

ਸ਼ਹੀਦ ਮੇਜਰ ਹਰਮਿੰਦਰਪਾਲ ਸਿੰਘ (ਸੈ. ਚੱ.) ਸਰਕਾਰੀ ਕਾਲਜ, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ

SHAHEED MAJOR HARMINDERPAL SINGH (Shaurya Chakra) GOVERNMENT COLLEGE, SAHIBZADA AJIT SINGH NAGAR

ਫੇਸ-6, ਸਾਹਿਬਜ਼ਾਦਾ ਅਜੀਤ ਸਿੰਘ ਨਗਰ (ਮੋਹਾਲੀ)-160056

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Programme Outcomes (POs) and Course Outcomes (COs)

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Harjeet Goyal
Principal
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Program Outcome for Different Courses

Shaheed Major Harminderpal Singh (Shaurya Chakra) Government College, Sahibzada Ajit Singh Nagar (Mohali) is a college affiliated to Punjabi University Patiala. It offers various undergraduate and post graduate courses. The college offers undergraduate courses in various streams- Arts, Science, Commerce and Computer Science. The post graduate courses are offered in the subjects of English, Punjabi, Fine Arts, Mathematics and Chemistry. There are also several self-finance courses in the streams of Computer Applications, Information Technology, Hospitality, and Biotechnology. Following are the program specific outcomes for each of the program offered in the college.

The Bachelor of Arts

The Bachelor of Arts requires three years of full-time study consisting of six semesters. The College offers nine arts subjects during the degree: English, Punjabi, History, Hindi, Public Administration, Political Science, Economics, Sociology, Home Science, Geography, Fine Arts, Music, Physical Education and Psychology. Bachelor of Arts degree is focused on increasing a students' knowledge and critical thinking in accordance to the syllabus and curriculum prescribed by the affiliating Panjabi University, Patiala. The courses offered in this stream aims to develop realization of human values, culture and a sense of social service. Skill of effective communication and language learning i.e. reading writing, listening and speaking with fluency and understand its cultural value is also one of the significant aims of this program. It develops critical and analytical skills for identification and resolution of problems having social, linguistic and literary contexts. Most importantly, the courses offered under this stream aims to nurture responsible citizen who cultivates human values becoming the building blocks of an egalitarian society.

The Bachelor of Commerce

The Bachelor of Commerce requires three years of full-time study consisting of six semesters. It endows students with the holistic and contemporary knowledge of Business & Commerce through a fair mix of theory & practical courses. It aims to provide students with the knowledge tools of analysis and skills to understand and participate in the modern business and economic world. Students who have taken admission in program of B. Com. are nurtured to develop conceptual foundation and application skills in the areas of accountancy

finance. Management, research and higher education. Develop managerial skills and ability to manage accounts, people and organizations. Further, building life skills and entrepreneurial skill through value-based education and service-oriented programs is one of the significant aims of this stream. The course aims to develop numerical ability, financial and management accounting techniques, analytical and decision-making skills that could make students well versed with business regularity framework.

The Bachelor of Science (Medical & Non-Medical)

Bachelor of Science offers both theoretical and practical knowledge about different subject areas. This course forms the basis of science to pursue multi and interdisciplinary science careers in future. These subject areas include Physics, Chemistry, Mathematics, Computer Science and Botany and Zoology. The program makes the students ready to take up jobs in various sectors such as research firms, health care industry, chemical industry, testing laboratories, Software Company, banks, etc. Students are expected to have an understanding of the analytical methods required to interpret and analyze results and draw conclusions as supported by their data. Students are also expected to develop written and oral communication skills in science and mathematics related topics. It helps to develop scientific temper and thus can prove to be more beneficial for the society as the scientific developments can make a nation or society to grow at a rapid pace through research. The program makes the students eligible to take up various competitive examinations also the knowledge of science is a definite advantage in various entrance examinations like Indian Administrative Services and other state and central Govt. services. The program may also lead the students to the advanced studies and research in multi and inter-disciplinary science for the welfare of the society.

The Master of Arts in English

M.A. (English) requires two years of full-time study consisting of four semesters. It enables the student to comprehend and critically interact with literary works from different contexts: social, political, economic, historical and national. The students become thorough in reading which open up their minds and stimulate the sympathetic/empathic imagination by allowing them to see the world through other's eyes as well to foster intercultural dialogue. Further, the course aims to nurture communication skills and rhetorical skills in students while writing

essays. Articles and project reports. The students can expect to respond to literature aesthetically and critically as informed readers after completing this course.

The Master of Arts in Punjabi

M.A. (Punjabi) requires two years of full-time study, consisting of four semesters. It allows the student to comprehend Punjabi language and literature at an advanced level. It connects students to their cultural roots and provides them with a comprehensive understanding of their diverse cultural and folk heritage. Language and linguistic complexities are also revealed. The program fosters critical thinking skills, and students gain a better understanding of Punjabi language, literature, linguistics, and culture. The course enables students to investigate the relationship of literature to history, society, culture, and human behavior, as well as the evolving cross-cultural concerns depicted in the literary works. It aims to instill skills in contextualizing, interpreting, and effectively communicating literary works.

The Master of Arts in Fine Arts

M.A (Fine Arts) requires two years of full-time study, consisting of four semesters. The course aims to equip and train its students for intellectual, professional, and artistic growth. It prepares pupils for in-demand critical thinking and artistic expertise. It nurtures students to develop solutions for challenges or aesthetic issues. The curriculum is designed in a way that students can develop expertise in artistic expression and gain from it. Finding a setting that promotes the expressive style requires knowledge of painting, the history of the arts, understanding of many art genres, artists, and artwork from various historical and modern situations. These fundamental aspects form a very important part of the curriculum of this course. The students can expect to learn about analyses of various works of art, including art history from various cultures and periods, multiple viewpoints, and comprehension of ethnic perspective.

The Master of Science in Mathematics

This program helps students in understanding fundamental axioms in mathematics and developing ideas based on mathematical reasoning. Students get knowledge on a wide range of mathematical techniques and application of mathematical methods/tools in other scientific and engineering domains. empowering them to pursue higher degrees at reputed academic

institutions. Strong foundation on Algebra. Analysis. Number Theory, topology and representation theory which is backbone of modern physics. string theory and cryptography is also an outcome of this program.

The Master of Science in Chemistry

This program enables the students to demonstrate and apply the fundamental knowledge of Chemistry in natural products isolations, pharmaceuticals, dyes, textiles. Polymers, petroleum products. Forensic etc. and also to develop interdisciplinary approach of the subject. It also helps students to communicate scientific information in a clear and concise manner both orally and in Writing. Program enables the students to understand and explain environmental pollution issues along with its remedies and apply the knowledge to develop the sustainable and eco-friendly technology in Industrial Chemistry. This program helps students in developing their critical reasoning, judgment and communication skills and enhances the scientific temper among the students so as to develop a research culture and implementation of the policies to tackle the burning issues at global and local level.

Master of Science in Information Technology

A Master of Science in Information Technology (MScIT) is a two year program that provides advanced technical skills, problem-solving abilities, and project management expertise. Graduates learn to analyze and solve complex technological issues, while also gaining proficiency in cybersecurity and data analysis. Effective communication of technical concepts and a grasp of how technology aligns with business goals are emphasized. The program encourages innovation, research, and the application of technology to various industries. Ultimately, MSIT equips students for roles in software development, IT management, cybersecurity, data analysis, and more, by deepening their understanding of technology and its real-world applications.

Post Graduate Diploma in Computer Application (PGDCA)

The Diploma course requires one years of full-time study consisting of two semesters. It is intended for graduate students to learn the fundamentals of information technology and database management. Students can pursue professional knowledge in computer applications through this program. After completing the course, students will be able to use internet

searching techniques, download information from the web, and communicate using digital mediums such as e-mail, drive sharing, cloud storage, and so on. The course develops such skills that students can opt for various Careers such as web developer, web designers, computer language programmers, computer programmer, software developer, ethical hacker and other fields of computer applications. The program covers all aspects and fundamentals of computer applications. It also includes projects for developing software in various programming languages, as well as a real-time environment. The program forms a foundation for entry to an appropriate Master's degree program.

The Bachelor of Computer Application

BCA is a three-year undergraduate course in computer application. It is one of the most sought-after technical courses because of the growing demand for computer experts both in India and abroad. The three years Course covers all crucial topics related to computer applications such as database. data structure, programming paradigms and networking. After completing the course, the students get opportunity to work in MNCs like Infosys, Oracle, IBM, in etc. Apart from this government organizations including NIC, Indian Air Force, Navy and Army also hire Computer specialists. Moreover, one can also start different sorts of enterprises or can even work for themselves.

