GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

DWARKA, NEW DELHI-110078

MBA

(PROGRAMME OUTCOMES & COURSE OUTCOMES)

SCHEME 2017 ONWARDS

PROGRAM OUTCOMES {POs)

P01: Ability to understand. analyse and communicate global. economic. legal. and ethical aspects of business .

P02: Analytical and critical thinking abilities for data-based decision making.

P03: Application of knowledge of all the functional areas of business using integrated problem-solving skills and strategic analysis.

P04: Develop abilities in relationship building. teamwork, and leadership.

P05: Generate creative. innovative. and entrepreneurial solutions to business problems.

SEMESTER- I

Subject: Management Practices and Organisational Behaviour **Paper Code: MS 101**

COURSE OUTCOMES (COs)

Students who have completed this course would have learned to:

COl: Examine the definition. basic concepts. theories. and principles applicable to the field of management and demonstrate the roles. skills and functions of management.

CO2: Analyse effective application of principles of management knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.

C03: Illustrate the / ppli cability of the concept of organisational behaviour. its theories and nodels.

C04: Analyse the complexities related with management of individual behaviour in the organisation and apply these concepts in motivating and leading people in the organisation.

C05: Understand the issues related with process of organisational change. management of group behaviour and conflict resolution in the organisation.

Suh_ject: Decision Science **Paper Code: MS 103**

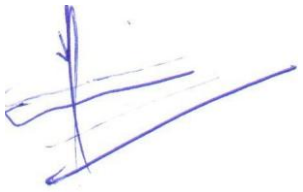
COURSE OUTCOMES (COs)

COI: Understand and use decision making models in solving different business problems.

CO2: Demonstrate effective computational and spreadsheets skills for business analysis.

C03: Apply an appropriate quantitative technique in analysing the management problems.

C04: Extract insight from models. and to use those insights to communicate, persuade and mot i, ·ate change.



Subject: Managerial Economics **Paper Code: MS 105**

COURSE OUTCOMES (Cos)

At the end of the course. a student will be able to:

COl: Understand the basic economic principles and methodological knowledge ·

CO2: Develop the skills to analyze the market structure and pricing practices

C03: Understand the production. factors of production, its process and impact of varjous costs on production

C04: Deveiop the abiiity to analyze and solve complex business problems

Subject: Accounting for Management **Paper Code: MS 107**

COURSE OUTCOMES (Cos)

At the end of the course, a student wilI be able to:

C01: Appreciation of fundamental accounting principles and develop understanding of using accounting information for business decision making

CO2: Capacity to understand various implications of accounting information

C03: Ability to analyze the decision-making context with due regard to the accounting information.

C04: General awaren ss of accounting mechanisms and role of accounting rules.

COS: Acquaintance with the procedural aspects related to financial accounting

C06: Acquisition of skills necessary to read and understand financial statements.

Sub_ject: Information Technology in Management **Paper Code: MS 109**

COURSE OUTCOMES (Cos)

At the end of the course a student will be able to:

COi: Understand the importance and role of different computer hardware, storage system number system and their conversions.

CO2: J ,earn about various softwares, programming languages, DBMS, ER models and their applications.

C03: Gain knowledge ahout data communication, types of networks and their application.

C04: Understand about various types of information systems and their application.

Subject: Business Communication **Paper Code: MS 111**

COURSE OUTCOMES (Cos)

/\t the end of the course. a student will be able:

CO i: To understand the scope and importance of business communication to become a global employee.

CO 2: To understand the principles of communication to make an impact on all .the stakeholders of the organization.

CO **3:** To prepare effective written communication correspondence (e.g. emails, reports, notices, biogs, press release etc.) and understand its role in highlighting the company image. Building confidence for emp loyment c orrespondence.

CO 4: To learn etiquettes for impactfol business dealings (dressing sense, listening skills, cultural sensitivity etc) for long lasting relationship building.

CO 5: To be able to solve real life problems from communication perspective .

Subject: Lega1 Aspects of Business **Paper Code: MS 113**

COURSE OUTCOMES (Cos)

J\t the end of the course. a student will be able to:

COi: Active appreci /t ion of various legal provisions related to the laws governing general and special contracts, negotiable ins truments , companies, competitive markets , consumers' protection. and investors· protection.

CO2: Capacity to understand the implications of various laws above mentioned for business decision making.

C03: Ability to analyze the decision-making context with due regard to the regulatory compliances and the consequences thereof.

C04: Gene ral awareness of various institutional mechanisms set up under the relevant laws for promoting the objectives of respective laws. their role. functions and powers.

COS: Reasonable level of acquaintance with the procedural aspects related to the availing of the remedies. contesting the matters and participating in proceedings .

C06: Acquisition of skills necessary to read and understand legal communications and respond to them in an appropriate manner while displaying legal proficiency that matches with the expectations of the job roles.

Subject: Managerial Skills Development **Paper Code:(MS 115)**

COURSE OUTCOMES (COs)

Students who have completed this course would have learned to:

COl: Be proficient in oral communication for handling all aspects of business.

CO2: Be proficient 111 corporate and creative written communication to make business more effective.

CO3: Able to manage oneself professionally and show professionalism in every facet of organizati on.

C04: Develop abilities in building effective relationships, teamwork, and conflict resolution.

MS 151 IT Lab

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COt: Understand the Windows and DOS interface and showcase a knowledge of basic commands of DOS.

CO2: Apply the knowledge of Editor and Spreadsheet softwares in information processing and report presentation.

C03: Understand the concept of database and use SQL commands for data retrieval.

SEMESTER - II

Subject: Managing Technology, Innovation and Change **Paper Code: MS102**

COURSE OUTCOMES (COs)

At the end of the course. a student wi II be able to:

COl: Understand the importance of technology and explain its forecasting, development, transfer and acquisition at macro and micro level.

CO2: Understand the importance of technological change and explain the organizational capability to build culture and climate for change and innovations.

C03: Classify innovation strategies and models and relate these 111 building and managmg sustaining innovative organizations.

C04: Describe creative thinking and demonstrate creative problem solving and lateral thinking management skills.

Subject: Financial Management **Paper Code: MS 104**

COURSE OUTCOMES (Cos)

At the end of the course. a student will be able to:

COl: Demonstrate the ability to apply the concept of Financial Management to comprehend the managerial decisions and corporate capital structure.

CO2: Apply the concept of leverage and EBIT-EPS Analysis for optimising the financial decisions.

C03: Analyse the convolutions associated with management of short-term and long-term funds in the corporate capital Structure.

C04: Demonstrate how risk is assessed.

COS: Demonstrate how the concepts of financial management and investment, financing and dividend policy decisions could help in making optimum valuation of a firm.

Sub_ject: Marketing Management **Paper Code: MS** I06

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Demonstrate ai understanding of the importance of a customer-centric approach and a knowledge of the basic marketing concepts. processes. and techniques.

CO2: Demonstrate an understanding of the major forces in the macro and rnicroenvironment that impact marketing strategy development and implementation.

C03: Demonstrate the ability to use a systematic research and information-based approach to critically analysing marketing tasks and challenges and to develop creative solutions.

C04: Demonstrate an understanding of contemporary marketing trends and emerging issues and the consequent opportunities and challenges.

Subject: Business Research Methods **Paper Code:** MS 108

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Develop necessary skills to prepare effective research proposal. formulate research questions. and choose appropriate methods to data collection and analysis.

CO2: Ability to apply critical analytical skills on research projects.

C03: lJ ndcrstand the strengths and weaknesses of different methods of data analysis

C04: Gain knowledge about the importance of business research in organizations and develop competitive advantages

Subject: Operations Management **Paper Code:· MS 110**

COURSE OUTCOMES (COs)

/\t the end of the course. a student will be able to:

COl: To understand strategic significance of operations management in a highly competitive global econom y.

CO2: To understand various principles, concepts, tools and techniques developed in the area of operations management.

C03: To analyse the tools and techniques developed in the area of operations management and relate them to practical application.

C04: To acquire and apply knowledge of global quality management practices m real life situations

Sub_ject: Human Resol' rec Management **Paper Code: MS** 112

COURSE OUTCOMES (COs)

COi: Describe the concept of Human Resource Management with the integration of concept of Strategic Human Resource Management for taking major Human Resource Decisions.

CO2: Explain the role Human Resource Manager plays to face the different challenges and strategies for new millennium.

C0 3: Illustrate the applicability of function of Human Resource Planning to Selection process by integrating an analysis of jobs. sources of recruitment and different changes occurring in jobs.

C04: Identify the steps in assessing the training and development needs. its effectiveness and explain the methods of Performance appraisal and Job Evaluation for deciding the compensation components.

Subject: E-Business **Paper Code: MS 114**

COURSE OUTCOMES (COs):

At the end of the course. a student will be able:

COl: To understand the concept of E-business and its applica tion.

CO2: To identify & understand security issues in e-business.

C03: To impart knowledge about Electronic payment system and its type.

C04: To impart knowledge about strategies & emerging trend of e-business along with understanding of various legal & ethical issues in e commerce

Subject: Business Analytics **Paper Code: MS 116**

COURSE OUTCOMES (COs):

At the end of the course. a student will be able:

COl: Critically thinking on import. manage and structure data files for using business analytics.

CO2: Apply analytical knowledge with the R interface and language for different fields.

C03: Provide leadership in analytics in existing datasets into R or create new ones.

C04: Cultivating cognitive skills acquired on existing data and performs all conventional statistical analysis tests. using R knowledge on data management

COS: Effectively solve business problems and make effective decision-making using R Statistics.

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SEMESTER - HI

Sub_jcct: Summer Internship Project **Paper Code: MS** 201

COURSE OUTCOMES (COs)

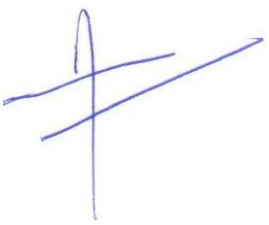
Upon successful completion of the internship. students will be able to:

COl: Integrate academic theory with practice.

CO2: Develop self-confidence, sensitivity and appreciation for diversity. clarification of work and personal values. and workplace etiquette.

C03: To apply knowledge and skills learned in company/industry/organization to real-world problems.

C04: Develop and demonstrate workplace competencies such oral and written communication, critical thinking, organization, problem solving, decision making, leadership, managing interpersonal relationships. etc. necessary for professional success.



COS: Carry out research projects. analyse data, and write up and present results in meetings (including experience in using specialized tools at each stage of this process).

Sub_jcct: Management of International Business **Paper Code:** MS 203

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Analyse the environment and reasons for going overseas.

CO2: Formulate different global strategy for international strategic alliances.

CO3: Interpreting business management at global platform.

C04: Evaluate various components required for the globalization for future m International business.

Subject: Information System Management **Paper Code:** MS 205

COURSE OUTCOMES (COs)

At the end of the course. a student will be able:

COi: To understand the concept oflnformation System in Global e- Business and collaboration, Information systems. organization, and strategy.

CO2: To understand c 1cept of DBMS, Telecommunication, Internet, and wireless technology.

C03: To analyse Key information Systems and Enterprise Applications, concept of E-commerce and Decision making.

C04: To analyse and understand Building Information Systems- system analysis and design, business value of information system and Project risk.

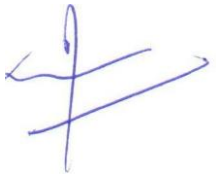
Sub_ject: Entrepreneurship Development **Paper Code:** MS 207

COURSE OUTCOMES (COs):

At the end of the course, a student will be able to:

C01: To understand the basic concepts in the area of entrepreneurship, traits, role and impo11ancc of Entrepreneurship & EDP for economic development.

CO2: To develop the ability of analyzing and understanding business opportunity situations and apply the concept of feasibilities analysis & repo11 preparation.



C03: To understand rational, objective. role & relevance of **SSI** & identify and evaluate the steps involved in starting **SST.**

C04: To evaluate the role of support institutions in the path of entrepreneurship in term of marketing. production.

Sub,icct: Business Simulation and Games **Paper Code ·MS** 209

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Represent strategic situation as a game and obtain adequate solution to the situation with the help of simulation techniques.

CO2: Propose the best strategy using decision making methods under uncertainty

C03: Demonstrate business acumen. enhance strategic thinking and financial understanding

C04: Apply the knowledge of simulation techniques in real world situations for optimising the usage of resources.

Sub.iect: Consumer Behaviour **Paper Code: MS** 211

COURSE OUTCOMES (COs)

At the end of the cours . a student will be able to:

CO1: Demonstrate an understanding of the importance of studying consumer behaviour and its relevance to decisions in marketing, public policy and social and economic spheres.

CO2: Demonstrate an understanding of the consumer decision-making process and the internal and external determinants that influence this process.

C03: Demonstrate the ability to apply the various research tools and techniques to gain insights into consumer behaviour.

C04: Demonstrate the ability to develop creative marketing strategies and solutions based on an understanding of the consumer behaviour of the relevant target groups.

Sub_ject: Sales & Distribution Management **Paper Code: MS** 213

COURSE OUTCOMES (COs)

At the end of the course. a student wi II be able to:

COi: Understand personal selling process. types of sales organizations, and analyze the role of sales strategics, territory allocation, and sales forecasting in sales management.

CO2: Understand the process of sales staffing and sales force management 111 a sales organization.

C03: Analyse the role of retailers and wholesalers in the distribution process, and understand the steps in channel creation and management.

C04: Differentiate between logistics, distribution, and supply chain management, and understand process of efficient physical distribution.

Sub.iect: International Marketing **Paper Code:** MS 215

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: !\.pply basic international marketing theories and concepts to understand the environment

CO2: Understand international environment in order to develop appropriate international marketing objectives and strategics

C03: Develop unique international marketing plans

C04: Design and implement effective market access strategies

r

Sub_ject: Services Marketing **Paper Code:** MS 217

COURSE OUTCOMES (COs)

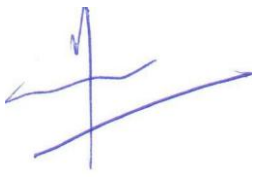
At the end of the course. a student will be able to:

CO1: Demonstrate an understanding of presence of the service element across the tangible-intangible product spectrum and the importance of service marketing management for creating a culture of service.

