab techniques as well as the propensity for fieldwork renders limitless avenues in the academics, government bodies and agricultural, environmental, or pharmaceutical industries. Candidates find jobs as Animal Behaviorist, Conservationist, Wildlife Biologist, Zoo Curator, Wildlife Educator, Zoology faculty, Forensic experts, lab technicians, pharma industry, media houses as scientific writers and editors, Environment consultants etc. Prepare the students for many competitive exams like RPSC, UPSC NET SET GATE.

15	M.Sc. (Maths)	Master of Science (M.Sc.)	Mathematics	Calculus: This course will enable the students to: i) Assimilate the notions of limit of a sequence and convergence of a series of real numbers. ii) Calculate the limit and examine the continuity of a function at a point. iii) Understand the consequences of various mean value theorems for differentiable functions. iv) Sketch curves in Cartesian and polar coordinate systems. v) Apply derivative tests in optimization problems appearing in social sciences, physical sciences, life sciences and a host of other disciplines. Ordinary Differential Equations This course will enable the students to: i) Understand the genesis of ordinary differential equations. ii) Learn various techniques of getting exact solutions of solvable first order differential equations and linear differential equations of higher order. iii) Know Picard's method of obtaining successive approximations of solutions of first order differential equations, passing through a given point in the plane and Power series method for higher order linear equations, especially in cases when there is no method available to solve such equations. iv) Grasp the concept of a general solution of a linear differential equation of an arbitrary order and also learn a few methods to obtain the general solution of such equations. v) Formulate mathematical models in the form of ordinary differential equations to suggest possible solutions of the day to day problems arising in physical, chemical and biological disciplines. Real Analysis This course will enable the students to: i) Understand many properties of the real line $\mathbb{R}$ and learn to define sequence in terms of functions from $\mathbb{R}$ to a subset of $\mathbb{R}$. ii) Recognize bounded, convergent, divergent, Cauchy and monotonic sequences and to calculate their limit superior, limit inferior, and the limit of a bounded sequence. iii) Apply the ratio, root, alternating series and limit comparison tests for convergence and absolute convergence of an infinite series of real numbers. iv) Learn some of the properties of Riemann integrable functions, and the applications of the fundamental theorems of integration. Group Theory The course will enable the students to: i) Recognize the mathematical objects called groups. ii) Link the fundamental concepts of groups and symmetries of geometrical objects. iii) Explain the significance of the notions of cosets, normal subgroups, and factor groups. iv) Analyze consequences of Lagrange's theorem. v) Learn about structure preserving maps between groups and their consequences. Linear Algebra This course will enable the students to: i) Understand the concepts of vector spaces, subspaces, bases, dimension and their properties. ii) Relate matrices and linear transformations, compute eigen values and eigen vectors of linear transformations. iii) Learn properties of inner product spaces and determine orthogonality in inner product spaces. iv) Realise importance of adjoint of a linear transformation and its canonical form. Partial Differential Equations This course will enable the students to: i) Apply a range of techniques to solve first & second order partial differential equations. ii) Model physical phenomena using partial differential equations such as the heat and wave equations. Multivariable Calculus This course will enable the students to: i) Learn conceptual variations while advancing from one variable to several variables in calculus. ii) Apply multivariable calculus in optimization problems. iii) Inter-relationship amongst the line integral, double and triple integral formulations. iv) Applications of multivariable calculus tools in physics, economics, optimization, and understanding the architecture of curves and surfaces in plane and space etc. v) Realize importance of Green, Gauss and Stokes' theorems in other branches of mathematics. Metric Spaces This course will enable the students to: i) Learn basic facts about the cardinality of a set. ii) Understand several standard concepts of metric spaces and their properties like openness, closedness, completeness, Bolzano-Weierstrass property, compactness, and connectedness. iii) Identify the continuity of a function defined on metric spaces Ring Theory This course will enable the students to: i) Understand the basic concepts of group actions and their applications. ii) Recognize and use the Sylow theorems to characterize certain finite groups. iii) Know the fundamental concepts in ring theory	Inculcate critical thinking to carry out scientific investigation objectively without being biased with preconceived notions. • Equip the student with skills to analyze problems, formulate an hypothesis, evaluate and validate results, and draw reasonable conclusions thereof. • Prepare students for pursuing research or careers in industry in mathematical sciences and allied fields • Imbibe effective scientific and/or technical communication in both oral and writing. • Continue to acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematical sciences. • Create awareness to become an enlightened citizen with commitment to deliver one's responsibilities within the scope of bestowed rights and privileges.	