Diploma Courses of Hospitality and Tourism Society (HATS)

Govt. College Mohali, Department of Hospitality and Tourism Society (HATS) offers four one-year diploma courses- Diploma in Food Production, Diploma in Bakery and Confectionary, Diploma in Food and Beverages and Diploma in Accommodation Operation. It aims to provide students with the foundation for a Career within the hospitality and Tourism industry. Its unique curriculum and state-of-the-art laboratories confer excellence in all aspects of hospitality management. In addition to program specific courses, students receive a solid foundation of critical skills such as problem solving, presentation, communication, team dynamics and analytical abilities, thus helping students develop holistic personality to evolve as a successful hospitality professional & entrepreneur. HATS distinctively blends the theoretical and practical elements of Education with real life Experience in internationally acclaimed and award winning five-star hotel properties like JW. Marriott, Taj, the Leela, Hyatt and Holiday Inn etc. This interface brings the students closer to achieving the transition from student -to employee-to future industry managers. The

Mission of "HATS" is to train and equip students with current and emerging hospitality knowledge and skills as per the present industry standards.

Department-wise Course Outcomes

B.A. with Public Administration

Class	Paper Name	Course Outcomes
BA I	Administration Theory	<ul style="list-style-type: none"> ➤ Awareness about the evolution and growth of the discipline of Public Administration. ➤ Learning of basic principles and approaches of Public Administration. ➤ Theoretical clarity of basic concepts and dynamics (both ecological and others) relating to Public organizations.
BA I	Indian Administration	<ul style="list-style-type: none"> ➤ Knowledge about the evolution and growth of Indian Administration. ➤ Familiarity with the constitutional framework on which Indian Administration is based. ➤ Grasping the role of Union Executive and Executive at the state level. ➤ Delineating the constitutional provisions and dynamics of union-state relationships.
BA II	Personnel Administration	<ul style="list-style-type: none"> ➤ Conceptual clarity regarding Public Personnel Administration, its issues, career systems and other dimensions covering various aspects of personnel administration. ➤ Detailed understanding of the Public personnel system of the Indian Republic. ➤ Theoretical clarity of basic concepts and dynamics relating to Public organizations.

BA II	Financial Administration	<ul style="list-style-type: none"> ➤ Knowledge of various aspects of Public Financial Administration in the Indian context. ➤ Understanding the process of Public budgeting, and financial resource mobilization strategies in the Indian context. ➤ Comprehending the system and dynamics of Indian fiscal federalism. ➤ Deep understanding of the role of Finance Commission and Comptroller and Auditor-General of India.
BA III	Local Government In India (With Special Reference To Punjab)	<ul style="list-style-type: none"> ➤ Acquiring the theoretical knowledge and understanding of the evolution and growth of local governance in India with special reference to Punjab. ➤ Gaining insights about composition, resources, role and functions, of Local Government Institutions. ➤ Understanding role and relationships of local government institutions with other institutions.
BA III	Development Administration In India (With Special Reference To Punjab)	<ul style="list-style-type: none"> ➤ Developing a basic intellectual understanding of development and sustainable development. ➤ Will be equipped with the knowledge and conceptual clarity of meaning, approaches and models of Comparative Public Administration. ➤ Understanding India as a Welfare State and rationale behind various steps taken uplift the marginal section of the society. ➤ Understanding the significance of planning in development and the role and reach of NITI Aayog in Indian Federalism.

B.A with Economics

Class	Paper	Course Outcome
BA I	Micro Economics and Indian Economy I	<ul style="list-style-type: none"> • Understand four major economics challenges of Indian Economy, Poverty, Inequality, Unemployment and inflation. • Analyse the context in which economic reforms were introduced in the country in the 1980s and 1990s. • To make the student understand different types of market and levels of competition prevailing in the market. • To make the student understand the supply side of the market through the production and cost behavior of firms
BA I	Micro Economics and Indian Economy II	<ul style="list-style-type: none"> • To expose the students to the basic concepts of micro economics and macroeconomic theory. • To expose the students to various economic problems and issues related to growth, development, sustainable development, environment with special reference to Indian. • To familiarize students to the basic concepts and theories of international trade, determinants, and dynamic effects of trade policies. • To make students understand the long run dynamic issues like growth and technical progress.
BA II	Macro Economics And Public Finance	<ul style="list-style-type: none"> • Students are expected to understand the content, possibilities and constraints of (macro)economic policy in an open economy, the unavoidable trade-offs between ultimate economic policy objectives • Understand the role of expectations in macroeconomics • Provides the backdrop against which the approaches to Term and Risk Structure of Interests has evolved and analysis of current approaches. • Explores Information Asymmetry in debt and credit markets.

BA II	Macro Economics And International Trade	<ul style="list-style-type: none"> • Demonstrate familiarity with the terminology adopted in international economics. • Reflect on trade policy instruments and analyses their effects on nations' welfare. • Analyse fiscal and monetary policy decisions to counter business cycle swings by using macro economic models.
BA III	Development of Economics	<ul style="list-style-type: none"> • After finishing the course, students are expected to demonstrate understanding the critical issues of economic development such as poverty, nutrition and inequality in the developing world. • Students will be able to critically view the growth and development theories and exhibit the ability to provide new evidence by empirically testing the models. • Students will also be able to critically read the journal literature in the area.
BA III	Quantitative Methods	<ul style="list-style-type: none"> • Explain and discuss the researcher's work. • Elucidate basic statistical concepts and tests used in educational research. • Demonstrate their competence and confidence in using descriptive statistics. • Demonstrate their competence and confidence in using inferential statistics in general and to the use of significance testing in particular.

B.A with Sociology

Class	Paper	Course outcome
BA I	Fundamentals of Sociology	<ul style="list-style-type: none"> • Understand the significance of current events as an individual, a member of social groups, a member of specific society. • It will also help them to understand the intellectual and ethical importance of the sociological imagination and sociological mindfulness.
BA II	Social Structure of Indian Economy	<ul style="list-style-type: none"> • explain +e meaning of real income and analyse the trends in real income. • analyse the trend in the rate of growth of Indian economy.

		<ul style="list-style-type: none"> outline the main features of the Indian economic system in [ems of ownership and organisation. explain the extent of poverty and the extent'of inequalities in India.
BA II	Social Changes in India	<ul style="list-style-type: none"> Define what social change is. Differentiate between social change and cultural change. Understand various characteristics of social change. Understand various sources of social change. Understand various factors of social change.
BA III	Social Thought	<ul style="list-style-type: none"> Examine the key tenets of classical social theory Appraise the intellectual contributions of thinkers in the course to sociological theory Illustrate the social and intellectual origins of classical sociology Demonstrate the applicability of sociological theory to understanding the current social.
BA III	Social Science Research Methods	<ul style="list-style-type: none"> describe major sociological research methods and methodologies and their relevance to a range of social research problems; evaluate the methodological validity of sociological knowledge claims; describe a range of ethical and practical issues associated with social research; develop a methodologically robust research plan.

B.A with Psychology

Class	Paper	Course outcomes
BA I	General Psychology	<ul style="list-style-type: none"> Know basic concepts of human psychology and the core processes related to psychology. Have an idea of the major theories that explain human behavior and cognitive processes. Use psychological knowledge to describe and explain human behavior in personal and social settings.

		<ul style="list-style-type: none"> Apply human psychology in understanding and explaining individual and social level of behavior.
BA II	Experimental Psychology	<ul style="list-style-type: none"> Acquire the skills in administration, scoring, and interpretation of psychological tests. Understand the use of psychological tests in diagnosis, psychological interventions and research. Understand the process of rapport building during the administration of psychological tests. Develop proficiency in interpreting the results of the test obtained.
BA III	Psychopathology	<ul style="list-style-type: none"> understand the current and historical sociocultural context of psychopathology. understand the many factors which influence the development of psychopathology. understand what helps and how to support someone who is experiencing mental health difficulties.

B.A with Economics

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BA I	Micro Economics and Indian Economy I	<ul style="list-style-type: none"> Understand four major economics challenges of Indian Economy, Poverty, Inequality, Unemployment and inflation. Analyse the context in which economic reforms were introduced in the country in the 1980s and 1990s. To make the student understand different types of market and levels of competition prevailing in the market. To make the student understand the supply side of the market through the production and cost behavior of firms
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		<ul style="list-style-type: none"> To make students understand the long run dynamic issues like growth and technical progress.
BA II	Macro Economics And Public Finance	<ul style="list-style-type: none"> Students are expected to understand the content, possibilities and constraints of (macro)economic policy in an open economy, the unavoidable trade-offs between ultimate economic policy objectives Understand the role of expectations in macroeconomics Provides the backdrop against which the approaches to Term and Risk Structure of Interests has evolved and analysis of current approaches. Explores Information Asymmetry in debt and credit markets.
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BA III	Development of Economics	<ul style="list-style-type: none"> After finishing the course, students are expected to demonstrate understanding the critical issues of economic development such as poverty, nutrition and inequality in the developing world. Students will be able to critically view the growth and development theories and exhibit the ability to provide new evidence by empirically testing the models. Students will also be able to critically read the journal literature in the area.
BA III	Quantitative Methods	<ul style="list-style-type: none"> Explain and discuss the researcher's work. Elucidate basic statistical concepts and tests used in educational research. Demonstrate their competence and confidence in using descriptive statistics. Demonstrate their competence and confidence in using inferential statistics in general and to the use of significance testing in particular.