CO2: Demonstrate an understanding of the process of service positioning, design and development and management of the services marketing mix.

C03: Define and measure service quality and demonstrate an understanding of the causes for gaps between customer expectations and perceptions of services and ability to develop appropriate innovative solutions.

C04: Demonstrate the ability to apply the concepts and principles of service marketing to develop creative service strategics across various service industries.



Subject: Customer Relationship Management **Paper Code:** MS 219

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

('01:

CO2:

('03:

C04:

Sub.icct: International Financial Management **Paper Code:** MS 221

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Develop the conceptual understanding of international monetary systems and exchange rate regimes and the concept of balance of payment.

CO2: Make them understand different types of exchange rate theories.

C03: Enable the students to understand the risk aversion and hedging strategies.

C04: Analyse risk factor in international investment and evaluate project with different techniques that result in successful projects.

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Subject: Financial Markets & Institutions **Paper Code:** MS 223

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

CO l: Develop an understanding about the role and structure of the Indian Financial System.

CO2: Analyse the various types of Financial Markets in India and analyse the role and contribution of these markets m meeting the financial and economic needs of business, individuals. and economy.

C03: Gain an understanding of the role of various regulators in financial system and legal framework pertaining to financial system.

C04: Understand the role and importance of cooperative sector in fund mobilization for Small Business. role of PFRDJ\ in managing efficiently the various Pension Fund Schemes

Sub,ject: Security Analysis and Investment Management **Paper Code:** MS 225

COURSE OUTCOMES (COs)

/\t the end of the course. a student will be able to:

COl: Understand the risk and return nature of various securities available in Indian financial markets.

CO2: Apply the acquired knowledge of security market for valuation of both equity and fixed income securities under goal-based investment planning.

C03: Understand the concept and importance of derivative market.

C04: Showcase a deep understanding on the trade-off between risk and return and portfolio optimisation.

Subject: Corporate Tax Planning **Paper Code: MS** 227

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Appreciate the principles of taxation and classification of types of taxes. and their impact on business decision making

CO2: Understand various implications of corporate taxes laws

C03: Acquaintance with the procedural aspects related to filing of details with the government.

C04: Acquisition of s tlls necessary to comply with legal requirement of tax laws.

Sub_jcct: Financial Econometrics **Paper Code: MS** 229

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

CO I: Understand the nature and behaviour of time series data .

CO2: Apply financial econometrics techniques on the real-life financial data.

C03: Forecast the financial data, derive a relationship between two or more series for useful implications.

C04: Validate financial theories and methods with the help of empirical data.

Subject: Compensation Management **Paper Code:** MS 231

COURSE OUTCOMES (COs)

At the end of the course. a student will be able:

CO 1: To study about components of pay structure in India and abroad.

CO2: To understand the theories involved and premise of the grant of bonus. wages, and minimum wages to workers.

C03: To understand various factors required to design compensation structure.

C04: To understand the role of compensation structure on relationships within th<.,organization to boost morale and appreciate good employees.

COS: To prepare salary structures of different types of employees.

Subject: Industrial Relations and Labour Laws **Paper Code:** MS 233

COURSE OUTCOMES (COs)

!\t the end of the course, a student will be able to:

COt: Examine the role of various stakeholders of business in maintaining peace at macro and micro level in the local as well as global industry.

CO2: Be acquainted with the concepts, principles and issues connected with trade umons, collective bargaining. workers pat1icipation, grievance rcdressal, and employee discipline and dispute resolution.

C03: Understand the t 1ical and legal processes and procedures of handling employee relations.

C04: Application of knowledge gained about national and international industrial relation's current scenario in problem solving, strategy formation and innovative solutions to business problems.

Subject: Training & DeYelopment **Paper Code:** MS 235

COURSE OUTCOMES (COs)

/\t the end of the course. a student will be able to:

C01: Understand the importance of training needs and its role in Human Resource Development for preparing a global employee (PO l).

CO2: To link the learning and development to company's strategy effectively and assess the training needs of the people working in the organization. (P02, P03).

C03: To apply various methods of learning and development in real life situations. (P02, P0 3).

C04: To understand the role of a leader and peers in conducting and implementing learning and training initiatives. (P04).

COS: To design, develop, and conduct learning and development programmes (POS).

Subject: Performance Management **Paper Code** MS 237

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

CO l: Demonstrate an understanding of the concept and philosophy of performance management and the linkage between performance management and organization strategy.

CO2: Demonstrate an understanding of the performance management process and the ability to select an appropriate measurement approach and plan the performance management process and documentation for an organization.

C03: Demonstrate an understanding of the importance of feedback and performance review dis cuss io_ns. and training programmes for supervisors for skill development in the areas of effective ratings. coaching and counselling.

C04: Demonstrate the ability to develop creative solutions to the challenges involved in implementing the performance management process and to employ the performance management process fi r potential appraisal and competency mapping.

Subject: Talent Management **Paper Code:** MS 239

COURSE OUTCOMES (COs)

J\t the end of the course. a student will be able to:

C01: Apply the knowledge of talent management in assessing talent management practices of an organization and aligning them to organizational strategy and other HR practices.

CO2: Measure the effectiveness of individual talent programs and monitor the health of an organization·s talent management system

C03: Examine the process for identifying high potential talent and developing a pipeline of talent to serve organizational present and future needs .

C04: Pinpoint the components of the performance management system to maximize people's potential and performance.

COS: Identify a variety of best practice methodologies to develop professionals. Learn the development methodologies that deliver a return on investment and the ones that do not.

Subject: System Analysis and Design **Paper Cocle:** MS 241

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

C'Ot: Understand the importance of adopting a structured methodology for system development.

CO2: Prepare and use various information gathering techniques for eliciting user information requirements and systems expectation.

C03: Produce the necessary system documentation at each stage of the analysis and design of an information system

C04: Develop an understanding of the overall process of System Development Life Cycle -- and of the roles of the analysis. design. production, implementation, and operation phases of that cycle.

COS: Construct and interpret a variety of system description documents and techniques such as Domain of change. Physical and logical Data flow diagrams, Entity Relationship diagrams, Structure charts. screen forms and report layouts. etc.

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Sub_ject: Enterprise System **Paper Code:** MS 243

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

CO i: lo understand the meaning. definition. concept and type of enterprise system along with its architecture and system development.

CO2: To analyse and understand the concept of ERP and its relationship with CRM, SCM and e-commerce.

C03: To analyse and understand the concept of SCM, e- SCM, e-Marketplaces, Online Auctions. CPFR and EDI.

C04: To interpret and understand concept of CRM. e- CRM, elements, models, applications, trends of CRM.

Subject: Network Applications and Management **Paper Code:** MS 245

COURSE OUTCOMES (COs)

At the end of the course. a student will be able:

COl: To understand the concept of Data Communication and its component and applications.

CO2: To understand & interpret Fundamentals of Networking and its Application.

C03: To analyse concept of Network layer, Transport Layer, TCP and Session Laye r.

C04: To analyse and understand Network Management and Network Security.

Subject: Database Management System **Paper Code: MS 247**

COURSE OUTCOMES (COs)

J\t the end of the course. a student will be able:

COJ: To understand the different forms of Database. its purpose, advantages and disadvantages and compare different database models.

CO2: To implement SQL for creation. modify and display data from DBMS. understand the basic concept of ER Models, design issues and key constraints. also Reduction of E-R Schema to Tables.

C03: To impart knowledge about Oracle, its structure and PL/SQL commands, cursors, triggers procedure and functions.

C04: To impart knowledge about the Structure of Relational Database, Normalization, Functional Dependencies, and their application, and learn database transaction, concurrency control and methods to manage data integrity.

Subject: Information Security Management **Paper Code:** MS 249

COURSE OUTCOMES (COs)

/\t the end of the course. a student will be able to:

COl: Understand the need for Computer Security & Security Mechanisms

CO2: Explore information and cyber security threats & other related issues

C03: Understand various methods and techniques for information security

C04: Apply preventive measures for controlling information threats in business

Subject: International Business Environment **Paper Code:** MS 251

COURSE OUTCOMES (COs)

J\t the end of the course, a student will be able to:

C01: The influence of international Environment on business, he can understand the various factors required for export business.

CO2: He can well appreciate the impact of international currency fluctuations on the business.

C03: He can better understand operations in the multilateral system.

Subject: Export Import Policies. Procedures and Documentation **Paper Code:** MS 253

COURSE OUTCOMES (COs)

J\t the end of the course. a student will be able to:

COl: Understand the basics of Export and Import

CO2: Develop the skills which are required to start the export business from India.

C03: To learn the export documentation formalities in India

C04: To understand the custom and quality control formalities and schemes as per foreign trade policy.

Sub_ject: WTO and Intellectual Propc11y Rights **Paper Code: MS** 255

COURSE OUTCOMES (COs)

J\t the end of the cours . a student will be able to:

COl: Understand the working and significance of world trade organization in liberalised era.

CO2: Be familiar with the concept of intellectual property rights and their application

C03: Appreciate the impact of WTO on Indian Economy

C04: Understand Trade Related Aspects Of Intellectual Property Rights (TRIPS) & Trade-Related Investment Measures (TRIMS) in context of international business

Subject: International Economics **Paper Code:** MS 257

COURSE OUTCOMES (COs)

J\t the end of the course, a student will be able to:

COt: Understand the concept of Gain and Losses in international trade with the help of theories.

CO2: Help to know about various effects of international tariff and non-tariff barriers.

C03: Enhance conceptual understanding of foreign exchange market and balance of payment.

C04: Develop an understanding of balance of payment disequilibrium adjustment mechanism.

Subject: International Business Negotiations **Paper Code:** MS 259

COURSE OUTCOMES (COs)

/\t the end of the course. a student will be able to:

CO I: Understand the strategic importance of international business negotiations·

CO2: Understa nd the strategies. tactics. ploys and a wide range of negotiations in context of international business

C03: Build the strategic and tactical skills to negotiate more effectively in international business

C04: Develop the intelligence competencies to correctly analyse the negotiations outcome

Sub_jcct: Database Management Systems Lab **Paper Code:** MS 261

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COl: Apply the basic concepts of Database Systems and Applications.

CO2: Use the basics of SQL and construct queries using SQL in database creation and interaction.

C03: Design a commercial relational database system (Oracle, MySQL) by writing SQL using the system.

C04: Analyze and Sc cct storage and recovery techniques of database system.

Subject: Operations and Supply Chain Management **Paper Code:** MS 263

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COl: Gain an understanding and appreciation of the principles and applications relevant to the planning, des ign. and operatio ns of manufacturing/service firms.

CO2: Understand the strategic importance and challenges of supply chain management for a business.

C03: Focuses on long term decisions involving the investment in productive resources, configuration of processes, product designs, and development of partnerships with suppliers and channels of distr ibution.

C04: Use analytical tools and conceptual frameworks to make decisions in supply chain contexts as well as a better understanding of the major strategic issues and trade-offs that arise in supply chain management.

Subject: Advanced Business Analytics **Paper Code:** MS 265

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COl: Gain an understanding of how managers use business analytics to formulate and solve business problems and to support managerial decision making.

CO2: Become familiar with the processes needed to develop. report. and analyze business data.

C03: Learn how to use and apply different application tools to solve business problems.

Sub,jec t: Services Operations Management **Paper Code: MS** 267

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COl: Gain an understanding and appreciation of the principles and applications relevant to the planning, design, and operations of service firms.

CO2: Understand thc nterdependence of the operations function with the other key functional areas of a firm in service sector

C03: Apply analytical skills and problem-solving tools to the analysis of the operations problems in service industry

Subject: Project Management **Paper Code: MS** 269

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

CO1: Appreciation of concept of project activity as distinct from routine activities and their role in business decision making

CO2: Capacity to generate new project ideas and evaluate the same for sustainable growth of business.

C03: Ability to plan and execute large scale projects with time and cost efficiency.

C04: General awareness of project life cycle and specific requirement of different stages of projects.

COS: Acquaintance with project scheduling. monitoring. control, and termination of projects.

C06: Acquisition of skills necessary to manage risk associated with project activities.

4th Semester

Subject: Project Disse1iation **Paper Code: MS** 202

J\t the end of the course. a student will be able to:

CO1: Identify and articulate a clear research question or research problem.

CO2: Perform a thorough literature review & formulate a hypothesis.

C03: Distinguish between different research methodologies and know when to use them.

C04: Collect pertinent data, analyse it and communicate clearly and effectively the findings and conelusions.

COS: Give recommendations based on research findings in the interest of benefitting industry and society.

Sub_ject: Business Int lligence and Application **Paper Code: MS** 204

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COI: Understand the concept of business intelligence and business decisions and different tools for decision making.

CO2: Understand the concept of data warehouse and its architecture.

C03: Implement SQL for creation modify and display data from DBMS.

C04: Analyse the concept of data mining and knowledge discovery and their application.

COS: Analyse the concept of knowledge management and issues in business intelligence.

Subject: Strategic Management **Paper Code:** MS 206

COURSE OUTCOMES (Cos)

At the end of the course, a student will be able to:

COl: Understand the integrative model of strategic management process along with role of corporate governance in strategic management.

CO2: Demonstrate tbe knowledge in formulating strategies along with identifying the resource endowments specific to the firm & industry.

C03: Implement a strategic plan that takes into account the functional areas of business along with procedures in order to achieve organizational goals.

C04: Evaluate challenges faced by managers in implementing and evaluating strategies based on the nature of business. industry, and cultural differences.

Sub.iect: Corporate Social Responsibility, Human Values & Ethics **Paper Code:** MS 208

COURSE OUTCOMES (COs)

/\t the end of the course. a student will be able to:

COl: Describe the concepts of values & Ethics. Types of Values, Institutions influencing value system. relevance of value system & ethical conduct in business.

CO2: Explain the role & responsibilities of corporations towards its various Stakeholders.