Understanding of the fundamental axioms in mathematics and capability of developing ideas based on them. • Inculcate mathematical reasoning. • Prepare and motivate students for research studies in mathematics and related fields. • Provide knowledge of a wide range of mathematical techniques and application of mathematical methods/tools in other scientific and engineering domains. • Provide advanced knowledge on topics in pure mathematics, empowering the students to pursue higher degrees at reputed academic institutions. • Strong foundation on algebraic topology and representation theory which have strong links and application in theoretical physics, in particular string theory. • Good understanding of number theory which can be used in modern online cryptographic technologies. • Nurture problem solving skills, thinking, creativity through assignments,

				such as the concepts of ideals, quotient rings, integral domains, and fields. iv) Learn in detail about polynomial rings, fundamental properties of finite field extensions, and classification of finite fields. Linear Programming This course will enable the students to: i) Analyze and solve linear programming models of real life situations. ii) Provide graphical solutions of linear programming problems with two variables, and illustrate the concept of convex set and extreme points. iii) Understand the theory of the simplex method. iv) Know about the relationships between the primal and dual problems, and to understand sensitivity analysis. v) Learn about the applications to transportation, assignment and two-person zero-sum game problems. Complex Analysis This course will enable the students to: i) Visualize complex numbers as points of ℝ  and stereographic projection of complex plane on the Riemann sphere. ii) Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy Riemann equations. iii) Learn the role of Cauchy Goursat theorem and Cauchy integral formula in evaluation of contour integrals. iv) Apply Liouville's theorem in fundamental theorem of algebra. v) Understand the convergence, term by term integration and differentiation of a power series. vi) Learn Taylor and Laurent series expansions of analytic functions, classify the nature of singularity, poles and residues and application of Cauchy Residue theorem. Numerical Analysis This course will enable the students to: i) Obtain numerical solutions of algebraic and transcendental equations. ii) Find numerical solutions of system of linear equations and check the accuracy of the solutions. iii) Learn about various interpolating and extrapolating methods. iv) Solve initial and boundary value problems in differential equations using numerical methods. v) Apply various numerical methods in real life problems. Discrete Mathematics This course will enable the students to: i) Learn about partially ordered sets, lattices and their types. ii) Understand Boolean algebra and Boolean functions, logic gates, switching circuits and their applications. iii) Solve real-life problems using finite-state and Turing machines. iv) Assimilate various graph theoretic concepts and familiarize with their applications. Mathematical Finance This course will enable the students to: i) Understand financial markets and derivatives including options and futures. ii) Appreciate pricing of options, interest rate swaps and no-arbitrage pricing concepts. iii) Study and use Hedging parameters, trading strategies and currency swaps. C++Programming for Mathematics This course will enable the students to: i) Understand and apply the programming concepts of C++ which is important for mathematical investigation and problem solving. ii) Use mathematical libraries for computational objectives. iii) Represent the outputs of programs visually in terms of well formatted text and plots. Cryptography This course will enable the students to: i) Understand the difference between classical and modern cryptography. ii) Learn the fundamentals of cryptography, including Data and Advanced Encryption Standards (DES & AES) and RSA. iii) Encrypt and decrypt messages using block ciphers, sign and verify messages using well-known signature generation and verification algorithms. iv) Know about the aspects of number theory which are relevant to cryptography. Number Theory This course will enable the students to: i) Learn about some important results in the theory of numbers including the prime number theorem, Chinese remainder theorem, Wilson's theorem and their consequences. ii) Learn about number theoretic functions, modular arithmetic and their applications. iii) Familiarise with modular arithmetic and find primitive roots of prime and composite numbers. iv) Know about open problems in number theory, namely, the Goldbach conjecture and twin-prime conjecture. v) Apply public crypto systems, in particular, RSA.		project work. • Assist students in preparing (personal guidance, books) for competitive exams e.g. NET, GATE, etc.