Bachelor of Commerce

Class	Paper	Course Outcomes
B Com I	FINANCIAL ACCOUNTING	<ul style="list-style-type: none"> • Demonstrate accounting process under computerized accounting system; • Measure business income applying relevant Accounting Standards • Evaluate the importance of depreciation and inventories in financial statements • Prepare cash book and other accounts necessary while running a business
B Com I	PRINCIPLES OF ECONOMICS	<ul style="list-style-type: none"> • Describe and differentiate between major economic systems. • Explain the determinants of demand. • Explain the determinants of supply. • Explain and graphically illustrate market equilibrium, surplus and shortage.
B Com I	BUSINESS LAWS	<ul style="list-style-type: none"> • Interpret the regulation governing the Contract of Sale of Goods. • Explain the law governing regulation and management of foreign exchange under FEMA. • Examine various aspects of entering into a contract and implications of different types of contract • Demonstrate an understanding of the Legal Environment of Business.
B Com I	COMPUTER APPLICATION IN BUSSINESS	<ul style="list-style-type: none"> • Gain familiarity with the concepts and terminology used in the development, implementation and operation of business application systems. • Explore various methods that Information Technology can be used to support existing businesses and strategies. • Achieve hands-on experience with productivity/application software to enhance business activities. • Accomplish projects utilizing business theories, Internet resources and computer technology.
B Com I	BUSINESS MATHEMATICS	<ul style="list-style-type: none"> • The students after completion of the program will be able to understand the mathematical concepts and terminology involved in Algebra, Derivatives and basic

		<p>arithmetic operations on Matrices.</p> <ul style="list-style-type: none"> • The students will be able to interpret and solve business related problems • A strong sense of identity. • Confident and involved learners.
B Com II	<p>BUSINESS STATISTICS</p>	<ul style="list-style-type: none"> • Use commonly used statistical packages to apply various statistical tools to a data set available through secondary sources. • Make use of computer aided software packages and prepare the practical graphical presentation of correlation and regression analysis, frequency charts etc. • Take the business case and assess how the use of matrices help in deciding about competing alternatives both under constrained and unconstrained situations. • Gather information about various deposit and loan schemes of banks and other financing institutions to find out interest rate differential, and compounded value.
B Com II	<p>CORPORATE ACCOUNTING</p>	<ul style="list-style-type: none"> • Describe the rationale, merits, and demerits of issuing bonus shares for a company. • Prepare balance sheet after Internal Reconstruction of company. • Analyse the case study of major amalgamations of companies in India • Describe the process of e-filing of annual reports of companies.
B Com II	<p>INCOME TAX LAW</p>	<ul style="list-style-type: none"> • Comprehend the provisions relating to filing of return of income. • Compute income under different heads, applying the charging provisions, deeming provisions, exemptions and deductions. • Apply the clubbing provisions and provisions relating to set-off and carry forward of losses to determine the gross total income. • Calculate the tax liability of an individual and HUF as well as deductions from gross total income and determine the total income of an individual and HUF.

B Com II	ENVIRONMENTAL STUDIES	<ul style="list-style-type: none"> • Demonstrate skills in organizing projects for environmental protection and sustainability. • Analyse various projects and initiatives with respect to ecosystem restoration. • Interpret significance of carbon footprints. • Summarize the green strategies and policies adopted by various business entities to preserve the environment.
B Com II	PRINCIPLES OF BUSINESS MANAGEMENT	<ul style="list-style-type: none"> • Distinguish and explain each form of business. • Analyse the concept of Delegation of Authority, coordination, and control. • Identify and explain the managerial skills used in business. • Prepare draft of Article of Association & Memorandum of Association for a business.
B Com II	COMPANY LAW	<ul style="list-style-type: none"> • Determine the role of Board of directors and their legal position. • Explain relevant definitions and provisions relating to issue of prospectus and allotment of shares. • Synthesize company processes, meetings, and decisions. • Describe the framework of dividend distribution, Accounts of the company and Audit and Auditors of company.
B Com II	OPERATIONS RESEARCH	<ul style="list-style-type: none"> • solve the integer programming models using branch-and-bound method. • formulate pure, mixed, and binary integer programming models. • use some solution methods for solving the nonlinear optimization problems. • solve the zero-sum two- person games.
B Com III	AUDITING	<ul style="list-style-type: none"> • This course introduces students to the field of auditing and assurance. • Define Audit Environment. • Explain need for independent audit. • Defining Audit Planning, Audit evidence and audit reports.

B Com III	COST ACCOUNTING	<ul style="list-style-type: none"> • Determine various types of cost of production • Compute unit cost and total cost of production and prepare cost statement • Compute employee cost, employee productivity, and employee turnover • Determine cost under job costing, batch costing, process costing, contract costing and service costing.
B Com III	MANAGEMENT ACCOUNTING	<ul style="list-style-type: none"> • Analyse the role of ERP in Business Decision Making. • Use spreadsheets and Expert System for managerial decision making. • Compute standard costs and analyse production cost preparing variance report. • Prepare various budgets and to measure the performance of the business firm applying budgetary control measures.
B Com III	MONEY AND BANKING	<ul style="list-style-type: none"> • Explain the meaning, scope and functions of Banking along with legal framework • Assess the operations of banking and its services • Explain the concept of insurance and its principles • Evaluate the lending operations of banks and identify causes of NPA in banks.
B Com III	INDIRECT TAX	<ul style="list-style-type: none"> • Explain concept, need, and utility of indirect taxes. • Explain the various procedures under GST • Identify exemptions for different types of goods and services. • Examine implications of input tax credit.
B Com III	PRINCIPLES OF MARKETING	<ul style="list-style-type: none"> • Learn various developments in marketing area that may govern marketing decisions of a firm and also various ethical and legal issues. • Analyse the process of marketing decisions involving product development and its role in value creation. • Analyse the process of marketing decisions involving product pricing and its distribution, and assess the impact on value creation • Analyse the process of marketing decisions involving product promotion and its role in

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		<p>creating communication value for customers.</p>
B Com III	FUNDAMENTAL OF INSURANCE	<ul style="list-style-type: none"> • Explain risk management in insurance and understanding of the insurance mechanism. • Determine the loss exposures of properties, human lives, business operations, and the financial consequences because of the occurrence of a loss. • Apply the knowledge of current information, models, and techniques and practices in all of the major business disciplines. • Create valuable insights into overview of Life Insurance and General Insurance Products.
B Com III	BUSINESS ENVIRONMENT	<ul style="list-style-type: none"> • Identify and evaluate the complexities of business environment and their impact on the business. • Analysis the relationships between Government and business and understand the political, economic, legal and social policies of the country. • Analysis current economic conditions in developing emerging markets, and evaluate present and future opportunities. • Gain knowledge about the operation of different institutions in international business environment.
B Com III	INTERNATIONAL MARKETING	<ul style="list-style-type: none"> • Classify strategies for entering export markets from extant knowledge and research • Apply core theoretical concepts in international marketing to find practical solutions to constraints of small businesses • Propose revised strategies and marketing communications to enter diverse international markets • Improve professional experience through an evidence-based approach to decision making in the domain of international marketing

B Com III	GOVERNANCE AND ETHICS	<ul style="list-style-type: none"> • To understand the Business Ethics and to provide best practices of business ethics • 2) To learn the values and implement in their careers to become a manager. • To develop various corporate social Responsibilities and practise in their professional life • To Imbibe the ethical issues in corporate governance and to adhere to the ethical codes.
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BA with Home Science

CLASS	PAPER	COURSE OUTCOME
BA I	Home Management and Hygiene	<ul style="list-style-type: none"> • Students will grasp knowledge of housing need and selection of site, soil and locality in real life situations. • Learn how to select furniture for their home. • Acquire knowledge about the principles and elements of design and their use in interior decoration. • Learn the family resource management as a whole.
BA I	Resource Management and Human Physiology	<ul style="list-style-type: none"> • Developing skills for making time plans for effective balance of work and leisure. • Learn to prepare budget for the family. • Gain knowlwdgw about time money and energy management. • Incorporate appropriate work simplification in

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		using household equipments.
BA II	Clothing	<ul style="list-style-type: none"> • Gain knowledge about sewing machine and different equipments and supplies used in clothing construction. • Learn the skill of drafting and pattern making. • Acquire knowledge about principles and elements of design and their use in personality development. • Acquire knowledge about selection of clothes.
BA II	Textiles	<ul style="list-style-type: none"> • Students will acquire knowledge about basic concepts related to different types of fibers, yarns and fabrics. • Learn fabric manufacturing. • Learn about the finishes done on fabrics. • Learn about different dyeing and printing techniques.
BA III	Food Science and Child Development I	<ul style="list-style-type: none"> • Students will acquire knowledge about the basic food groups and food constituents. • Understand development related issues more efficiently. • Students will get familiar with different methods of cooking • Learn to cope up with adolescent and

		adulthood problems
BA III	Food Science and Child Development II	<ul style="list-style-type: none"> • Students will learn to concept of balanced diet. • Develop skill of meal planning. • Able to know the concept of pre-natal development, pregnancy. • Learn about dietary management in some common disorders.