C03: Analyse the real-life challenges of moral, values and ethics in variety of functional areas in the organizations.

C04: Understand th d comp lcxit ies of business corporations in decision making process while upholding tbe ethical and social responsibility towards its stakeholders.

Subject: Retail Management **Paper Code:** MS 212

COURSE OUTCOMES (COs)

J\t the end of the course, a student will be able to:

COl: Understand the retailing concept, its evolution and importance, and retail scenano at Indian and global level.

CO2: Explain the process of retail strategy formulation and designing & checking of customer service quality goals in retail.

C03: Analyse the merchandise management process, inventory planning, retail pncmg and designing retail promotion-mix.

C04: Analyse and explain store layout and design process, store management, online and international retailing along with legal & ethical issues in retail.

Suh_ject: Advertising and Brand Management **Paper Code: MS** 214

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Understand the nature and scope of advertising management as a part of Integrated marketing communi cati on.

CO2: Evaluate different media and media selection for its effectiveness.

C03: Interpret importance of strategic brand management process with help of different model.

C04: Analyse managing global brands in different sectors.

Sub_jcct: Internet Marketing **Paper Code: MS** 216

COURSE OUTCOMES (COs)

!\t the end of the course . a student will be able to:

COl: Understand the concepts. techniques and evolving strategies of internet marketing.

CO2: Assess opportunities of internet medium to support the organization's marketing activities.

C03: Investigate the main forms of internet media and channels.

C04: Develop a deep appreciation of the entire internet marketing ecosystem.

I

Sub_jcct: Business Marketing **Paper Code: MS** 218

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COl: Describe the applications. challenges and the dynamic environment of Business marketing. including the unique nature of organizational buying behaviour.

CO2: Design strategies and structures to effectively serve the Business market.

C03: Apply a systematic approach to problem solving and decision making m business marketing organizations.

C04: Develop a business marketing plan for an organisation that mainly targets business customers.

Sub_ject: Strategic Financial Management **Paper Code:** MS 220

COURSE OUTCOMES (COs)

At the end of the course_ a student will be able to:

CO1: Think critically to creatively in identify and evaluate the alternative solutions to business problems.

CO2: Solve complex problems to support financial evaluations and business management decisions.

C03: Understand the financial services market in India and acquire skills to solve co,..mplex business problems.

C04: Synthesize and use information and knowledge effectively.

COS: Suggest the ways to improve a company's performance by employing corporate n:structuring strategies

Subject: Mergers. Acquisitions and Corporate Restructuring **Paper Code:** MS 222

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

CO1: Analyse difference between various mergers along with the motives of undergoing mergers.

CO2: Understand the role of different regulators of mergers & acquisition.

C0 3: Apply correct v uation technique of target companies

C04: Evaluate appropriate defence mechanisms against hostile takeovers.

Subject: Financial Derivatives **Paper Code:** MS 224

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COi: Develop the conceptual understanding of derivatives.

CO2: Enhance the knowledge to understand the risk aversion strategies and the concept of hedging.

C03: Acquire the understanding about the use of options to face the dynamics of financial market.

C04: Enable to understand about structure of derivative market m India and its regulatory framework

Sub,ject: Behavioural Finance **Paper Code:** MS 226

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

CO I: Understand interrelationship of economic, social, psychology theories underlying human decision making.

CO2: Develop understanding of foundations of behavioural finance and its theories. -

C03: Learn tools and techniques for analysing stock market behaviour and will be able to make strategics for designing portfolios.

C04: Start entrepreneurial ventures as investment consultants, advisors and investment banking.

Subject: Strategic Human Resource Management **Paper Code:** MS 228

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COt: To understand the evolution of SHRM and its role for competitive advantage.

CO2: To Demonstrate critical thinking skills in analysing theoretical and applied perspectives of SHRM.

C03: To learn existing SHRM Practices worldwide. To understand the relationship of HR strategy with overall eorporate strategy and craft effective functional strategies.

C04: To be able to develop solutions to issues of different types of employees at both national and international level.

COS: To enable students meet HRM challenges through effective SHRM strategies

Subject: Organization Development **Paper Code:** MS 230

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COt: Apply principles of systems thinking and relevant theories that are foundational to organizational change current research concerning individuals, groups. and organizations to the process of change.

CO2: Ability to think analytically and creatively in their approach to organizational problem-solving using change management strategies.

C03: Collect and analyse organizational data in order to frame effective OD interventions.

C04: Develop interventions to improve group dynamics. teamwork, leadership, structure, culture, processes. and practices in the organizations.

COS: To explore the role of OD in addressing issues relating to globalization and ethical issues

Subject: Team Building **Paper Code: MS** 232

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Ability to understand the structure of teams. its types. behavioural dynamics, creative and effective problem solving in teams.

CO2: Ability to analyse roles that can be played by individuals in teams and managing globally, nationally. and demographically diverse teams.

C03: Develop and facilitate team building activities that promote trust, collaboration, communication. and conflict resolution.

C04: Ability to understand the role of leaders in teams and design strategies to develop effective team leadership.

Sub_jcct: Behaviour Testing and Counselling **Paper Code:** MS 234

I **COURSE OUTCOMES (COs)**

Students who have completed this course would have learned to:

COl: Ability to understand the personality, interest, ability, attitude of individuals 111 the organization.

CO2: Ability to assess the personality, interpersonal relations, motivation, attitudes, and interests of the individuals for effective workplace management.

C03: Ability to develop measurement tools for various aspects of HR.

C0 4: Ability to provide basic counselling for managing behaviour, interpersonal relationships, leadership. group dynamics. teamwork, and handling problem employees.

Suh_ject: Digitalisation and £-Governance **Paper Code:** MS 236

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Gain a familiarity with the basic concepts. terminology and technology of digitalisation and e-governance.

CO2: Develop skills to critically evaluate government web sites and eservices against current ··best practice" principles and standards.

C03: Understand the major federal and state laws and regulations impacting the evolution of e-govemance.

C04: Be able to articulate the policy and social issues facing agencies tn implementing e-government initiat ives .

COS: Be able to apply basic business case and government IT management concepts 111 preparing e-government proposals, plans or strategies.

Sub_ject: Software Project Management **Paper Code:** MS 238

COURSE OUTCOMES (COs)

J\t the end of the course, a student will be able to:

COl: Understand about the Software, its Characteristics and Application of different Models for software development.

CO2: Understand the basic concept of Software Requirement and its Specification, Planning and Scheduling. *f*

C03: comprehend the importance of Software Quality Assurance and Configuration Management.

C04: Understand the Risk Management in Software Development.

Sub_ject: Web Technologies **Paper Code:** MS 240

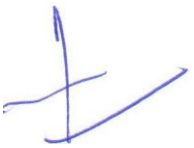
COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COJ: Apply a structured approach to identifying needs. interests, and functionality of a website and design dynamic websites that meet specified needs and interests by writing well-structured, easily maintained. standards compliant. accessible HTML code.

CO2: Use tools to add dynamic content to pages by writing well-structured, easily maintained codes

C03: Understand basic fundamental of webtools that works to validate on client site.



C04: Develop a data driven web application.

Subject: Knowledge Management **Paper Code:** MS 242

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COi: Describe how valuable individual, group and organizational knowledge is managed throughout the knowledge management cycle

CO2: Define the different knowledge types and explain how they are addressed by knowledge management

C03: Describe the major roles and responsibilities in knowledge management implementations

C04: Identify some of the key tools and techniques used in knowledge management applications.

COS: Identify and evaluate major issues related with knowledge management such as ethics, knowledge ownership vs. authorship, copyright, intellectual property and knowledge sharing incentives.

Subject: Global Competitiveness and Strategic Alliance **Paper Code:** MS 244

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Understand the concept of strategic alliances and acquaint themselves with the worldwide trends in this area.

CO2: Explain the factors responsible for the rise of strategic alliances.

C03: Develop an awareness of costs and benefits of alliance arrangements.

C04: Explain the process of planning successful alliances and responsibility of the alliance partners.

Sub_jcct: Supply Chain Management for International Business **Paper Code:** MS 246

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COJ: Understand the challenges involved in managing international supply chain.

CO2: Gain command of the key factors in new business models based on e-commerce and an insight on how it affects the logistic system.

C03: Distinguish the forces shaping international logistics in global market.

C04: Use analytical tools & concept in as well as better understand the major' s trategic issues and trade off in international business related with supply chain management .

Sub_ject: Managing Diversity **Paper Code:** MS 248

COURSE OUTCOMES (COs)

At the end of the course. a student will be able to:

COl: Understand the various aspects of diversity management in an organisation.

CO2: Exemplify the impact of diversity management and also understand the challenges and significance of diversity management in an organisation.

C03: Demonstrate the knowledge of the theories and applications of diversity management.

C04: Compare and use tools of diversity management , formulate policies for managing the employees coming from diverse cultures and prepare them to work in a global environment.

Sub_jcct: Global Strategic Management **Paper Code:** MS 250

I **COURSE OUTCOMES (COs)**

At the end of the course. a student will be able to:

COl: Understand the range of competitive opportunities and challenges businesses face 111 creating value worldwide, especially the forces of globalization.

CO2: Appreciate the complexities of national institutions and the dynamics of industry competition at the global level.

C03: Know the resources, capabilities, and core competences enabling a company to sustain above-average returns over the long run in context of international business.

C04: Develop critical thinking skills to address business challenges and opportunities taking into consideration the various stakeholders that are important to the organization at the global level.

COS: Identify the issues of social responsibility, environmental sustainability, and corporate governance at global level.

Subject: Web Technology Lab **Paper Code:** MS 252

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

COl: Analyze a web page and identify its elements and attributes.

CO2: Create web pages using XHTML and Cascading Style Sheets.

C03: Build dynamic web pages using JavaScript (Client side programming).

C04: Create XML documents and Schemas.

Subject: Supply Chain Analytics **Paper Code:** MS 254

COURSE OUTCOMES (COs)

At the end of the course, a student will be able to:

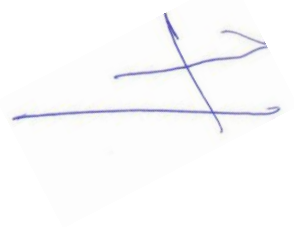
COI: Analyse and model supply chains.

CO2: Enhance supply chain visibility.

C03: Develop data driven rules to manage volatility

C04: Plan inventory flow of goods and services.

COS: Forecast demand and to predict and monitor supply and replenishment policies



GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

DWARKA, NEW DELHI-110078

MBA-FINANCIAL ANALYSIS

(PROGRAMME OUTCOMES AND COURSE OUTCOMES)

SCHEME 2019 ONWARDS

Offered by

University School of Management Studies

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
UNIVERSITY SCHOOL OF MANAGEMENT STUDIES

MBA- FINANCIAL ANALYSIS

Program Outcomes (POs)

PO1: Apply knowledge of business theory and practice to solve organizational problems using a systematic and analytical decision-making approach.
PO2: Demonstrate the knowledge and skills to manage personnel in a dramatically changing digital, economic, demographic, and social landscape.
PO3: Exhibit awareness of their personal ethical values and the effect of those values on their decision-making within an organization.
PO4: Function effectively and cohesively as an individual and as team member in diverse settings.
PO5: Effectively use technology and innovation for the continuous growth of the organization.
PO6: Demonstrate critical thinking abilities based on contextual knowledge to assess societal, legal, and cultural issues relevant to management practice.
PO7: Manifest Sustainable competitive advantage for the organization, in the face of contemporary global business environment.
PO8: Strive for creation of value for the stakeholders.
PO9: Employ knowledge of regulatory framework for effective compliance thereof.
PO10: Analyse management research problems and create effective solutions.
PO11: Pursue independent and life-long learning.

Program Specific Outcomes (PSOs)

PSO1: Acquire conceptual understanding of the business environment, financial challenges confronting the global businesses, and the potential responses thereto;
PSO2: Develop the skills for analysing the risks associated with the complex business environment for strategic financial decision-making;
PSO3: Ability to apply financial theories, models, and approaches for identifying, mitigating, and managing risks in the financial markets;
PSO4: Promote critical thinking to create holistic value for stakeholders.

FIRST SEMESTER

Code No.	Paper
MFA-101	Accounting for Management
MFA-103	Quantitative Techniques for Finance
MFA-105	Managerial Economics
MFA-107	IT for Finance
MFA-109	Personal Finance
MFA-111	Financial Markets and Institutions
MFA-113	Management Process and Organizational Behaviour
MFA-115	Business Communication and Managerial Skill Development
MFA-151	IT for Finance – Lab

MFA-101 Accounting for Management

Course outcomes:

CO1: Appreciation of fundamental accounting principles and develop understanding of using accounting information for business decision making
CO2: Capacity to understand various implications of accounting information
CO3: Ability to analyse the decision-making context with due regard to the accounting information.
CO4: General awareness of accounting mechanisms and role of accounting rules.
CO5: Acquaintance with the procedural aspects related to financial accounting
CO6: Acquisition of skills necessary to read and understand financial statements.

MFA-103 Quantitative Techniques for Finance

Course Outcomes:

On a successful completion of the course, the students will be able to:

CO1: Understand and use decision making models in solving different business problems.
CO2: Demonstrate effective computational and spreadsheets skills for business analysis.
CO3: Apply an appropriate quantitative technique in analysing the management problems.
CO4: Extract insight from models, and to use those insights to communicate, persuade and motivate change

MFA-105 Managerial Economics

Course Outcomes:

On a successful completion of the course, the students will be able to:

CO1: Understand the basic economic principles and methodological knowledge
CO2: Develop the skills to analyse the market structure and pricing practices
CO3: Understand the production, factors of production, its process and impact of various costs on production
CO4: Develop the ability to analyse and solve complex business problems

MFA-107 IT for Finance

Course Outcomes:

CO1: Understanding about computer hardware, memory, storage and its applications and number system and its conversions with examples.
CO2: Learning about various software, programming languages, DBMS, ER models and its applications.
CO3: Gaining knowledge about data communication and networks and its various types and their application.

CO4: Understanding about various information systems and components and their application.

MFA 109 Personal Finance

Course Outcomes:

CO1: To familiarizing the students with the Indian financial market, its players, products and regulations.
CO2: To develop financial literacy and skills to analyse the personal financing needs, and sources of funds to raise capital.
CO3: To design portfolios that suits the risk return requirements of individuals and mapping products related to banking, insurance, loans, real estate, retirement planning.
CO4: The course is especially useful for those learners who want to start entrepreneurial ventures as investment consultants, advisors and investment banking

MFA 111 Financial Markets and Institutions

Course Outcomes:

CO1: The students will understand interrelationship of economic, commerce, financial markets and strategies for corporate decision making.
CO2: This course will help students develop understanding of foundations of financial markets and institutions.
CO3: They will learn tools and techniques for analysing market behaviour, impact of regulatory policies on changing decision making of companies and will be able to make strategies for investment.
CO4: The course is especially useful for those learners who want to get employed in financial sector or start entrepreneurial ventures as financial service provider as investment consultants, advisors and investment banking

MFA- 113 Management Process and Organizational Behaviour

Course Outcomes:

On a successful completion of the course, the students will be able to:

CO1: Examine the definition, basic concepts, theories, and principles applicable to the field of management and demonstrate the roles, skills and functions of management.
CO2: Analyse effective application of principles of management knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.
CO3: Illustrate the applicability of the concept of organisational behaviour, its theories and models.
CO4: Analyse the complexities related with management of individual behaviour in the organisation and apply these concepts in motivating and leading people in the organisation.
CO5: Understand the issues related with process of organisational change, management of group behaviour and conflict resolution in the organisation.

MFA-115 Business Communication and Managerial Skill Development

Course Outcomes:

CO1: To understand the scope and importance of business communication to become a global employee
CO2: To understand the principles of communication to make an impact on all the stakeholders of the organization.
CO3: To prepare effective written communication correspondence (e.g., emails, reports, notices, blogs, press release etc.) and understand its role in highlighting the company image. Building confidence for employment correspondence.
CO4: To learn etiquettes for impactful business dealings (dressing sense, listening skills, cultural sensitivity etc) for long lasting relationship building.
CO5: To be able to solve real life problems from communication perspective

MFA 151 IT for Finance Lab

Course Outcomes:

CO1: Learning about various details of HTML and learn to code in HTML
CO2: Understanding about basics of DOS and learning basic commands of DOS
CO3: Learning about maintaining record through MS-Excel and understanding the various features of it
CO4: Learning about practical application of SQL and using commands of SQL

SECOND SEMESTER

Code No.	Paper
MFA-102	Financial Management
MFA-104	Investment Analysis and Portfolio Management
MFA-106	Business Analytics
MFA-108	Macro and Mathematical Economics
MFA-110	Business Research
MFA-112	Legal Framework of Business
MFA-114	Marketing Management
MFA-116	Human Resource Management
MFA-152	Finance Lab – I (NUES)

MFA-102 Financial Management

Course Outcomes:

On a completion of this course, the students will be able to

CO1: Demonstrate the ability to apply the concept of Financial Management to comprehend the managerial decisions and corporate capital structure.
CO2: Apply the concept of leverage and EBIT-EPS Analysis for optimising the financial decisions.
CO3: Analyse the convolutions associated with management of short-term and long-term funds in the corporate capital Structure.
CO4: Demonstrate how risk is assessed.
CO5: Demonstrate how the concepts of financial management and investment, financing and dividend policy decisions could help in making optimum valuation of a firm.

MFA-104 Investment Analysis and Portfolio Management

Course Outcomes:

On a completion of this course, the students will be able to:

CO1: Understand the risk and return nature of various securities available in Indian financial markets.
CO2: Apply the acquired knowledge of security market for valuation of both equity and fixed income securities under goal-based investment planning.
CO3: To enable the students get familiarized with derivative market.
CO4: Showcasing a deep understanding on the trade-off between risk and return and getting expertise on asset allocation in portfolio.

MFA 106 Business Analytics

Course Outcomes:

On a completion of this course, the students will be able to:

CO1: Critically thinking on import, manage and structure data files for using business analytics.
CO2: Apply analytical knowledge with the R interface and language for different fields.
CO3: Provide leadership in analytics in existing datasets into R or create new ones.
CO4: Cultivating cognitive skills acquired on existing data and performs all conventional statistical analysis tests. using R knowledge on data management
CO5: Effectively solve business problems and make effective decision-making using R Statistics.

MFA-108 Macro and Mathematical Economics

Course Outcomes:

On a successful completion of this course, the students should be able to:

CO1: Understand various economic models and institutions in macroeconomics
CO2: Understand different macroeconomic perspectives of various economists of past and present
CO3: Find, interpret and analyse economic information and data
CO4: Applying mathematical techniques to economic data for problem solving
CO5: Solve complex problems and build arguments using mathematical economic models

MFA-110 Business Research

Course Outcomes:

CO1: Develop necessary skills to prepare effective research proposal, formulate research questions, and choose appropriate methods to data collection and analysis
CO2: Ability to apply critical analytical skills on research projects
CO3: Understand the strengths and weaknesses of different methods
CO4: Gain knowledge about the importance of business research in organizations and develop competitive advantages

MFA 112: Legal Framework of Business

Course Outcomes:

CO1: Active appreciation of various legal provisions related to the laws governing general and special contracts, negotiable instruments, companies, competitive markets, consumers' protection and investors' protection
CO2: Capacity to understand the implications of various laws above mentioned for business decision making.
CO3: Ability to analyse the decision-making context with due regard to the regulatory compliances and the consequences thereof
CO4: General awareness of various institutional mechanisms set up under the
relevant laws for promoting the objectives of respective laws, their role, functions and powers
CO5: Reasonable level of acquaintance with the procedural aspects related to the
availing of the remedies, contesting the matters and participating in proceedings
CO6: Acquisition of skills necessary to read and understand legal communications
and respond to them in an appropriate manner while displaying legal proficiency that matches with the expectations of the job roles.

MFA 114: Marketing Management

Course Outcomes:

On completion of the course, students should be able to:

CO1: Demonstrate an understanding of the importance of a customer-centric approach and a knowledge of the basic marketing concepts, processes and techniques.
CO2: Demonstrate an understanding of the major forces in the macro and micro environment that impact marketing strategy development and implementation.
CO3: Demonstrate the ability to use a systematic research and information-based approach to critically analysing marketing tasks and challenges and to develop creative solutions.
CO4: Demonstrate an understanding of contemporary marketing trends and emerging issues and the consequent opportunities and challenges.

MFA-116 Human Resource Management

Course Outcomes:

CO1: Describe the concept of Human Resource Management with the integration of concept of Strategic Human Resource Management for taking major Human Resource Decisions.
CO2: Explain the role Human Resource Manager plays to face the different challenges and strategies for new millennium.
CO3: Illustrate the applicability of function of Human Resource Planning to Selection process by integrating an analysis of jobs, sources of recruitment and different changes occurring in jobs.
CO4: Identify the steps in assessing the training and development needs, its effectiveness and explain the methods of Performance appraisal and Job Evaluation for deciding the compensation components.

MFA 152 Finance Lab-(NUES)

Course Outcomes:

After the successful completion of the course, the student will:
CO1: Get familiarized with basic to intermediate features of Microsoft Excel and develop the ability to use Excel utilities and formulas like VLOOKUP, HLOOKUP, Count, Sum.
CO2: Get familiarized with the financial formulas like NPV, PV, IRR, XIRR and use this functionality in decision making to solve managerial problem in business environment.
CO3: Learn to analyse data using descriptive statistics and analysis tools of ANOVA, Correlation, Covariance, Regression.
CO4: Learn to use charting techniques and Pivot tables for data representation.

THIRD SEMESTER

Code No.	Paper
MFA-201	Summer Internship Project
MFA-203	Financial Derivatives
MFA-205	International Financial Management
	Elective 1
	Elective 2
	Elective 3
	Elective 4
MFA-251	Finance Lab – II (NUES)

List of Electives

Codes	**Financial Analytics**
MFA-207	Financial Econometrics
MFA-209	Mergers, Acquisitions, and Corporate Restructuring
MFA-211	Sustainable Finance
MFA-213	Fixed Income Securities
MFA-215	Emerging Technologies in Finance
Codes	**Financial Systems**
MFA-217	Direct and Indirect Taxes
MFA-219	Central Banking
MFA-221	Commercial Banking
MFA-223	Financial Journalism
MFA-225	Venture Capital and Entrepreneurial Finance

MFA 201 Summer Internship Project

Course Outcomes:

Upon successful completion of the internship, students will be able to

CO1: Integrate academic theory with practice.
CO2: Develop self-confidence, sensitivity and appreciation for diversity, clarification of work and personal values, and workplace etiquette.
CO3: To apply knowledge and skills learned in company/industry/organization to real-world problems.
CO4: Develop and demonstrate workplace competencies such oral and written communication, critical thinking, organization, problem solving, decision making, leadership, managing interpersonal relationships, etc. necessary for professional success.
CO5: Carry out research projects, analyse data, and write up and present results in meetings (including experience in using specialized tools at each stage of this process).

MFA-203 Financial Derivatives

Course Outcomes:

CO1: To develop an understanding amongst students of financial derivatives about theories, principles of derivatives pricing and models.
CO2: To understand the regulatory framework and interplay of other macro-economic and social factors that impact derivatives market.
CO3: To develop skills required for taking corporate finance-related decisions to maximize the firm value through inter-company derivatives investments
CO4: To equip the students to conceive and evaluate entrepreneurial ideas in the field of financial derivatives trading and for taking-up consultancy assignments in the field of personal finance and wealth management.

MFA-205 International Financial Management

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Understand different exchange rate regimes, and systems across the globe
CO2: Analyse, apply and evaluate information within the global financial environment of foreign exchange to solve problems and make informed decisions
CO3: Recognise and calculate forward exchange rates given spot rates, identify market conventions on exchange rate quotation
CO4: Develop a sound understanding of the foreign exchange market and foreign exchange risk exposure
CO5: Analyse both quantitative and qualitative financial information to influence foreign investment decisions

MFA-207 Financial Econometrics

Course Outcomes:

After completion of the program students will be able to

CO1: Understand the nature and behaviour of time series data.
CO2: Apply financial econometrics techniques on the real-life financial data.
CO3: Forecast the financial data, derive a relationship between two or more series for useful implications.
CO4: Validate financial theories and methods with the help of empirical data.

MFA-209 Mergers, Acquisitions, and Corporate Restructuring

Course Outcomes:

CO1: Understand the process of corporate restructuring
CO2: Ability to comprehend the value of mergers, acquisitions, and other corporate restructuring tools for the business
CO3: Develop the skillset to evaluate the opportunity for corporate restructuring
CO4: Ability to value the firms through various accounting and managerial methods
CO5: Competence to appreciate and resolve the HR and other cultural issues involved in mergers, and acquisitions

MFA-211 Sustainable Finance

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Describe, understand and discuss the latest developments and trends in the area of sustainable finance
CO2: Understand different types of sustainable finance products and their functioning
CO3: Discuss opportunities, challenges, and enabling conditions for different stakeholders to benefit from increasing sustainable investment opportunities
CO4: Understand functioning of green bonds and green loans and identify opportunities for the public and private sectors to issue such products
CO5: Apply sustainable finance mechanisms to a real-life scenario

MFA-213 Fixed Income Securities

Course Outcomes:

After completion of the course, students will:

CO1: Understand the concept and fundamental features of fixed income securities.
CO2: Understand valuation and pricing of fixed income securities and calculation of yield and return.
CO3: Identify the types and sources of risks in fixed income securities and apply structural models for risk estimation.
CO4: Understand the bond portfolio management strategies for effective risk management.
CO5: Demonstrate how to apply derivative instruments to hedge the risks and enhance the returns of fixed income securities.

MFA-215 Emerging Technologies in Finance

Course Outcomes:

After completing this course, students will be able to:

CO1: Understand the growth and trends of financial technology
CO2: Analyse the role of different technologies used in finance industry
CO3: Applications of various technologies in finance industry

MFA-217 Direct and Indirect Taxes

Course Outcomes:

After completion of the course, students will:

CO1: Appreciation of principles of taxation and classification of types of taxes. and their impact on business decision making
CO2: Capacity to understand various implications of direct and indirect taxes
CO3: Ability to apply norms of taxes efficiently in the context of business situations
CO4: General awareness of taxation rules and role of government.
CO5: Acquaintance with the procedural aspects related to filing of details with the government.
CO5: Acquisition of skills necessary to comply with legal requirement of tax laws.

MFA-219 Central Banking

Course Outcomes:

CO1: Understand the structure, operations, tools, and policies of central banks
CO2: Conceptual clarity about the management of money in global economy
CO3: Decode the impact of central banking policies on macroeconomic stability measured through indicators, such as inflation, growth, employment, etc.
CO4: Competence to formulate policy regarding interest rate determination and other monetary decisions to attain economic goals

MFA-221 Commercial Banking

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Describe the functions of commercial banks along with the history and evolution of commercial in India and abroad.
CO2: Explain how commercial banks operate in India and the impact of technology on commercial banking. Describe the importance of financial planning and wealth management.
CO3: Identify leading trends affecting the financial services industry.
CO4: Describe the importance of risk management in commercial banks, including how they manage the various sources of funds.
CO5: Describe how banking and other financially related legislations and regulations have impacted the operation of today's commercial banks.

MFA-223 Financial Journalism

Course Outcomes:

CO1: To understand basic concepts of financial reports, journalism and mass media.
CO2: To develop analytical skills to understand role of macro-economic, environmental, and industry in corporate and financial market changes.
CO3: To become independent reporter and develop entrepreneurial skill set.
CO4: The course will familiarize students with nuances of financial journalism and legal aspects related to it.