BSc Zoology

CLASS	PAPER	COURSE OUTCOME
BSC I	CELL BIOLOGY	<ul style="list-style-type: none"> • . Students will understand the structures and purposes of basic components of prokaryotic and eukaryotic cells, especially macromolecules, membranes, and organelles • . Students will understand how these cellular components are used to generate and utilize energy in cells • Students will understand the cellular components underlying mitotic cell division • Students will apply their knowledge of cell biology to selected examples of changes or losses in cell function. These can include responses to environmental or physiological changes,

		or alterations of cell function brought about by mutation.
BSC I	NON CHORDATES	<ul style="list-style-type: none"> • Learn about the importance of systematics, taxonomy and structural organization of animals. • Understand evolutionary history and relationships of different non-chordates through functional and structural affinities. • Critically analyse the organization, complexity and characteristic features of nonchordates making them familiarize with the morphology and anatomy of representatives of various animal phyla. • Enhance collaborative learning and communication skills through practical sessions, team work, group discussions, assignments and projects.
BSC I	ECOLOGY	<ul style="list-style-type: none"> • Describe a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability • Critically analyze technical subject matter (written or oral) for scientific

		merit apply learned environmental knowledge and understanding to solve technical /research problems in new contexts
BSC I	CHRODATES	<ul style="list-style-type: none"> • Enumerate the inheritance of major human genetic traits, pedigree chart, normal and abnormal human karyotypes, phenotypic differences of male and female Drosophila and solve problems on Monohybrid, dihybrid crosses, blood groups and sex-linked inheritance • Understand electrophoresis, PCR, Northern blotting, Southern blotting and Western blotting, DNA sequencing and fingerprinting and isolation of genomic DNA. • Perform gram staining and preparation of culture media for bacteria and demonstrate bacterial motility by standard laboratory protocols. • Understand the detection of human blood groups and organs of immune system
BSC II	BIOCHEMISTRY	<ul style="list-style-type: none"> • To learn about tests carried out for biochemical investigations. • Understanding of principle of biochemical Clinical biochemistry tests.

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		<ul style="list-style-type: none"> • To learn normal ranges and abnormal ranges of biochemical components and hormones. • To study about diseases related to biochemical and hormone imbalance in human body.
BSC II	ANIMAL PHYSIOLOGY	<ul style="list-style-type: none"> • Summaries the functions of all body organs • Classify the factors that increase or decrease the mechanism correction. • Debate the function of adrenal glands (aldosterone, cortisol, and catecholamine). • Evaluate the negative feedback control in Homeostasis
BSC III	MOLECULAR BIOLOGY	<ul style="list-style-type: none"> • Describe basic biological concepts and principles and underlying chemical, physical and mathematical foundations. • Be aware of the environmental, health, economic and ethical implications of scientific discoveries and technical innovations. • Integrate the different levels of

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		<p>biological organization, from molecules to cells to organisms.</p> <ul style="list-style-type: none"> • Integrate the different levels of biological organization, from molecules to cells to organisms.
BSC III	DEVELOPMENTAL BIOLOGY	<ul style="list-style-type: none"> • Describe the basic anatomy of invertebrate and vertebrate animals • Describe developmental stages in invertebrate and vertebrate animals • Identify new signalling pathways in a complete organism <p>Analyse mutant worms and their placement of components in signalling pathways.</p>
BSC III	MEDICAL ZOOLOGY AND MEDICAL LAB TECHNOLOGY	<ul style="list-style-type: none"> • Understand the industrial and medical importance of microorganisms. • Learn the application of radiations in Medical treatments. • Equip the learner to use the tools

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		<p>and techniques for project work/ research.</p> <p>Learn the economic and medical importance of insects</p>
BSC III	IMMUNOLOGY	<ul style="list-style-type: none"> • Provide an intensive and in-depth knowledge to the students in immunology • Understand the role of immunology in human health and well-being • Familiarize the students the new developments in immunology <p>Understand the risks in transplantation of organs.</p>
BSC III	INSECT BIOLOGY	<ul style="list-style-type: none"> • Explore and discover insect diversity and biology via lectures, discussions and a laboratory, on topics ranging from anatomy and physiology to diversity and life-history. • Gain in-depth and working knowledge of major Insect Orders, including opportunity to teach peers about the biology and diversity of Orders, drawing upon personal experience, primary literature,

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		<p>web-based resources, specimens, and textbooks.</p> <ul style="list-style-type: none"> • Write about an insect species, from its evolutionary history to its biology, natural history and diagnostic characteristics. <p>Appreciate the important role of insects in society, from economics to art.</p>
BSC III	ECONOMIC ENTOMOLOGY AND PEST MANAGEMENT	<ul style="list-style-type: none"> • Understand the life history and ecology of the main economically important pest insects, focusing on those occurring in agricultural ecosystems in Uganda and East African region • Understand the life history and ecology of the main economically important pest insects, focusing on those occurring in agricultural ecosystems in Uganda and East African region <p>Students will identify and label insect anatomy, and describe their role in the insect life cycle.</p>

BSC III	AQUACULTURE	<ul style="list-style-type: none"> • Define, comprehend, scope and significance of aquaculture • . Acquire knowledge on taxonomy and morphology of fishes • Examine the types and practices of Aquaculture <p>Estimate and evaluate the functions of reproduction and endocrine glands</p>
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BA with Computer Science

CLASS	PAPER	COURSE OUTCOME
BA I	Fundamentals of information technology	<ul style="list-style-type: none"> • Understand basic concepts and terminology of information technology. • Have a basic understanding of personal computers and their operations. • Be able to identify issues related to information security. • Master database concepts for a full understanding of Relational Model, ER Model, and more.
BA I	MS- Office Automation tools	<ul style="list-style-type: none"> • The course aims to provide knowledge about basic components of a computer and their significance. • Office tools course would enable the students in crafting professional word documents, excel spread

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		<p>sheets, power point presentations using the Microsoft suite of office tools.</p> <ul style="list-style-type: none"> • To familiarize the students in preparation of documents and presentations with office automation tools. • By learning the course, the students will be able to perform documentation, to perform accounting operations & to perform presentation skills.
BA II	C Programming and Data Structures	<ul style="list-style-type: none"> • Understand importance of object oriented programming and difference between structured oriented and object oriented programming features. Develop an in-depth understanding of object oriented paradigm with principles of classes, objects and functions. • Able to make use of objects and classes for developing programs. Ø • Implement various object oriented concepts to solve different problems. CO4: Apply algorithms, flowcharts and applications of graphs and trees to simplify real time problems. • Implement the abstract data types stack, queue, deque, and list.
BA II	Database Management system	<ul style="list-style-type: none"> • Understand, effectively & explain the underlying concepts of database Technologies. • Design and implement a database schema for a

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		<p>given problem-domain.</p> <ul style="list-style-type: none"> • Normalize a database and query a database using SQL DML/DDDL/DCL/TCL/DQL • Declare and enforce integrity constraints on a database.
BA III	Object Oriented Programming Using C++	<ul style="list-style-type: none"> • Able to develop programs with reusability • Develop programs for file handling. • Handle exceptions in programming. • Develop applications for a range of problems using object-oriented programming techniques.
BA III	Introduction to computer Network and Internet Programming	<ul style="list-style-type: none"> • Understand computer network basics, network architecture, TCP/IP and OSI reference models. • Identify and understand various techniques and modes of transmission • Describe data link protocols, multi-channel access protocols and IEEE 802 standards for LAN • Describe routing and congestion in network layer with routing algorithms and classify IPV4 addressing scheme.

POST GRADUATE COURSES

Master in English

Program Name: Master in English Literature	Program Code: ENGM2PUP
Program Specific Outcomes:	
<ol style="list-style-type: none"> 1. The students will learn about the different genres and forms of literary texts. 2. The students will develop a broader chronological understanding of the transitions in the history of English literature and the socio-cultural and political contexts that led to the emergence of different genres in literature. 3. The students will become familiar with literary masterpieces and will learn to appreciate the creative as well as critical insights of literary writers. 4. The students will be able to situate literary works in different social, political, economic, historical and national contexts. 5. The students will learn to appreciate modern Indian literature in English and its unique contribution to literature. 6. The students will be able to critically analyse and interpret a literary text. 7. The students will become acquainted with the <i>weltanschauung</i> of writers writing from different socio-cultural, political and linguistic backgrounds. 8. The students will develop efficient writing skills and become well-versed with the conventions of academic writing. 9. Students will become acquainted with major literary terms, concepts and techniques in modern English literature. 10. Students will be able to better appreciate the complex nature of literary studies and its relationship to others aspects of social life. The students will become more sensitive towards issues such as marginalization and subjugation of women. 	
Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Introduction to Poetry: Medieval and Renaissance	Course Code: ENGM1101T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will develop an understanding of the complex character of medieval society and culture. 2. The students will also learn about the modes of representation used by medieval writers. 	