MFA 225 Venture Capital and Entrepreneurial Finance

Course Outcomes:

After completion of the course, students will:

CO1: Get familiarized with the basic features, terms and concepts of entrepreneurship and venture capital and comprehend and develop skills for converting a business idea to business plan.
CO2: Understand the various sources of entrepreneur finance and the assistance and role offered by the development agencies for entrepreneurs.
CO3: Understand the concepts of valuation of start- ups and specific performance measurement tools.
CO4: Develop understanding of the legal and marketing issues and challenges for entrepreneurs and strategies for future growth.
CO5: Understand the global aspects and barriers for international trade for entrepreneurial ventures and strategies for management.

MFA 251 Finance Lab – II (NUES)

Course Outcomes:

CO1: Ability to comprehend the modelling techniques for financial management, investment analysis, portfolio management, risk management, project planning, valuation and corporate restructuring
CO2: Analytical skills on MS-Excel and other software for building powerful models in finance
CO3: Assist managerial decision making by helping transform data to information that can be used at strategic and operational levels

FOURTH SEMESTER

Code No.	Paper
MFA-202	Project Dissertation
MFA-204	Strategic Management and Corporate Governance
MFA-206	Behavioural Finance
	Elective 1
	Elective 2
	Elective 3
	Elective 4
MFA-252	Finance Lab – III (NUES)

List of Electives

Codes	Financial Analytics
MFA-208	Advanced Technical Analysis
MFA-210	Equity Valuation
MFA-212	Project Management
MFA-214	Risk Management
MFA-216	Financial Modelling
Codes	**Financial Systems**
MFA-218	Financial Serviced Marketing
MFA-220	Strategic Financial Management
MFA-222	International Accounting & Reporting
MFA-224	Investment Banking
MFA-226	Forensic Finance

MFA-202 Project Dissertation

Course Outcomes:

Upon successful completion of the project dissertation, students will be able to

CO1: Identify and articulate a clear research question or research problem.
CO2: Perform a thorough literature review & formulate a hypothesis.
CO3: Distinguish between different research methodologies and know when to use them.
CO4: Collect pertinent data, analyse it and communicate clearly and effectively the findings and conclusions.
CO5: Give recommendations based on research findings in the interest of benefitting industry and society.

MFA-204 Strategic Management and Corporate Governance

Course Outcomes:

CO1: Appreciation of strategic vision, corporate mission, objectives and goals in the process of strategic management.
CO2: Capacity to analyse internal resources and understand strengths and weaknesses to generate strategic advantage.
CO3: Ability to formulate strategy and choosing appropriate functional policies.
CO4: General awareness of principles of good corporate governance
CO5: Acquaintance with specific strategic management system focusing on big picture.
CO6: Acquisition of skills necessary to apply specific practices for good corporate governance

MFA-206 Behavioural Finance

Course Outcomes:

CO1: The students will understand interrelationship of economic, social, psychology theories underlying human decision making.
CO2: This course will help students develop understanding of foundations of behavioural finance and its theories.
CO3: They will learn tools and techniques for analysing stock market behaviour and will be able to make strategies for designing portfolios.

CO4: The course is especially useful for those learners who want to start entrepreneurial ventures as investment consultants, advisors and investment banking.

MFA-208 Advanced Technical Analysis

Course Outcomes:

After completion of the course students will be able to

CO1: Understand and read the charts of stocks and securities values arranged in a time series.
CO2: Identify tends and patterns in the charts as per the technical indicators.
CO3: Apply techniques to identify the support, resistance, consolidation, target etc for the price levels.
CO4: Provide consultation and research input for a security or index.

MFA-210 Equity Valuation

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Understand and critically discuss concepts of equity valuation like valuation process, risk and return, and required rate of return on equity.
CO2: Conduct valuations based on methods like the Discounted Cash Flow method, Gordon Growth model, H-model etc.
CO3: Understand and apply skills in practical financial analysis and conduct a relative valuation and residual income valuation.
CO4: Critically analyse publicly available information for valuation of equity.
CO5: Understand the approaches in private company valuation and loose ends in valuation.

MFA-212 Project Management

Course Outcomes:

CO1: Appreciation of concept of project activity as distinct from routine activities and their role in business decision making
CO2: Capacity to generate new project ideas and evaluate the same for sustainable growth of business.
CO3: Ability to plan and execute large scale projects with time and cost efficiency.
CO4: General awareness of project life cycle and specific requirement of different stages of projects.
CO5: Acquaintance with project scheduling, monitoring, control and termination of projects.
CO6: Acquisition of skills necessary to manage risk associated with project activities.

MFA-214 Risk Management

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Understand Risk Management Principles and Conceptual Framework of Risk with a financial perspective

CO2: Demonstrate knowledge of the range of financial risks faced by organisations, and understanding the process of identifying and categorising these risks
CO3: Explain the various risk control measures and design risk management program for organisations
CO4: Understand the approach to risk management through insurance
CO5: Understand Risk & Forecasting issues in Asset Prices and effectively carry out risk reporting and risk budgeting exercises

MFA-216 Financial Modelling

Course Outcomes:

CO1: Theoretical understanding of financial modelling, valuation and strategy analysis
CO2: Understanding and analysing financial statements
CO3: Working knowledge of the techniques, elements and approaches of forecasting
CO4: Ability to develop and interpret financial statements in Excel and use it for solving their business problems

MFA-218 Financial Services Marketing

Course Outcomes:

After completion of the course, students should be able to:

CO1: Describe the nature and scope of services marketing and analyse and evaluate customer expectations and perception of the service.
CO2: Understand the models to measure service quality and apply them to real life cases to examine the customer satisfaction.
CO3: Identify the process and issues related to service blueprinting, service design and development and pricing thereof.
CO4: Understand the concept of customer relationship management and apply in real business scenarios to build and manage customer relationship in financial services.
CO5: Identify and evaluate the new emerging areas and trends in marketing of financial services.

MFA-220 Strategic Financial Management

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Think critically to creatively in identify and evaluate the alternative solutions to business problems.
CO2: Solve complex problems to support financial evaluations and business management decisions.
CO3: Understand the financial services market in India and acquire skills to solve complex business problems.
CO4: Synthesize and use information and knowledge effectively.
CO5: Suggest the ways to improve a company’s performance by employing corporate restructuring strategies

MFA-222 International Accounting and Reporting

Course Outcomes:

CO1: Appreciation of issues connected with international accounting and reporting with a view to assess their role in business decision making.
CO2: Capacity to understand and interpret financial statements produced by multinational corporations
CO3: Ability to understand international auditing requirements along with international accounting policies.
CO4: General awareness of International financial reporting standards (IFRS) as applicable for global firms.
CO5: Acquaintance with the Generally Accepted Accounting Principles.
CO6: Acquisition of skills necessary to compare disclosure requirements for multinational companies across different countries.

MFA-224 Investment Banking

Course Outcomes:

CO1: Develop skillsets in financial analysis and widen the knowledge about financial instruments and institutions
CO2: Assist the firm management in creating value by analysing competitive investment proposals and financial options
CO3: Orientation about banking and financial concepts about managing investment in primary market and secondary market
CO4: Ability to establish fair value for the companies involved in the merger and acquisition activities, project finance, IPO analysis, etc.

MFA-226 Forensic Finance

Course Outcomes:

CO1: To develop theoretical understanding of frauds and reporting manipulations done by businesses.
CO2: To learn the tools available and legal framework for identifying financial frauds.
CO3: To develop analytical ability to predict and forecast financial frauds.
CO4: The course is especially useful for those learners who want to get employed in forensic finance sector or start entrepreneurial ventures as forensic expert in financial markets.

MFA 252 Finance Lab – III (NUES)

Course Outcomes:

CO1: Ability to apply the modelling techniques for financial management, investment analysis, portfolio management, risk management, project planning, valuation and corporate restructuring
CO2: Application of analytical skills on MS-Excel and other software for building powerful models in finance
CO3: Take managerial decisions using advanced software for business and finance

Semester	Subject	Mapping															
I	MFA-101 Accounting for Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3		2	1						1		2	3	2	1
		CO2		2		3					1	2		3		1	1
		CO3	3	1			2					1			3	2	
		CO4	1	2		1		1					2	1	1	2	
		CO5	1	1			3				1					2	
		CO6	3			2					2		1	3			3

I	MFA-103 Quantitative Techniques for Finance		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3		2										
		CO2		3	3		2										
		CO3		3	3		2										
		CO4				3	2										

I	MFA-105 Managerial Economics		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1												3	3	2	2
		CO2												3	3	3	3
		CO3												3	3	3	2
		CO4												2	2	3	3

I	MFA-107 IT for Finance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	1	1	2	3	1	1				1	1	1	1		
		CO2	2	2	3	2	2	3				2	2	2	2		
		CO3	3	3	3	3	3					3	3	3	3		
		CO4	4	4	1	2	4	3				4	4	4	4		

I	MFA 109 Personal Finance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3	3	2		2	3			3	3	2	3			
		CO2						3			3	3	3		3	3	
		CO3	3	3		2		3		3		3	2	2		3	
		CO4	3	3	2	2		3		3		3	3	2	2		3

I	MFA 111 – Financial Markets and Institutions		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3	3				3	2	1	3			3	2	1	3
		CO2	3	3				3	3	3	3	1		3	3	1	1
		CO3	1	1							3		2	3	3	2	1
		CO4	2	2		2	3			3	2	2	3	3	1	2	3

I	MFA- 113 Management Process and Organizational Behaviour		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	2	3	2	3	2	2	3	3	2	2	1	2	1	1	2
		CO2	3	3	3	2	3	3	3	2	1	3	1	3	1	1	3
		CO3	1	3	3	3	2	1	1	2	1	2	1	2	1	1	2
		CO4	2	3	3	3	3	2	3	2	1	2	2	2	1	1	2
		CO5	3	3	3	3	3	3	3	2	1	1	2	3	1	1	3

I	MFA-115 Business Communication and Managerial Skill Development		PO1	PO2	PO3	PO4											
		CO1	3			2											
		CO2	3														
		CO3	3			2											

		CO4	3			2										
		CO5	3	1		1										

I	MFA 151 IT for Finance Lab		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	1	1	1		1				1		1	1	1		
		CO2	2	2			2						2	2			
		CO3	3	3	3		3	3					3	3	3		
		CO4	4	4	4						4			4			

II	MFA-102 Financial Management		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3												
		CO2	2	3	2												
		CO3	2	3	2												
		CO4	2	3	2												
		CO5	2	3	2												

II	MFA-104 Investment Analysis and Portfolio Management		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3												
		CO2	2	3	3		1										
		CO3	2	3	3		1										
		CO4	1	3	3		1										

II	MFA 106 Business Analytics		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3	2	2	2	2	2	2	1	1	2	1	1	2	3	2
		CO2	2	2	2	3	3	3	3	2	2	3	2	3	3	3	1
		CO3	2	2	2	2	2	2	1	1	2	1	1	2	2	1	3
		CO4	1	3	2	2	2	1	3	1	1	3	2	1	2	2	3
		CO5	2	2	2	2	1	1	2	2	2	3	3	1	2	3	2

II	MFA-108 Macro and Mathematical Economics		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	2				1	2		2		2	3	3	2	3	2
		CO2	3		2			2	2	2		2	3	3	2	3	2
		CO3	3	1	1	2	2	2	1	2		3	2	2	2	3	2
		CO4	3	1	1		2	3	1			3	2	2	3	3	
		CO5	3	1	1	2	1	3		1		3	3	2	3	2	1

II	MFA-110 Business Research		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1												2	2	3	3
		CO2												2	2	3	3
		CO3												2	1	2	2
		CO4												2	2	2	3

II	MFA 112: Legal Framework of Business		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3	3	2	1	1	3	2	2	3	2	3	2	2	1	2
		CO2	3	2	2	1	1	3	3	2	3	3	2	2	2	2	3
		CO3	2	3	2	1	1	2	2	2	3	2	2	3	2	3	3
		CO4	3	3	2	1	1	3	3	2	3	2	2	2	2	1	3
		CO5	3	3	2	1	1	3	2	2	3	2	2	2	2	2	3
		CO6	3	3	2	2	1	3	2	2	3	2	2	2	2	3	3

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
II	MFA 114: Marketing Management	CO1	3	3			1	3	3	3	1	3	3	1	1		3
		CO2	3	3			1	3	2	2	1	3		1	1		3
		CO3	3	3			2	3	2	3		3	2				3
		CO4	3	3				3	2	2	2	2	1				2

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
II	MFA-116 Human Resource Management	CO1	3	3	2	3	2	3	3	3	2	2	1	2	1	1	3
		CO2	3	3	3	2	2	3	3	3	2	3	1	2	1	1	3
		CO3	2	3	2	2	3	2	2	2	3	2	1	3	1	1	1
		CO4	3	3	3	2	3	3	3	3	3	2	1	2	1	1	1

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
II	MFA 152 Finance Lab- (NUES)	CO1					2					2				3	
		CO2	2				2					2		2	3	3	
		CO3	3				2					2			3	3	
		CO4	2				2									3	

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA 201 Summer Internship Project	CO1	2	3	2	3	2	2	3	3	2	2	1	2	1	1	2
		CO2	3	3	3	2	3	3	3	2	1	3	1	3	1	1	3
		CO3	1	3	3	3	2	1	1	2	1	2	1	2	1	1	2
		CO4	2	3	3	3	3	2	3	2	1	2	2	2	1	1	2
		CO5	3	3	3	3	3	3	3	2	1	1	2	3	1	1	3

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-203 Financial Derivatives	CO1	2	3			2				3	3		3	3	3	1
		CO2			3		2	3	2		3	3	3	3	3	3	2
		CO3			3				2	3			3	3			3
		CO4			2				3	3			3	3	3	2	3

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-205 International Financial Management	CO1	2			2		3	3		3		1	3	2		
		CO2	3	1	2		2	3	3	1		3	1	3	2	2	1
		CO3	3	1	2		1	3	2	1			2	2	2	3	1
		CO4	3				2	2	2	1	3	2	2	3	3	2	1
		CO5	3	1	2	2	3	2	2	2		3	3	2	3	3	2

			PO1	PO2	PO3	PO4	PO5										
III	MFA-207 Financial Econometrics	CO1	3	3	3		2										
		CO2	2	3	3		2										
		CO3		3	3		2										
		CO4	3	3	3		3										