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Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Classical and Elizabethan Drama	Course Code: ENGM1102T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will develop an understanding of the differences between Classical, Renaissance and Jacobean dramatic traditions. 2. The students will learn about the historico-cultural factors for the popularity of the genre of drama in Elizabethan England. 	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Beginnings of the Novel	Course Code: ENGM1103T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will learn about the literary and cultural context that contributed to the rise of the novel. 2. The students will develop an appreciation of the centrality of the novel to modern cultural and political life. 3. The student will become familiar with the challenges of reading a novel. 	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: English Phonetics and Phonology	Course Code: ENGM1104T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will become familiar with phonemic/phonetic differences of English words. 2. The students will development an understanding of the mechanics of pronunciation. 	
Program Name: Master in English	Program Code: ENGM2PUP

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Literature	
Course Name: William Shakespeare: From Stage to Screen	Course Code: ENGM1105T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will be able to appreciate Shakespeare's departure as a dramatist from Aristotelian theory of drama. 2. The students will develop an understanding of the philosophical depth Shakespearean tragedy. 3. The students will be develop an understanding of the transition from the English tradition of morality/mystery plays to Shakespearean drama. 	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Literary Criticism	Course Code: ENGM1206T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will be able to appreciate the changing function of literary criticism. 2. The students will learn to read a literary text critically. 3. The students will also use Indian literary concepts to interpret texts. 	
Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Poetry from Neoclassical to Victorian Age	Course Code: ENGM1207T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will develop a period-specific understanding of poetry. 2. The students will be able to appreciate poetry by situating it in the socio-cultural and historical context. 3. The students will develop an understanding of the changing contours poetic sensibility. 	
Program Name: Master in English	Program Code: ENGM2PUP

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Literature	
Course Name: Nineteenth Century Fiction	Course Code: ENGM1208T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will be able to appreciate the centrality of the novel in the nineteenth century. 2. The students will develop an understanding of the flourishing of the genre of novel across America, France, England and Russia during the nineteenth century. 	

Program Name: Master in English	Program Code: ENGM2PUP
Literature	
Course Name: Contemporary Essay	Course Code: ENGM1209T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will be able to appreciate the growth of essay writing from the classical to the modern. 2. The students will develop an understanding of how essay writing is different from other forms of writing (both fiction and non-fiction). 	

Program Name: Master in English	Program Code: ENGM2PUP
Literature	
Course Name: Creative Writing	Course Code: ENGM1210T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will be able to appreciate the construction of clear, precise and beautiful sentences. 2. The students will develop an understating of the organization of information into a narrative. 	
Program Name: Master in English	Program Code: ENGM2PUP

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Literature	
Course Name: Modern English Grammar and Usage	Course Code: ENGM1211T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will develop an understanding of the rudiments of grammar and its usage. 	
Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Literature and Modernity	Course Code: ENGM2112T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will be able to appreciate the complexity of modernism and the kind of literature it produced. 2. The students will develop an understanding of the complex relationship between modernity and modern literary forms such as the novel. 	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Twentieth Century Poetry and Fiction	Course Code: ENGM2113T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will develop an appreciation of the literary techniques used by modern writers. 2. The students will have a better grasp of how different kinds of experimentation that was happening in literature with reference to select texts. 	

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Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Literature and Gender	Course Code: ENGM2114T
Course Outcomes: <ol style="list-style-type: none">1. The students will be able to appreciate the contribution of women as agents in the making of modern literature.2. The students will develop an understanding of how women writes interrogated the existing literary landscape.	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Literature and Postcoloniality	Course Code: ENGM2115T
Course Outcomes: <ol style="list-style-type: none">1. The students will be able to appreciate how writers started interrogating the complex layers of colonial imagination.2. The students will develop an understanding of the politics of representation.	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Modern Drama	Course Code: ENGM2116T
Course Outcomes: <ol style="list-style-type: none">1. The students will be able to appreciate how and where modern theatre departs from Aristotelian principles of dramatic representation.2. The students learn to appreciate the significance of theatre in the modern cultural context.	
Program Name: Master in English	Program Code: ENGM2PUP

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Literature	
Course Name: Indian Writing in English	Course Code: ENGM2117T
Course Outcomes: <ol style="list-style-type: none">1. The students will be able to appreciate how writers from India have appropriated and engaged with tradition of writing in English.2. The students will develop an understanding of how regional, cultural and linguistic diversity of India is represented in Indian writing in English.	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Literary and Cultural Theory	Course Code: ENGM2218T
Course Outcomes: <ol style="list-style-type: none">1. The students will develop an understanding of the changing trajectory of cultural studies as a discipline.2. The students will be able to appreciate the complexity which underpins cultural praxis and processes.	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Modern Indian Literature in Translation	Course Code: ENGM2219T
Course Outcomes: <ol style="list-style-type: none">1. The students will be able to appreciate the significance and necessity of literary translation.2. The students will develop an understanding of the different kinds of writing taking place in the regional languages of India.	

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Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Literature and Politics	Course Code: ENGM2220T
Course Outcomes: <ol style="list-style-type: none">1. The students will be able to appreciate how literature engages and responds to major political events that have shaped modern history.2. The students will develop an understanding of how the act of writing can influence political participation and processes.	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: American Literature	Course Code: ENGM2221T
Course Outcomes: <ol style="list-style-type: none">1. The students will develop an understanding of how the experience of race and class shape your relationship to the American dream.2. The students will develop an insight into how American social and cultural history has shaped American literary landscape.	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: Language and Linguistics	Course Code: ENGM2222T
Course Outcomes: <ol style="list-style-type: none">1. The students will develop an understanding of the semantics of language with special reference to word formation, grammar and morphology.2. The students will also be able to appreciate the relationship between language and the construction of discourse.	

Program Name: Master in English Literature	Program Code: ENGM2PUP
Course Name: European Drama	Course Code: ENGM2223T
Course Outcomes:	
<ol style="list-style-type: none"> 1. The students will be exposed to the traditions of Greek and Modern European drama. 2. The students will develop an understanding of the thematic changes that have occurred in European drama. 	

M.Sc. (Mathematics)

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Program Outcomes:	
PO1	To provide solid mathematical foundation to the students which should make their theoretical as well as problem-solving techniques on a firm mathematical footing
PO2	To make the students well versed in modern computational subjects like soft computing, artificial intelligence, image processing and others, so that the student will be able to conduct meaningful research in almost all computational sciences with proper mathematical background as well as become successful teachers
PO3	To expose the students to the applications of computational subjects which makes them suitable for intake into the industrial sector.
Program Specific Outcomes:	
PSO1	Capability for inquiring about appropriate questions relating to the concepts in various fields of mathematics.
PSO2	Ability to communicate various concepts of mathematics effectively using examples and their geometrical visualizations.
PSO3	Ability to analyze the results and apply them in various problems appearing in different branches of mathematics.

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Algebra-I	Course Code: AMCM1101T
Course Outcomes:	

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CO1	To understand the notion of group action and able to apply this to get some interesting results of Group actions like Class Equation etc
CO2	Able to learn Lagrange's Theorem , structure theory of groups, solvability and nilpotency of groups
CO3	To understand the Symmetric groups , Alternating Groups and their simplicity
CO4	To know how to apply Sylow Theory to determine structure of groups of finite order
CO5	To understand the basic properties of Rings and Ideals

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Mathematical Analysis		Course Code: AMCM1102T
Course Outcomes:		
CO1	Solve problems based on functional of several variables including Inverse function theorem, Implicit function theorem	
CO2	Understand Measure spaces and Lebesgue measure	
CO3	Identify measurable function ,Riemann and lebesgue integrals.	
CO4	Understand differentiation ,functions of bounded variation, differentiation of an integral, absolute continuity, convex functions and Jensen's inequality.	
CO5	Describe the applications in probability theory, real analysis, and many other fields in mathematics as functional analysis, approximation theory and PDE.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Topology-I		Course Code: AMCM1103T
Course Outcomes:		
CO1	Can differentiate between finite, countable, uncountable sets and understand the concept of open-sets, closed set, interior and exterior points.	
CO2	Can understand the topological properties like compactness, connectedness and the countability axioms and find their numerous uses in the course.	
CO3	The concepts of basis and sub-basis of a space, of interior and closure set the stage for the most general study of continuity.	
CO4	Enables the student to understand the special characters of the metric spaces as an important special case of a topological space.	
CO5	Enables the student to use these concepts in other areas of their studies whenever needed and establishing the importance of rigorous proof in mathematics.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Introduction to Computer and Programming Using 'C'		Course Code: AMCM1104T

Course Outcomes:	
CO1	Have basic knowledge of computer hardware and software
CO2	Write, compile and debug programs in C language
CO3	Use different data types, operators and I/O functions in computer program
CO4	Design programs involving decision control statements, loop control statements and case control statements
CO5	Understand the implementation of arrays, pointers and functions
CO6	Use the file operations, character I/O, strings and pre-processor directives

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Differential Geometry		Course Code: AMCM1105T
Course Outcomes:		
CO1	To calculate the curvature and torsion of curves and surfaces in the three-dimensional space	
CO2	To study the geometry of curves and surfaces in three-dimensional space using calculus techniques	
CO3	Use of the first and the second fundamental forms for computing the length of the curves on a surface and to determine the deviation of the surface from its tangent plane	
CO4	To have an idea about the surfaces of the constant mean and Gaussian curvature which have interesting physical interpretations.	
CO5	To have a thorough knowledge about the effect of the Gauss's remarkable theorem on the bending of the surface without stretching.	
CO6	To apply the theory of geodesics to study geodesic curvature, geodesic equations and the surfaces of revolution	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Mathematical Statistics		Course Code: AMCM1106T
Course Outcomes:		
CO1	Knowledge of the theory of statistics through mathematical techniques	
CO2	To understand the axiomatic approach to probability with reference to the conceptual details of the set theory	
CO3	Demonstration of the uses of specific parametric families of univariate density functions in day to day life	
CO4	To obtain various generating functions for different discrete and continuous	

	distributions and derive their properties
CO5	To understand the concept of sampling and some important sampling distributions to make inferences about the population
CO6	To apply the knowledge of two important aspects of statistical inference-estimation and test of hypothesis in various feasible statistical and mathematical spheres

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Linear Programming		Course Code: AMCM1107T
Course Outcomes:		
CO1	Able to model a real world problem as a and to find its solution using different variants of Simplex methods	
CO2	To understand dual nature of linear programming problem and their solution	
CO3	To analyze the effect of parametric changes on Optimal solution.	
CO4	To understand important concept of job sequencing problems and variety of models.	
CO5	Replacement of goods which degenerates with time with/without considering any change in value of money	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Algebra-II (Rings and Modules)		Course Code: AMCM1201T
Course Outcomes:		
CO1	To understand the connection between PID, ED and UFD	
CO2	To understand the division algorithm in Polynomial Rings	
CO3	Able to understand the concepts of modules, submodules and their properties	
CO4	To understand the difference of Modules and Vector Spaces and can see modules as generalization of vector spaces	
CO5	To know the concepts of Simple modules, Artinian Modules, Noetherian Modules and their simple characterizations	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Object Oriented Programming Using C++		Course Code: AMCM1202T
Course Outcomes:		
CO1	Write, compile and debug programs in C++ language	

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CO2	Understand the implementation of arrays, pointers and functions
CO3	Describe the procedural and object-oriented paradigm with concepts of classes and objects
CO4	Describe the concept of function overloading, operator overloading, virtual functions and polymorphism
CO5	Classify inheritance with the understanding of early and late binding, usage of exception handling
CO6	Demonstrate the use of various OOPs concepts with the help of programs

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Differential Equations-I		Course Code: AMCM1203T	
Course Outcomes:			
CO1	Know the concepts of existence, uniqueness and continuity of the solutions of first order ordinary differential equations.		
CO2	Identify the properties of the zeros of solutions of linear nth order ordinary differential equations.		
CO3	Analyze the dependence of solutions on initial conditions and parameters.		
CO4	Demonstrate the knowledge of eigen values and eigen functions of Sturm-Liouville systems.		

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Complex Analysis-I		Course Code: AMCM1204T	
Course Outcomes:			
CO1	Study the theory of complex variable with reference to theory real variables		
CO2	Analyse the behaviour of derivative of a function of a complex variable		
CO3	To deal effectively with the numerical concepts related to analytic functions and harmonic functions		
CO4	Construction of various methods to deal with complex integration		
CO5	To investigate the behaviour of a function at the singularities through various series expansions		
CO6	To deal with the concept of analytic continuation by extending the domain of analyticity		

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Topology-II		Course Code: AMCM1205T	

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Course Outcomes:	
CO1	Knowledge of convergence in mathematics through filters, regularity, complete regularity and normality of topological spaces.
CO2	Able to understand the modern language of Categories and Functors through the study of Homotopy
CO3	Introduce the idea of universal properties through the study of Stone Cech Compactification of Tichonov spaces.
CO4	The standard material of Identification spaces and their applications are established.
CO5	Enable the student to see the link between Algebra and Topology by proving the fundamental theorem of Algebra through Topological ideas.
CO6	Prepares the student for their future study of Algebraic Topology and the study of Natural Transformations in Mathematics.

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Functional Analysis-I	Course Code: AMCM1206T
Course Outcomes:	
CO1	Understand and apply fundamental theorems Hahn-Banach theorem in Normed linear spaces and its applications, uniform boundedness principle, open mapping theorem, closed graph theorem.
CO2	Understand Hilbert spaces including orthogonality, orthonormal sets, Bessel's inequality, Parseval's theorem.
CO3	Use and derive basic definitions and theorems of functional analysis
CO4	Differentiate between Banach Space and Hilbert Space
CO5	Apply contraction and approximation theory in differential equations and integral equations.

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Classical Mechanics-I	Course Code: AMCM1207T
Course Outcomes:	
CO1	Determine the Lagrangian and Hamiltonian functions for a physical systems
CO2	Derive and solve the equations of motion from these functions
CO3	Determine the moments of inertia of a rigid body.
CO4	Identify symmetries and to derive the corresponding conservation laws
CO5	Perform calculations using relativistic kinematics and conservation laws

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Programming Using Python	Course Code: AMCM2101T
Course Outcomes:	

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CO1	To learn and understand Python programming basics and paradigm
CO2	To learn and understand Python looping, control statements and string manipulations
CO3	To acquire Object Oriented Skills in Python.
CO4	To learn and know the concepts of file handling and exception handling in Python

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Differentiable Manifolds		Course Code: AMCM2102T
Course Outcomes:		
CO1	To study complicated structures in terms of relatively well understood properties of simpler spaces	
CO2	To acquire the thorough knowledge of the concept of Riemannian manifolds having wide applications in various fields of mathematics	
CO3	Understanding the theory of various differential geometric structures on manifolds and arrange the results on submanifolds of Riemannian manifolds with certain structures	
CO4	To deal with the theory of tensors and to construct differentiable mappings on the tensor product spaces	
CO5	To define various differentiable mappings and connections on the structure of manifolds leading to formation of some important differential geometric tools.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Field Theory		Course Code: AMCM2103T
Course Outcomes:		
CO1	Ability to test whether a given polynomial is irreducible or not	
CO2	Understanding of the basic notions of Field theory like Normal Extensions, Seperable Extensions etc	
CO3	Ability to find splitting field of a given polynomial	
CO4	To calculate Galois group of certain polynomials	
CO5	To apply the Galois correspondence to solve problems of Field theory	

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Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Differential Equations-II		Course Code: AMCM2104T
Course Outcomes:		
CO1	Analyse the existence of solutions of first order differential equations for complex system.	
CO2	Derive the family of Equipotential surface and prove Kelvin inversion theorem.	
CO3	Understand the uniqueness and continuation of solutions of first order differential equations for complex system.	
CO4	Understand the Maximum and minimum solution of first order differential equations for complex system.	
CO5	Formulate and solve initial and boundary value problems for the Laplace equations in polar, spherical and cylindrical coordinates	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Category Theory-I		Course Code: AMCM2105T
Course Outcomes:		
CO1	The central concepts of Functors, Natural Transformations and its numerous applications enable the student to see the link between seemingly different concepts.	
CO2	Can establish the importance of universal properties and the study of various mathematical structures through their universal mapping properties via commutative diagrams.	
CO3	Study of categorical limits and co-limits and its use to bring concepts like pullbacks, products and equalizers under a common structure.	
CO4	Prepares the groundwork for a deeper study of adjunctions and monads.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Complex Analysis-II		Course Code: AMCM2106T
Course Outcomes:		
CO1	Introduce the analyticity of complex functions and study their applications.	
CO2	Evaluate complex integrals using Cauchy residue and Cauchy integral theorems.	
CO3	Determine and classify the zeros and singularities of the complex functions	
CO4	Learn the uniqueness of conformal transformation	
CO5	Establish the capacity for mathematical reasoning through analysing, proving and explaining concepts from complex analysis	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Classical Mechanics-II		Course Code: AMCM2107T
Course Outcomes:		
CO1	Determine the Lagrangian and Hamiltonian functions for a physical systems	
CO2	Derive and solve the equations of motion from these functions	
CO3	Determine the moments of inertia of a rigid body.	
CO4	Identify symmetries and to derive the corresponding conservation laws	
CO5	Perform calculations using relativistic kinematics and conservation laws	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Algebraic Topology		Course Code: AMCM2108T
Course Outcomes:		
CO1	Able to find algebraic invariants that classify topological spaces up to homeomorphism.	
CO2	Enables in the construction and use of functors from some category of topological spaces into an algebraic category.	
CO3	Can have the idea of attaching an algebraic structure with a given topological space and to prove that if the topological spaces are homeomorphic then their associated algebraic structure must be isomorphic.	
CO4	Able to solve the associated algebraic problem than the original topological one.	
CO5	Through the concepts like homotopy, the fundamental group and the covering spaces can establishes a close link between topology and algebra.	
CO6	Knowledge of concept of categories and functors.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Optimization Techniques-I		Course Code: AMCM2109T
Course Outcomes:		
CO1	Model a problem as a linear programming problem and to apply the appropriate method in order to find an optimal solution	
CO2	Formulate a given simplified description of a suitable real-world problem as a linear programming model in general, standard and canonical forms	
CO3	Sketch a graphical representation of a two-dimensional linear programming model given in general, standard or canonical form	
CO4	Use the Simplex method to solve small linear programming models by hand	
CO5	Find optimal solutions of many other problems like assignment, transportation, travelling salesman etc.	
CO6	Understand dynamic programming algorithms and its applications in problem solving.	
CO7	Solve various problems in game theory	