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-209 Mergers, Acquisitions, and Corporate Restructuring	CO1												3	2	2	2
		CO2												3	2	3	2
		CO3												2	3	2	3
		CO4												2	3	3	3
		CO5												2	3	3	3

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-211 Sustainable Finance	CO1	3		2		2	1	3	3			3	3			3
		CO2	2	2	2		1		3	3			2	2		1	3
		CO3	2	1	3	2	1		2	3		2	2	2	1	2	3
		CO4	3	2	3		2	2	3	3		2	1	2	2	2	3
		CO5	3	1	3	1	1	2	3	3		3	2	2	3	2	3

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-213 Fixed Income Securities	CO1	1									2		3		3	
		CO2	1						1	2		2		3	2	3	
		CO3	1	1				2	1	1	2	2		1	3	3	
		CO4							2	2	2	2		1	3	3	3
		CO5	1							2	2	2		2	3	3	3

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-215 Emerging Technologies in Finance	CO1			1			1						1			
		CO2					2					2				2	2
		CO3	3				3									3	

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-217 Direct and Indirect Taxes	CO1	1		3	2	1		1		3			2	2		1
		CO2		3	1	3					2			3		1	2
		CO3		2			2	3				2		1	2	3	
		CO4		2		3			1				2	2	3	1	
		CO5	2	1			2				2			2	2	3	
		CO6	2		2	3			1		3		1	2	3	3	1

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-219 Central Banking	CO1												3	2	3	2
		CO2												3	2	3	2
		CO3												2	3	3	3
		CO4												2	3	3	3

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-221 Commercial Banking	CO1	2		1	3					3		2	3	1	2	
		CO2	3	1		2	3	3		2	3		3	3	2	3	2
		CO3	2		2	1	3	3	1		1	2	3	2	3	2	
		CO4	2	2	1	2	2	3	2	2	1	3	3	2	3	2	2
		CO5	2	1	2	1	2	1	1		3	2	2	2	1	2	

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA-223 Financial Journalism	CO1	3				3		1		1			2	1	1	1
		CO2	3	3	3				2	2		2	2	3	3	3	1
		CO3			3				2	3			3	3	3	2	3
		CO4		3	2	3	3	3			3	1		3		3	1

			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
III	MFA 225 Venture Capital and Entrepreneurial	CO1	2					2	1			2	1	3	3		2
		CO2	1					1		2				2	2		

	Finance	CO3	2				1		2					3	3	3	2
		CO4	1									2		3	2	1	2
		CO5	2					2			2	2		3	3		3

III	MFA-251 Finance Lab – II (NUES)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1												3	3	2	2
		CO2												2	3	3	2
		CO3												2	2	3	3

IV	MFA-202 Project Dissertation		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	2	2	1	1	1	3	3	2	2	3	3	3	2	2	2
		CO2	2	2	2	1	3	3	3	2	2	3	3	3	2	2	3
		CO3	3	1	3	1	3	1	3	3	1	3	3	2	3	3	3
		CO4	3	2	2	2	3	3	3	3	2	3	3	3	3	3	3
		CO5	3	3	3	1	2	3	3	3	3	3	2	3	3	3	3

IV	MFA-204 Strategic Management and Corporate Governance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3		1	2	3		2			1		3	2	1	
		CO2	2		3	2			2			3		1	2	1	2
		CO3		2		1	1	2				1		2	3	1	1
		CO4	3	1		3	2		2		1		3	2	2	3	
		CO5	1	3		2	2			1				2	1	3	
		CO6	2	1	2	2			2		2		1	2	2	1	1

IV	MFA 206 Behavioural Finance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	2	3												3	3
		CO2	3	2													
		CO3					2		3	3	1	3			3	2	3
		CO4	2	2	3	3	3	2	3	3	2	3	3	2	2	1	3

IV	MFA-208 Advanced Technical Analysis		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3		2										
		CO2	2	3	2		2										
		CO3	2	3	3		2										
		CO4	2	2	2		3										

IV	MFA-210 Equity Valuation		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3		1			2	1				3	3	3	3	
		CO2	3	2			1	1	2	2		2	2	2	3	3	2
		CO3	3	2	1			3	2	2		3	3	2	3	2	2
		CO4	2	2	2	2	1	3	1	2		3	3	3	3	2	2
		CO5	2	1	1		1	3	2	3		2	2	2	3	3	3

IV	MFA-212 Project Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3	2	1		2				2			3	1		2
		CO2		2	2	1	3		1				1	1	1	2	3
		CO3	2	1		3	1	2		2		2	1	2		2	1
		CO4			2	2	1		2		3		1	1	3	1	
		CO5		2	3		1		2		3			1	1	1	
		CO6	1		2	1		2	1			2	1	2		3	1

IV	MFA-214 Risk		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4

	Management	CO1	3		1			2	1		2		3	3	3	3	
		CO2	2	1		2	2	3	2	2		2	3	3	3	3	2
		CO3	2	2		3	3	2	1	2		3	2	2	3	3	2
		CO4	3		2		2	1	1	1		1	2	3	3	3	1
		CO5	3	2	2	1	2	3		1		3	3	2	3	3	1

IV	MFA-216 Financial Modelling		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1												3	3	2	2
		CO2												3	3	2	2
		CO3												3	3	3	2
		CO4												2	3	3	3

IV	MFA-218 Financial Services Marketing		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	2					2	1	1		2		2			2
		CO2	2						1	3	3			1	2		1
		CO3	2					2	2	2				2	2		1
		CO4	2	2		1			1	3		1		2	2		2
		CO5	1						1	1		2		1	1		2

IV	MFA-220 Strategic Financial Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3	2	2		3	3	2	3		3	3	3	3	2	3
		CO2	2	1	2	2	2	3	3	2		3	3	3	3	3	2
		CO3	3	1	1	1	1	3	3	2	2	3	2	2	3	2	2
		CO4	2	2	2	2	2	2	2	2	1	2	3	2	3	1	2
		CO5	3	2		1	2	2	2	3		3	3	3	3	3	3

IV	MFA-222 International Accounting and Reporting		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	2		2				1		3			1	1	2	
		CO2	1		2	3					1			1	2	2	3
		CO3			3		2	1			1	2	2			3	
		CO4			1	3	2			2		1	2		2	1	
		CO5	3				1	2		2	2			3	1	1	1
		CO6	1	3	1		3	2			2		1	3	2		2

IV	MFA-224 Investment Banking		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1												2	3	2	2
		CO2												2	3	3	3
		CO3												3	2	2	3
		CO4												2	2	3	3

IV	MFA 226 Forensic Finance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3				3		1		1			2	1	1	1
		CO2	3	3	3				2	2		2	2	3	3	3	1
		CO3			3				2	3			3	3	3	2	3
		CO4		3	2	3	3	3			3	1		3		3	1

IV	MFA-252 Finance Lab – III (NUES)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1												3	3	2	2
		CO2												2	3	3	2
		CO3												2	2	3	3

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
DWARKA, NEW DELHI-110078

MBA-FINANCIAL MARKETS

(PROGRAMME OUTCOMES AND COURSE OUTCOMES)

SCHEME 2017 ONWARDS

Offered by

University School of Management Studies

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
UNIVERSITY SCHOOL OF MANAGEMENT STUDIES

MBA- FINANCIAL MARKETS

Program Outcomes (POs)

PO1: Apply knowledge of business theory and practice to solve organizational problems using a systematic and analytical decision-making approach.
PO2: Demonstrate the knowledge and skills to manage personnel in a dramatically changing digital, economic, demographic, and social landscape.
PO3: Exhibit awareness of their personal ethical values and the effect of those values on their decision-making within an organization.
PO4: Function effectively and cohesively as an individual and as team member in diverse settings.
PO5: Effectively use technology and innovation for the continuous growth of the organization.
PO6: Demonstrate critical thinking abilities based on contextual knowledge to assess societal, legal, and cultural issues relevant to management practice.
PO7: Manifest Sustainable competitive advantage for the organization, in the face of contemporary global business environment.
PO8: Strive for creation of value for the stakeholders.
PO9: Employ knowledge of regulatory framework for effective compliance thereof.
PO10: Analyse management research problems and create effective solutions.
PO11: Pursue independent and life-long learning.

Program Specific Outcomes (PSOs)

PSO1: Acquire conceptual understanding of the business environment, financial challenges confronting the global businesses, and the potential responses thereto;
PSO2: Develop the skills for analysing the risks associated with the complex business environment for strategic financial decision-making;
PSO3: Ability to apply financial theories, models, and approaches for identifying, mitigating, and managing risks in the financial markets;
PSO4: Promote critical thinking to create holistic value for stakeholders.

FIRST SEMESTER

MBA (FM) 101 Management Process & Organizational Behaviour
MBA (FM) 103 Introduction to Financial Markets and Mutual Funds
MBA (FM) 105 Managerial Economics
MBA (FM) 107 Accounting for Management
MBA (FM) 109 Information Technology Management
MBA (FM) 111 Capital Market Operations
MBA (FM) 113 Financial Management
MBA (FM) 115 Managerial Skills Development (NUES)
MBA (FM) 151 Information Technology Management Lab

MBA (FM) 101 Management Process and Organizational Behaviour

Course Outcomes:

On a successful completion of the course, the students will be able to:

CO1: Examine the definition, basic concepts, theories, and principles applicable to the field of management and demonstrate the roles, skills and functions of management.
CO2: Analyse effective application of principles of management knowledge to diagnose and solve organizational problems and develop optimal managerial decisions.
CO3: Illustrate the applicability of the concept of organisational behaviour, its theories and models.
CO4: Analyse the complexities related with management of individual behaviour in the organisation and apply these concepts in motivating and leading people in the organisation.
CO5: Understand the issues related with process of organisational change, management of group behaviour and conflict resolution in the organisation.

MBA (FM) 103 Introduction to Financial Markets and Mutual Funds

Course Outcomes:

CO1: The students will understand interrelationship of economic, commerce, financial markets and strategies for corporate decision making.
CO2: This course will help students develop understanding of foundations of financial markets and institutions.
CO3: They will learn tools and techniques for analysing market behaviour, impact of regulatory policies on changing decision making of companies and will be able to make strategies for investment.

CO4: The course is especially useful for those learners who want to get employed in financial sector or start entrepreneurial ventures as financial service provider as investment consultants, advisors and investment banking

MBA (FM) 105 Managerial Economics

Course Outcomes:

On a successful completion of the course, the students will be able to:

CO1: Understand the basic economic principles and methodological knowledge
CO2: Develop the skills to analyse the market structure and pricing practices
CO3: Understand the production, factors of production, its process and impact of various costs on production
CO4: Develop the ability to analyse and solve complex business problems

MBA (FM) 107 Accounting for Management

Course outcomes:

CO1: Appreciation of fundamental accounting principles and develop understanding of using accounting information for business decision making
CO2: Capacity to understand various implications of accounting information
CO3: Ability to analyse the decision-making context with due regard to the accounting information.
CO4: General awareness of accounting mechanisms and role of accounting rules.
CO5: Acquaintance with the procedural aspects related to financial accounting
CO6: Acquisition of skills necessary to read and understand financial statements.

MBA (FM) 109 Information Technology Management

Course Outcomes:

CO1: Understanding about computer hardware, memory, storage and its applications and number system and its conversions with examples.
CO2: Learning about various software, programming languages, DBMS, ER models and its applications.

CO3: Gaining knowledge about data communication and networks and its various types and their application.
CO4: Understanding about various information systems and components and their application.

MBA (FM) 111 Capital Market Operations

Course Outcomes:

CO1: Understanding about Indian Securities Market including Market segments, Primary market, Secondary market, products and participants
CO2: Learning about trading mechanism including order management, trade management, auction, internet broking etc.
CO3: Learning about clearing and settlement process while understanding key terminologies and learning to use relevant software for this process.
CO4: Understanding about legal framework and valuation concept in capital markets.

MBA (FM) 113 Financial Management

Course Outcomes:

On a completion of this course, the students will be able to

CO1: Demonstrate the ability to apply the concept of Financial Management to comprehend the managerial decisions and corporate capital structure.
CO2: Apply the concept of leverage and EBIT-EPS Analysis for optimising the financial decisions.
CO3: Analyse the convolutions associated with management of short-term and long-term funds in the corporate capital Structure.
CO4: Demonstrate how risk is assessed.
CO5: Demonstrate how the concepts of financial management and investment, financing and dividend policy decisions could help in making optimum valuation of a firm.

MBA (FM) 115 Managerial Skills Development (NUES)

Course Outcomes:

CO1: Personality development of students by enhancing their communication skills
CO2: Developing professionalism and shaping the attitude and behaviour of students
CO3: Preparing the students for Corporate Roles through various exercises and activities
CO4: Developing interpersonal skills to work in teams and learning conflict resolution techniques.

MBA (FM) 151 Information Technology Management Lab

Course Outcomes:

CO1: Learning about various details of HTML and learn to code in HTML
CO2: Understanding about basics of DOS and learning basic commands of DOS
CO3: Learning about maintaining record through MS-Excel and understanding the various features of it
CO4: Learning about practical application of SQL and using commands of SQL

SECOND SEMESTER

MBA (FM) 102 Quantitative Techniques in Finance
MBA (FM) 104 Investment Analysis and Portfolio Management
MBA (FM) 106 Marketing Management
MBA (FM) 108 Business Research Methods
MBA (FM) 110 Commodity Markets
MBA (FM) 112 Human Resources Management
MBA (FM) 114 Regulatory Framework in Security Market
Currency
MBA (FM) 116 Emerging Trends in Financial Markets (NUES*)

MBA (FM) 102 Quantitative Techniques for Finance

Course Outcomes:

The students will be able to:

CO1: understand and use decision making models in solving different business problems.

CO2: demonstrate effective computational and spreadsheets skills for business analysis.

CO3: apply an appropriate quantitative technique in analysing the management problems.