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Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Fuzzy Set and Applications		Course Code: AMCM2110T
Course Outcomes:		
CO1	To be able to distinguish between the crisp set and fuzzy set concepts through the learned differences between the crisp set characteristic function and the fuzzy set membership function.	
CO2	To be able to draw a parallelism between crisp set operations and fuzzy set operations through the use of characteristic and membership functions respectively.	
CO3	Become aware of the use of fuzzy inference systems in the design of intelligent or humanistic systems.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Solid Mechanics		Course Code: AMCM2111T
Course Outcomes:		
CO1	Understand tensor and its basic properties	
CO2	Find gradient, divergence and curl of a vector tensor field	
CO3	Determine the Stresses and Strain developed in a body due to loading and find the different types of Stresses/strains in the body	
CO4	Develop governing equations for isotropic or anisotropic elastic solids	
CO5	Find the solution for the two dimensional problems	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Functional Analysis-II		Course Code: AMCM2112T
Course Outcomes:		
CO1	Understand and apply fundamental theorems Hahn-Banach theorem in Normed linear spaces and its applications, uniform boundedness principle, open mapping theorem, closed graph theorem.	
CO2	Understand Hilbert spaces including orthogonality, orthonormal sets, Bessel's inequality, Parseval's theorem.	
CO3	Use and derive basic definitions and theorems of functional analysis	
CO4	Differentiate between Banach Space and Hilbert Space	
CO5	Apply contraction and approximation theory in differential equations and integral equations.	

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Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Numerical Analysis		Course Code: AMCM2113T
Course Outcomes:		
CO1	Understand the concept of single step and multistep methods for solving Initial and Boundary Value problems	
CO2	Analyze the convergence , truncation error and stability of the single and multistep methods	
CO3	Develop an efficient numerical scheme for solving boundary value problems based finite difference approach(explicit and implicit method) arising in science and engineering	
CO4	Carry out stability analysis and truncation error in various finite difference schemes	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Modeling and Simulation		Course Code: AMCM2114T
Course Outcomes:		
CO1	Sufficient understanding of the fundamentals of mathematics with computational techniques, and program core to address challenges faced in mathematics and other related interdisciplinary fields.	
CO2	Facilitate as a deep learner and progressive careers in teaching, academia, research organizations, national/international laboratories and industry.	
CO3	Develop models & simulation tools for real life problems by analysing and applying mathematical and computational tools and techniques.	
CO4	Demonstrate effective communication and interpersonal, management and leadership skills to fulfil professional responsibilities, retaining scientific fervour in day-to-day affairs.	
CO5	Engage in lifelong learning and adapt to changing professional and societal needs.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Operating System		Course Code: AMCM2115T
Course Outcomes:		
CO1	Master functions, structures and history of operating systems	
CO2	Students have the logical, algorithmic, and mathematical capability to model and analyze real-world problems in different application domains, to devise the problem-solving schemes accordingly, and to validate the correctness and effectiveness of the schemes.	
CO3	Master understanding of design issues associated with operating systems	
CO4	Have a solid understanding of the theoretical, the operational, and the implementation underpinnings of the modern computing infrastructure to be able to effectively utilize the whole spectrum of the modern computing infrastructure, including computer hardware, software, programming environments, operating	

	systems, and networking environments.
CO5	Master various process management concepts including scheduling, synchronization, deadlocks , concepts of memory management , operating systems including Unix

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Data Structure		Course Code: AMCM2116T
Course Outcomes:		
CO1	To be familiar with basic data structures and algorithms	
CO2	Comparison of the algorithms in terms of time and space complexity, Big Oh notation	
CO3	Choose appropriate data structures and use it to design algorithms for a specific problem	
CO4	Implement operations like searching, insertion, deletion and traversing for studied data structures	
CO5	Implement various searching and sorting algorithms	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Computer Organization and Architecture		Course Code: AMCM2117T
Course Outcomes:		
CO1	To have a thorough understanding of the basic structure and operation of a digital computer	
CO2	To discuss in detail the operation of the arithmetic unit including the algorithms & implementation of fixed-point and floating-point addition, subtraction, multiplication & division	
CO3	To study the different ways of communicating with I/O devices and standard I/O interfaces	
CO4	To study the hierarchical memory system including cache memories and virtual memory	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Computer Graphics		Course Code: AMCM2118T
Course Outcomes:		
CO1	Understand the basics of computer graphics, different graphics systems and applications of computer graphics.	
CO2	Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.	
CO3	Use of geometric transformations on graphics objects and their application in composite form.	

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CO4	Extract scene with different clipping methods and its transformation to graphics display device.
CO5	Explore projections and visible surface detection techniques for display of 3D scene on 2D screen.

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Design and Analysis of Algorithms		Course Code: AMCM2119T
Course Outcomes:		
CO1	Learn the basics of computational complexity analysis and various algorithm design paradigms.	
CO2	Enable students with solid foundations to deal with a wide variety of computational problems	
CO3	Equipped with a thorough knowledge of the most common algorithms.	
CO4	Analyze time and space complexity	
CO5	Apply important algorithm methodology to solve problems	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Parallel Computing		Course Code: AMCM2120T
Course Outcomes:		
CO1	Have an overview of the architectures and communication networks employed in parallel computers.	
CO2	Enables the foundations for development of efficient parallel algorithms.	
CO3	Knowledge through examples from relatively simple numerical problems, sorting, and graph problems.	
CO4	Develop parallel algorithm code for iterative methods	
CO5	Apply parallel computing method for solving simple differential equations	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Introduction to Artificial Intelligence		Course Code: AMCM2121T
Course Outcomes:		
CO1	Acquire knowledge on intelligent systems and agents.	
CO2	Formalization of knowledge, reasoning with and without uncertainty,	
CO3	Machine learning and applications at a basic level.	
CO4	Competency in algorithm development and visualization tools	
CO5	Can apply business and data thinking to complex research problems	

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Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Machine Learning with R		Course Code: AMCM2201T
Course Outcomes:		
CO1	To be able understand the concept of machine learning	
CO2	To be able understand various Machine Learning algorithms and their applications	
CO3	To be able to identify and apply the appropriate machine learning technique for classification, pattern recognition, optimization and decision problems.	
CO4	To be able to implement Machine Learning Techniques using R.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Wavelets		Course Code: AMCM2202T
Course Outcomes:		
CO1	Expand a function in Haar wavelets	
CO2	Construct Meyer wavelets to a given function	
CO3	Find Daubechies wavelet series to a given function	
CO4	Analyse two or more dimensional problems using wavelets	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Homology Theory		Course Code: AMCM2203T
Course Outcomes:		
CO1	Deep knowledge of algebraic structures associated with a topological space.	
CO2	Homology groups lead to the singular and simplicial homology	
CO3	Enables the student to compute some homology groups.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Theory of Linear Operators		Course Code: AMCM2204T
Course Outcomes:		
CO1	Understand spectral theory in Normed linear spaces, bounded linear operator, spectral mapping theorem for polynomials, elementary theory of banach algebras..	
CO2	Undersatand spectral properties of compact linear operators on normed space bounded self-adjoint linear operators on a complex Hilbert space.	
CO3	Differentiate between Banach Space and Hilbert Space	
CO4	Apply spectral techniques for the study of the theory of linear operators.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Lie Groups and Complex Manifolds		Course Code: AMCM2205T
Course Outcomes:		
CO1	To acquire the knowledge of the theory of Lie groups which is based on the study of differential geometry and differential topology	
CO2	To define connections on the structure of complex manifolds leading to the development of new spaces	
CO3	To implement the metric induced on the submanifolds for the construction of structural equations	
CO4	To understand the concept of complex manifolds and complex differential forms based on unitary space which is instrumental in further research in this field	
CO5	To apply the theory of differentiable manifolds and Lie groups, which is one of the cornerstones of the edifice of modern mathematics, in various spheres of study	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Category Theory-II		Course Code: AMCM2206T
Course Outcomes:		
CO1	Knowledge of the fundamental concepts of categorical adjunctions and monads.	
CO2	Can establish the unity of all mathematical concepts as different instances of adjoints	
CO3	Development of the machinery of Eilenberg Moore Category and Kliegli construction for the study of relationship between adjoints and monads.	
CO4	Yoneda lemma also finds many applications in the course.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Optimization Techniques-II		Course Code: AMCM2207T

Course Outcomes:	
CO1	Formulate a given simplified description of a suitable real-world problem as a linear programming model in general, standard and canonical forms
CO2	Use the Simplex method to solve small linear programming models by hand
CO3	Find optimal solutions of many other problems like assignment, transportation, travelling salesman etc.
CO4	Understand dynamic programming algorithms and its applications in problem solving.

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Homological Algebra		Course Code: AMCM2208T	
Course Outcomes:			
CO1	Knowledge of homology functors in the more general algebraic setting.		
CO2	The categorical concepts having natural applications in the study of homology and algebraic topology		
CO3	Proficiency in setting up the homology functors, derived functors and the special ext and tor functor		
CO4	Can apply knowledge of functors in algebraic topology.		

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Finite Element Methods		Course Code: AMCM2209T	
Course Outcomes:			
CO1	Understand the concept of finite element methods and their effectiveness as compared to finite difference methods		
CO2	Formulate the boundary value problem		
CO3	Solve simple ordinary differential equations using FEM		
CO4	Determine stresses and strains in a body using FEM		
CO5	Solve two dimensional partial differential equations under different geometric conditions		

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Fluid Mechanics		Course Code: AMCM2210T	
Course Outcomes:			
CO1	Understand the basic principles of fluid mechanics, such as Lagrangian and Eulerian approach, conservation of mass .		
CO2	Understand the application of Euler and Bernoulli's equations and the conservation of mass to determine velocity and acceleration for incompressible and inviscid fluid.		

CO3	Analyse the concept of rotational and irrotational flow, stream functions, velocity potential, sink, source, vortex etc.
CO4	Understand the simple fluid flow problems (flow between parallel plates, flow through pipe etc.) with Navier - Stoke's equation of motion.

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Algebraic Coding Theory	Course Code: AMCM2211T
Course Outcomes:	
CO1	To do arithmetic in Finite fields, Linear Algebra over Finite Fields
CO2	To find Minimal polynomials with the help of Cyclotomic cosets
CO3	Understanding of Linear codes , their basis and distance
CO4	Encoding and Decoding of Linear Codes;
CO5	The Main Coding Theory Problem and certain bounds

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Commutative Algebra	Course Code: AMCM2212T
Course Outcomes:	
CO1	Understanding of the basic terminology used to understand commutative algebra
CO2	To know exact sequences, construction of Tensor product and exactness of Hom and Tor Functor
CO3	Understanding of Localization of rings, modules and will be able to see the correspondence between ideals of rings and localized rings
CO4	To know Primary ideals and two theorems regarding decomposition of ideals as product of Primary Ideals
CO5	To understand Integral Dependence of rings, Going up and Going down theorems.

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Operations Research	Course Code: AMCM2213T
Course Outcomes:	
CO1	To understand basic characteristic features of a queuing system and acquire skills in analyzing queuing models
CO2	Understand different queuing situations and find the optimal solutions using models for different situations
CO3	Comprehend the dynamics of inventory management's principles, concepts, and techniques as they relate to the entire supply chain (customer demand, distribution, and product transformation processes)

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CO4	Replacement of goods which degenerates with time with/without considering any change in value of money
CO5	To understand operations research situations that can be conveniently modeled and solved as network problems through a variety of network optimization algorithms

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Non-Linear Programming		Course Code: AMCM2214T
Course Outcomes:		
CO1	Understand the concept of non linear optimization problems and its formulation	
CO2	Formulate unconstrained problems, constrained problems with equality and inequality constraints	
CO3	Solve one dimensional unconstrained non linear optimization problems	
CO4	Solve multidimensional non linear optimization problems	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Mathematics of Finance		Course Code: AMCM2215T
Course Outcomes:		
CO1	The students will study different market models using basic notions and assumptions.	
CO2	Students will learn to manage risk with options.	
CO3	Students will learn about periodic compounding, continuous compounding and will be able to compare the various compounding methods.	
CO4	In this subject techniques will be learnt to apply the different models to the dynamics of stock prices.	
CO5	Some particular models like Binomial tree model, Trinomial tree model and continuous time limit will be taught to the students so that they can manage the risks.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Mathematical Methods		Course Code: AMCM2216T
Course Outcomes:		
CO1	Understand the relation between linear differential equation and Volterra's equation and convert one type into another.	
CO2	Apply to analyze the safety and stability of the dam during an earthquake.	
CO3	Understand the difference between Volterra and Fredholm integral equations, first kind and second kind.	
CO4	Understand the fundamental concepts of the space of admissible variations for fixed	

	points.
CO5	Give the Solution to the brachistochrone and isoperimetric problem

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Analytic Number Theory		Course Code: AMCM2217T	
Course Outcomes:			
CO1	Can handle multiplicative functions.		
CO2	Can deal with Dirichlet series as functions of a complex variable,		
CO3	To prove the Prime Number Theorem and simple variants.		
CO4	To study number theory by using analytic tools (inequalities, limits, calculus, etc) .		
CO5	To solve problems about the integers and the distribution of prime numbers by using analysis.		

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Computational Techniques		Course Code: AMCM2218T	
Course Outcomes:			
CO1	Compute piecewise cubic and Hermite polynomials		
CO2	Understand the Hermite-Birkhoff interpolation problem		
CO3	Use of different types of Spline functions and their properties		
CO4	Find the solution of various problems using Green's function and Tchebycheffian spline functions		

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Computer Networks		Course Code: AMCM2219T	
Course Outcomes:			
CO1	Knowledge of computer network organization.		
CO2	Understanding of data communication and computer networks		
CO3	Understanding of different components of <i>computer networks</i> .		
CO4	Knowledge of various protocols, modern technologies and their applications		

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP	
Course Name: Database Management System		Course Code: AMCM2220T	
Course Outcomes:			
CO1	To be able to understand the concepts of Database Architecture, design notations, ER Modeling, Mapping and Schema design.		

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CO2	To gain the knowledge Relational algebra and learn the use of SQL.
CO3	To be able to understand the formal database design approach through normalization and various normal forms.
CO4	To be able to understand the importance of Concurrent Transactions and transaction control algorithms.

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Mobile Computing		Course Code: AMCM2221T
Course Outcomes:		
CO1	Can define mobile technologies in terms of hardware, software, and communications.	
CO2	Utilize mobile computing nomenclature.	
CO3	Describe and analyze existing mobile computing frameworks and architectures.	
CO4	Evaluate the effectiveness of different mobile computing frameworks.	
CO5	Can describe how mobile technology functions to enable other computing technologies.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Artificial Neural Networks		Course Code: AMCM2222T
Course Outcomes:		
CO1	Sound and comprehensive understanding of artificial neural networks and machine learning.	
CO2	Can solve practical problems via implementation of these techniques via simulation.	
CO3	Knowledge of further independent learning on the topics of artificial neural networks and machine learning.	
CO4	Determine the mathematical foundations of neural network models	
CO5	Design and build neural networks for practical purposes .	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Software Engineering		Course Code: AMCM2223T
Course Outcomes:		
CO1	To be able to understand the basic principles of Software Engineering	
CO2	To be able to understand Software Engineering concepts, methodologies and best practices	
CO3	Learn Software Engineering principles and approach used in industry	

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Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Image Processing		Course Code: AMCM2224T
Course Outcomes:		
CO1	To be able to understand the fundamentals of digital image	
CO2	To be able to apply image enhancement and restoration techniques	
CO3	Use image compression and segmentation Techniques	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Soft Computing		Course Code: AMCM2225T
Course Outcomes:		
CO1	Be able to understand about soft computing techniques and their applications	
CO2	Analyze various neural network architectures and learning methods	
CO3	Understand MP Neuron, perceptron, ADALINE, MADALINE and Back propagation neural networks	
CO4	To be able to distinguish between the crisp set and fuzzy set.	
CO5	To be able to draw a parallelism between crisp set operations and fuzzy set operations	
CO6	Become aware of the use of fuzzy inference systems using fuzzy logic	
CO7	Analyze the genetic algorithms and their applications	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Information Security		Course Code: AMCM2226T
Course Outcomes:		
CO1	Students are equipped with the knowledge and techniques of professional practices in information security and activities.	

Program Name: M.Sc. (Applied Mathematics & Computing)		Program Code: AMCM2PUP
Course Name: Introduction to Data Sciences		Course Code: AMCM2227T
Course Outcomes:		
CO1	Identify and describe the methods and techniques commonly used in data science.	
CO2	Demonstrate proficiency with the methods and techniques for obtaining, organizing, exploring, and analysing data.	
CO3	Recognize how data analysis, inferential statistics, modeling, machine	

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	learning, and statistical computing can be utilized in an integrated capacity.
CO4	Demonstrate the ability to clean and prepare data for analysis and assemble data from a variety of sources.

Program Name: M.Sc. (Applied Mathematics & Computing)	Program Code: AMCM2PUP
Course Name: Computer Algebra System	Course Code: AMCM2228T
Course Outcomes:	
CO1	The student will be able to learn about Computer Algebra.
CO2	The students will have concept clarity of the subjects like Basic Algebra and Basic Calculus.
CO3	The students will learn about Rational Function plotting : 2D and 3D
CO4	Students will be told about construction of groups, homomorphisms and isomorphisms.
CO5	The students will learn to write programs for elementary problems in Group theory.
CO6	The students will be able to have understanding of other Algebraic subjects using GAP.