CO4: extract insight from models, and to use those insights to communicate, persuade and motivate change

MBA (FM) 104 Investment Analysis and Portfolio Management

Course Outcomes:

On a completion of this course, the students will be able to:

CO1: Understand the risk and return nature of various securities available in Indian financial markets.
CO2: Apply the acquired knowledge of security market for valuation of both equity and fixed income securities under goal-based investment planning.
CO3: To enable the students get familiarized with derivative market.
CO4: Showcasing a deep understanding on the trade-off between risk and return and getting expertise on asset allocation in portfolio.

MBA (FM) 106 Marketing Management

Course Outcomes:

On completion of the course, students should be able to:

CO1: Demonstrate an understanding of the importance of a customer-centric approach and a knowledge of the basic marketing concepts, processes and techniques.
CO2: Demonstrate an understanding of the major forces in the macro and micro environment that impact marketing strategy development and implementation.
CO3: Demonstrate the ability to use a systematic research and information-based approach to critically analysing marketing tasks and challenges and to develop creative solutions.
CO4: Demonstrate an understanding of contemporary marketing trends and emerging issues and the consequent opportunities and challenges.

MBA (FM) 108 Business Research Methods

Course Outcomes:

CO1: Develop necessary skills to prepare effective research proposal, formulate research questions, and choose appropriate methods to data collection and analysis
CO2: Ability to apply critical analytical skills on research projects
CO3: Understand the strengths and weaknesses of different methods
CO4: Gain knowledge about the importance of business research in organizations and develop competitive advantages

MBA (FM) 110 Commodity Markets

Course Outcomes:

CO1: Understanding the fundamentals and functioning of commodity derivatives in India using platforms like NCDEX
CO2: Understanding the application of commodity futures for hedging, speculating and arbitrage process.
CO3: Understand the trading, clearing and settlement process in commodity derivatives including risk management and margining process
CO4: Gain knowledge about the regulatory framework in relation to commodity derivatives.

MBA (FM) 112 Human Resources Management

Course Outcomes:

CO1: Describe the concept of Human Resource Management with the integration of concept of Strategic Human Resource Management for taking major Human Resource Decisions.
CO2: Explain the role Human Resource Manager plays to face the different challenges and strategies for new millennium.
CO3: Illustrate the applicability of function of Human Resource Planning to Selection process by integrating an analysis of jobs, sources of recruitment and different changes occurring in jobs.
CO4: Identify the steps in assessing the training and development needs, its effectiveness and explain the methods of Performance appraisal and Job Evaluation for deciding the compensation components.

MBA (FM) 114 Regulatory Framework in Security Market

Course Outcomes:

CO1: Active appreciation of various legal provisions related to the laws governing general and special contracts, negotiable instruments, companies, competitive markets, consumers' protection and investors' protection
CO2: Capacity to understand the implications of various laws above mentioned for business decision making.
CO3: Ability to analyse the decision-making context with due regard to the regulatory compliances and the consequences thereof
CO4: General awareness of various institutional mechanisms set up under the
relevant laws for promoting the objectives of respective laws, their role, functions and powers
CO5: Reasonable level of acquaintance with the procedural aspects related to the
availing of the remedies, contesting the matters and participating in proceedings
CO6: Acquisition of skills necessary to read and understand legal communications
and respond to them in an appropriate manner while displaying legal proficiency that matches with the expectations of the job roles.

MBA (FM) 116 Emerging Trends in Financial Markets

Course Outcomes (COs)

After the successful completion of the course, the student will:

CO 1 Get familiarized with the money market and regulations of SEBI and RBI.

CO 2 Get familiarized with the financial formulas like NPV, PV, IRR, XIRR and use this functionality in analysing GDP data, Inflation Data etc.

CO 3 Study and learn from the recent case studies in the area of Mergers and Acquisitions.
CO 4 Learn to use charting techniques and Pivot tables for data representation.

THIRD SEMESTER

MBA (FM) 201 Summer Training Project
MBA (FM) 203 Equity Derivatives Market Operations
MBA (FM) 205 Venture Capital and Private Equity
MBA (FM) 207 Technical Analysis

LIST OF ELECTIVES

I. Financial Advisory Services

MBA (FM) 209 - Interest Rate Derivatives
MBA (FM) 211 - Management of Life Insurance
MBA (FM) 213 - Debt Market
MBA (FM) 215 – Merchant Banking

II. Corporate Valuation Services

MBA (FM) 217 - Mathematical Finance
MBA (FM) 219 - Equity Research
MBA (FM) 221 - Investment Banking
MBA (FM) 223 – Financial Valuation and Modeling

MBA (FM) 201 Summer Training Project

Course Outcomes:

Upon successful completion of the internship, students will be able to

CO1: Integrate academic theory with practice.
CO2: Develop self-confidence, sensitivity and appreciation for diversity, clarification of work and personal values, and workplace etiquette.
CO3: To apply knowledge and skills learned in company/industry/organization to real-world problems.
CO4: Develop and demonstrate workplace competencies such oral and written communication, critical thinking, organization, problem solving, decision making, leadership, managing interpersonal relationships, etc. necessary for professional success.
CO5: Carry out research projects, analyse data, and write up and present results in meetings (including experience in using specialized tools at each stage of this process).

MBA (FM) 203 Equity Derivatives Market Operations

Course Outcomes (COs)

After completion of the course, students will:

CO1: Get familiarized with the basic features of derivatives market products in speculating, hedging and arbitrage.
CO2: Understand the concept and techniques of pricing the derivative instruments while learning about the application of derivatives
CO3: Understand the process involved in trading, clearing, settlement, and risk management of equity derivatives
CO4: Develop understanding of the regulatory framework related to derivatives trading.

MBA (FM) 205 Venture Capital and Private Equity

Course Outcomes (COs)

After completion of the course, students will:

CO1: Get familiarized with the basic features, terms and concepts of entrepreneurship and venture capital and comprehend and develop skills for converting a business idea to business plan.
CO2: Understand the various sources of entrepreneur finance and the assistance and role offered by the development agencies for entrepreneurs.
CO3: Understand the concepts of valuation of start- ups and specific performance measurement tools.
CO4: Develop understanding of the legal and marketing issues and challenges for entrepreneurs and strategies for future growth.
CO5: Understand the global aspects and barriers for international trade for entrepreneurial ventures and strategies for management.

MBA (FM) 207 – Technical Analysis

Course Outcomes:

After completion of the course students will be able to

CO1: Understand and read the charts of stocks and securities values arranged in a time series.
CO2: Identify tends and patterns in the charts as per the technical indicators.
CO3: Apply techniques to identify the support, resistance, consolidation, target etc for the price levels.
CO4: Provide consultation and research input for a security or index.

MBA (FM) 209 - Interest Rate Derivatives

Course Outcomes:

After completion of the course students will be able to

CO1: Understand the concept of money markets, time value of money, and functioning of government bonds.
CO2: Understand the concept of interest rate derivatives and learn about its application as a risk management tool.
CO3: Acquire a deeper understand about interest rate futures and its role in the risk management process.
CO4: Devise strategies for Hedgers, Speculators and Arbitrageurs in the interest rate derivatives

market.

MBA (FM) 211 - Management of Life Insurance

Course Outcomes:

After completion of the course, students will:

CO1: Understand the fundamental principals of life insurance, premium and bonuses
CO2: Understand the underwriting process and study the recent trends in the insurance market
CO3: Learn about the documentation process, policy conditions and claims in life insurance.
CO4: Develop understanding of the rules and regulations governing life insurance business.

MBA (FM) 213 - Debt Market

Course Outcomes:

After completion of the course, students will:

CO1: Understand the concept and fundamental features of fixed income securities.
CO2: Understand valuation and pricing of fixed income securities and calculation of yield and return.
CO3: Identify the types and sources of risks in fixed income securities and apply structural models for risk estimation.
CO4: Understand the bond portfolio management strategies for effective risk management.
CO5: Demonstrate how to apply derivative instruments to hedge the risks and enhance the returns of fixed income securities.

MBA (FM) 215 – Merchant Banking

Course Outcomes:

After completion of the course, students will:

CO1: Understand the concept and fundamentals of merchant banking, its importance, need and functions
CO2: Understand the concept and process of the Initial Public Offering and learn about the regulations guiding the entire process
CO3: Understand the process of issuing of depository receipts, and learn about its structures, norms and guidelines
CO4: Understand the procedure for issue of bonds and debentures

MBA (FM) 217 - Mathematical Finance

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Understand the mathematical tools in finance like basic probability, variables, multivariate distributions, and sampling techniques
CO2: Design portfolios using techniques like Studying Cash Flows, Markowitz model, Capital Asset Pricing Model etc.
CO3: Learn the techniques of pricing the financial derivatives and understand the factors influencing options premium

CO4: Understand the valuation models for financial derivatives

MBA (FM) 219 - Equity Research

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Understand and critically discuss concepts of equity valuation like valuation process, risk and return, and required rate of return on equity.
CO2: Conduct valuations based on methods like the Discounted Cash Flow method, Gordon Growth model, H-model etc.
CO3: Understand and apply skills in practical financial analysis and conduct a relative valuation and residual income valuation.
CO4: Critically analyse publicly available information for valuation of equity.
CO5: Understand the approaches in private company valuation and loose ends in valuation.

MBA (FM) 221 - Investment Banking

Course Outcomes:

CO1: Develop skillsets in financial analysis and widen the knowledge about financial instruments and institutions
CO2: Assist the firm management in creating value by analysing competitive investment proposals and financial options
CO3: Orientation about banking and financial concepts about managing investment in primary market and secondary market
CO4: Ability to establish fair value for the companies involved in the merger and acquisition activities, project finance, IPO analysis, etc.

MBA (FM) 223 – Financial Valuation and Modeling

Course Outcomes:

CO1: Theoretical understanding of financial modelling, valuation and strategy analysis
CO2: Understanding and analysing financial statements
CO3: Working knowledge of the techniques, elements and approaches of forecasting
CO4: Ability to develop and interpret financial statements in Excel and use it for solving their business problems

FOURTH SEMESTER

MBA (FM) 202 Project Dissertation
MBA (FM) 204 Behavioural Finance
MBA (FM) 206 Surveillance in Stock Exchanges
MBA (FM) 208 Tax Planning and Management
MBA (FM) 210 – Entrepreneurship Development

LIST OF ELECTIVES

I Financial Advisory Services

MBA (FM) 212 – Depository Operations
MBA (FM) 214 – Financial Journalism
MBA (FM) 216 – Mergers, Acquisitions and Corporate Restructuring

II Corporate Valuation Services

MBA (FM) 218 - Options Trading Strategies
MBA (FM) 220 – Wealth Management
MBA (FM) 222 - International Financial Management

MBA (FM) 202 Project Dissertation

Course Outcomes:

Upon successful completion of the project dissertation, students will be able to

CO1: Identify and articulate a clear research question or research problem.
CO2: Perform a thorough literature review & formulate a hypothesis.
CO3: Distinguish between different research methodologies and know when to use them.
CO4: Collect pertinent data, analyse it and communicate clearly and effectively the findings and conclusions.
CO5: Give recommendations based on research findings in the interest of benefitting industry and society.

MBA (FM) 204 Behavioral Finance

Course Outcomes:

CO1: The students will understand interrelationship of economic, social, psychology theories underlying human decision making.
CO2: This course will help students develop understanding of foundations of behavioural finance and its theories.
CO3: They will learn about the preliminary analysis and investigation process of surveillance in stock exchange
CO4: The course is especially useful for those learners who want to start entrepreneurial ventures as investment consultants, advisors and investment banking.

MBA (FM) 206 Surveillance in Stock Exchanges

Course Outcomes:

CO1: The students will understand the importance of role of surveillance in stock exchanges
CO2: This course will help students develop understanding about surveillance activities, rumour verification, and risk containment measures
CO3: They will learn tools and techniques for analysing stock market behaviour and will be able to make strategies for designing portfolios.
CO4: Develop understanding of the rules and regulations governing securities market in India.

MBA (FM) 208 Tax Planning and Management

Course Outcomes:

After completion of the course, students will:

CO1: Appreciation of principles of taxation and classification of types of taxes. and their impact on business decision making
CO2: Capacity to understand various implications of direct and indirect taxes
CO3: Ability to apply norms of taxes efficiently in the context of business situations
CO4: General awareness of taxation rules and role of government.
CO5: Acquaintance with the procedural aspects related to filing of details with the government.
CO5: Acquisition of skills necessary to comply with legal requirement of tax laws.

MBA (FM) 210 – Entrepreneurship Development

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

CO1: Understand the concept of entrepreneurship and acquire competencies needed to become an entrepreneur
CO2: Learn about the process to identify entrepreneurial opportunity and conduct feasibility study
CO3: Learn about enterprise launching formalities, registration process, and project appraisal
CO4: Understand the role of support institutions and management of small business

MBA (FM) 212 – Depository Operations

Course Outcomes:

CO1: To understand the rationale for depository, services and its processes
CO2: To develop understanding of capital markets and get an overview of NSDL
CO3: To learn about NSDL business partners, NSDL application software, service standards, benefits and safety and charge structure of NSDL
CO4: To learn about core and special services from NSDL

MBA (FM) 214 - Financial Journalism

Course Outcomes:

CO1: To understand basic concepts of financial reports, journalism and mass media.
CO2: To develop analytical skills to understand role of macro-economic, environmental, and industry in corporate and financial market changes.
CO3: To become independent reporter and develop entrepreneurial skill set.

CO4: The course will familiarize students with nuances of financial journalism and legal aspects related to it.

MBA (FM) 216 – Mergers, Acquisitions and Corporate Restructuring

Course Outcomes:

CO1: Understand the process of corporate restructuring
CO2: Ability to comprehend the value of mergers, acquisitions, and other corporate restructuring tools for the business
CO3: Develop the skillset to evaluate the opportunity for corporate restructuring
CO4: Ability to value the firms through various accounting and managerial methods
CO5: Competence to appreciate and resolve the HR and other cultural issues involved in mergers, and acquisitions

MBA (FM) 218 - Options Trading Strategies

Course Outcomes:

CO1: Understand the option terminology and options payoffs
CO2: Learn about various options strategies
CO3: Learn about risks associated with different options strategies
CO4: Ability to apply options strategies as a risk management tool

MBA (FM) 220 – Wealth Management

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Understand the concepts of financial planning and wealth management
CO2: Understand the risk management in investments like equity, debt and other alternate investments
CO3: Learn about the investment evaluation framework and acquire knowledge about various investment products
CO4: Develop a sound understanding of the elements of taxation in wealth management

MBA (FM) 222 - International Financial Management

Course Outcomes:

On a successful completion of this course, the students should be able to

CO1: Understand different exchange rate regimes, and systems across the globe
CO2: Analyse, apply and evaluate information within the global financial environment of foreign exchange to solve problems and make informed decisions
CO3: Recognise and calculate forward exchange rates given spot rates, identify market conventions on exchange rate quotation
CO4: Develop a sound understanding of the foreign exchange market and foreign exchange risk exposure
CO5: Analyse both quantitative and qualitative financial information to influence foreign investment decisions

Semester	Subject	Mapping														
I	MBA (FM) 101 Management Process & Organizational Behaviour		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	2	3	2	3	2	2	3	3	2	2	1	2	1	1	2
		CO2	3	3	3	2	3	3	3	2	1	3	1	3	1	1	3
		CO3	1	3	3	3	2	1	1	2	1	2	1	2	1	1	2
		CO4	2	3	3	3	3	2	3	2	1	2	2	2	1	1	2
		CO5	3	3	3	3	3	3	3	2	1	1	2	3	1	1	3
I	MBA (FM) 103 Introduction to Financial Markets and Mutual Funds		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3	3				3	2	1	3			3	2	1	3
		CO2	3	3				3	3	3	3	1		3	3	1	1
		CO3	1	1							3		2	3	3	2	1
		CO4	2	2		2	3			3	2	2	3	3	1	2	3
I	MBA (FM) 105 Managerial Economics		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1												3	3	2	2
		CO2												3	3	3	3
		CO3												3	3	3	2
		CO4												2	2	3	3
I	MBA (FM) 107 Accounting for Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	3		2	1						1		2	3	2	1
		CO2		2		3					1	2		3		1	1
		CO3	3	1			2					1			3	2	
		CO4	1	2		1		1					2	1	1	2	
		CO5	1	1			3				1					2	
		CO6	3			2					2		1	3			3
I	MBA (FM) 109 Information Technology Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO3	PSO4
		CO1	1	1	2	3	1	1				1	1	1	1		

		CO2	2	2	3	2	2	3				2	2	2	2		
		CO3	3	3	3	3	3					3	3	3	3		
		CO4	4	4	1	2	4	3				4	4	4	4		
I	MBA (FM) 111 Capital Market Operations		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	1	1
		CO2												3	3	2	
		CO3												3	2	3	1
		CO4												2	3	1	1
I	MBA (FM) 113 Financial Management		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3												
		CO2	2	3	2												
		CO3	2	3	2												
		CO4	2	3	2												
		CO5	2	3	2												
I	MBA (FM) 115 Managerial Skills Development (NUES)		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												1	3	2	3
		CO2												1	3	3	2
		CO3												2	3	2	3
		CO4												2	3	3	3
I	MBA (FM) 151 Information Technology Management Lab		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	1	1	1		1				1		1	1	1		
		CO2	2	2			2						2	2			
		CO3	3	3	3		3	3					3	3	3		

		CO4	4	4	4						4			4			
II	MBA (FM) 102 Quantitative Techniques for Finance		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3		2										
		CO2		3	3		2										
		CO3		3	3		2										
		CO4				3	2										
II	MBA (FM) 104 Investment Analysis and Portfolio Management		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3												
		CO2	2	3	3		1										
		CO3	2	3	3		1										
		CO4	1	3	3		1										
II	MBA (FM) 106 Marketing Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	3	3			1	3	3	3	1	3	3	1	1		3
		CO2	3	3			1	3	2	2	1	3		1	1		3
		CO3	3	3			2	3	2	3		3	2				3
		CO4	3	3				3	2	2	2	2	1				2
II	MBA (FM) 108 Business Research Methods		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												2	2	3	3
		CO2												2	2	3	3
		CO3												2	1	2	2
		CO4												2	2	2	3
II	MBA (FM) 110 Commodity Markets		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	1	2	

		CO2												2	3	3	
		CO3												3	3	3	1
		CO4												2	3	1	1
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
II	MBA (FM) 112 Human Resources Management	CO1	3	3	2	3	2	3	3	3	2	2	1	2	1	1	3
		CO2	3	3	3	2	2	3	3	3	2	3	1	2	1	1	3
		CO3	2	3	2	2	3	2	2	2	3	2	1	3	1	1	1
		CO4	3	3	3	2	3	3	3	3	3	2	1	2	1	1	1
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
II	MBA (FM) 114 Regulatory Framework in Security Market	CO1	3	3	2	1	1	3	2	2	3	2	3	2	2	1	2
		CO2	3	2	2	1	1	3	3	2	3	3	2	2	2	2	3
		CO3	2	3	2	1	1	2	2	2	3	2	2	3	2	3	3
		CO4	3	3	2	1	1	3	3	2	3	2	2	2	2	1	3
		CO5	3	3	2	1	1	3	2	2	3	2	2	2	2	2	3
		CO6	3	3	2	2	1	3	2	2	3	2	2	2	2	3	3
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
II	MBA (FM) 116 Emerging Trends in Financial Markets (NUES)	CO1					2					2				3	
		CO2	2				2					2		2	3	3	
		CO3	3				2					2			3	3	
		CO4	2				2									3	
			PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
III	MBA (FM) 201 Summer Training Project	CO1	2	3	2	3	2	2	3	3	2	2	1	2	1	1	2
		CO2	3	3	3	2	3	3	3	2	1	3	1	3	1	1	3

		CO3	1	3	3	3	2	1	1	2	1	2	1	2	1	1	2
		CO4	2	3	3	3	3	2	3	2	1	2	2	2	1	1	2
		CO5	3	3	3	3	3	3	3	2	1	1	2	3	1	1	3
III	MBA (FM) 203 Equity Derivatives Market Operations		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	2
		CO2												3	3	2	1
		CO3												3	3	2	2
		CO4												3	1	2	2
III	MBA (FM) 205 Venture Capital and Private Equity		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	2					2	1			2	1	3	3		2
		CO2	1					1		2				2	2		
		CO3	2				1		2					3	3	3	2
		CO4	1									2		3	2	1	2
		CO5	2					2			2	2		3	3		3
III	MBA (FM) 207 – Technical Analysis		PO1	PO2	PO3	PO4	PO5										
		CO1	2	3	3		2										
		CO2	2	3	2		2										
		CO3	2	3	3		2										
		CO4	2	2	2		3										
III	MBA (FM) 209 - Interest Rate Derivatives		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	2	3	1
		CO3												3	3	2	2
		CO4												2	3	3	3

III	MBA (FM) 211 - Management of Life Insurance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	2	3	2
		CO3												3	2	2	2
		CO4												2	1	3	2
III	MBA (FM) 213 - Debt Market		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	1									2		3		3	
		CO2	1						1	2		2		3	2	3	
		CO3	1	1				2	1	1	2	2		1	3	3	
		CO4							2	2	2	2		1	3	3	3
		CO5	1							2	2	2		2	3	3	3
III	MBA (FM) 215 – Merchant Banking		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	3	2	2
		CO3												3	2	3	2
		CO4												3	2	2	2
III	MBA (FM) 217 - Mathematical Finance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												2	3	3	3
		CO3												3	3	3	2
		CO4												3	3	3	2
III	MBA (FM) 219 - Equity Research		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	3		1			2	1				3	3	3	3	

		CO2	3	2			1	1	2	2		2	2	2	3	3	2
		CO3	3	2	1			3	2	2		3	3	2	3	2	2
		CO4	2	2	2	2	1	3	1	2		3	3	3	3	2	2
		CO5	2	1	1		1	3	2	3		2	2	2	3	3	3
III	MBA (FM) 221 - Investment Banking		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												2	3	2	2
		CO2												2	3	3	3
		CO3												3	2	2	3
		CO4												2	2	3	3
III	MBA (FM) 223 – Financial Valuation and Modeling		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	3	2	2
		CO2												3	3	2	2
		CO3												3	3	3	2
		CO4												2	3	3	3
IV	MBA (FM) 202 Project Dissertation		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	2	2	1	1	1	3	3	2	2	3	3	3	2	2	2
		CO2	2	2	2	1	3	3	3	2	2	3	3	3	2	2	3
		CO3	3	1	3	1	3	1	3	3	1	3	3	2	3	3	3
		CO4	3	2	2	2	3	3	3	3	2	3	3	3	3	3	3
		CO5	3	3	3	1	2	3	3	3	3	3	2	3	3	3	3
IV	MBA (FM) 204 Behavioural Finance		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	2	3												3	3
		CO2	3	2													
		CO3					2		3	3	1	3			3	2	3

		CO4	2	2	3	3	3	2	3	3	2	3	3	2	2	1	3
IV	MBA (FM) 206 Surveillance in Stock Exchanges		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	3	2	2
		CO3												2	3	3	3
		CO4												3	2	2	2
IV	MBA (FM) 208 Tax Planning and Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	1		3	2	1		1		3			2	2		1
		CO2		3	1	3					2			3		1	2
		CO3		2			2	3				2		1	2	3	
		CO4		2		3			1				2	2	3	1	
		CO5	2	1			2				2			2	2	3	
		CO6	2		2	3			1		3		1	2	3	3	1
IV	MBA (FM) 210 – Entrepreneurship Development		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	2	2	2
		CO3												3	2	3	1
		CO4												3	2	3	2
IV	MBA (FM) 212 – Depository Operations		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	2	2	2
		CO3												3	3	2	3
		CO4												3	2	3	3
IV	MBA (FM) 214 - Financial Journalism		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	3				3		1		1			2	1	1	1

		CO2	3	3	3				2	2		2	2	3	3	3	1
		CO3			3				2	3			3	3	3	2	3
		CO4		3	2	3	3	3			3	1		3		3	1
IV	MBA (FM) 216 – Mergers, Acquisitions and Corporate Restructuring		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	2
		CO2												3	2	3	2
		CO3												2	3	2	3
		CO4												2	3	3	3
		CO5												2	3	3	3
IV	MBA (FM) 218 - Options Trading Strategies		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	2	2	2
		CO3												3	3	2	2
		CO4												2	3	3	3
IV	MBA (FM) 220 – Wealth Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1												3	2	2	1
		CO2												3	3	2	2
		CO3												3	2	3	2
		CO4												3	2	3	2
IV	MBA (FM) 222 - International Financial Management		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PSO1	PSO2	PSO 3	PSO 4
		CO1	2			2		3	3		3		1	3	2		
		CO2	3	1	2		2	3	3	1		3	1	3	2	2	1
		CO3	3	1	2		1	3	2	1			2	2	2	3	1
		CO4	3				2	2	2	1	3	2	2	3	3	2	1
		CO5	3	1	2	2	3	2	2	2		3	3	2	3	3	2

B.A. LL.B.

Programme Outcomes & Course Outcomes

Scheme : 2014 Onwards

Offered by

University School of Law & Legal Studies

Guru Gobind Singh Indraprastha University
Sector 16C, Dwarka, Delhi – 110 078 [INDIA]
www.ipu.ac.in

Program Outcomes (POs)

PO -1 : Evolving analytical and critical thinking by augmenting academic and professional excellence.

PO-2 : Developing critical and relentless engagement with legal theory and practice, synergizing law, legal research, legal education and action to further the quest for justice

PO-3 : Imparting theoretical and clinical legal education towards developing academic potential, advocacy, counseling and mediation skills so as to fully equip the students with learning which is intellectually stimulating, socially vital and professionally enriching.

PO- 4 : Development of technical, advocacy, communication and research skills through practical training and engagement with the industry, community and the state.

PO-5 : Evolving capacities for constant involvement with processes and practice of law in the professional, social and economic arenas of life by encouraging interaction between the institutional systems and those involved in these processes.

PO-6 : Developing abilities in relationship building, teamwork, leadership and negotiating differences.

PO-7 : Generating creative, innovative and entrepreneurial solutions to the problems in hand.

B.A.LL.B. : Course Outcome

FIRST YEAR

First Semester

Paper Code	**SUBJECTS**	**Course Outcome**
LLB 101	Legal Method	CO1: Trained in identifying legal problems and issues in a client-centered legal environment, with an approach towards problem solving; CO2: be able to exhibit a comprehensive understanding of a variety of methods and materials for conducting effective legal research; and (iii) prepare briefs and summaries.
LLB 103	Law of Contract-I	CO1: to inculcate skills into students to solve real life contractual problems applying legal acumen; CO2: to enable them to produce a clear, rational, coherent and professional written responses to a contract law question using appropriate legal authority and citation; CO3: to wisely select from a range of approaches to written communication, and critically think to bring about creative solutions to complex legal problem in the area of contract law; and CO4: to formulate and draft well-structured written agreements in response to a given set of facts
LLB 105	Legal English and Communication Skills	CO1: Command over language, legal terms and terminologies are of primary importance in legal profession; CO2: The course will enable the student to polish his speaking, writing, listening, and reading abilities into the kind of multifaceted, communicative skill-set that is expected from legal professionals'; and CO3: to understand the complexity of any society
BA LLB 107	History-I	CO1: to encourages students in critical thinking, identify myths and stereotypes, embedded meanings and discourses; CO2: study past in the light of its present to make it meaningful; and CO3: help them to understand the socio, economic and political context in which Indian legal system emerged and evolved in Ancient and Medieval India; and CO4: to enable students to critically appreciate how law and legal institutions work in any society and how they transform with changing social, political and economic conditions.
BA LLB 109	Sociology-I	CO1: to cultivate among students an inclination for appreciation about human behaviour, acceptance of diversity, changing scenarios of human

		co-existence and respect for the vulnerable and the marginalized.

Second Semester

Paper Code	**SUBJECTS**	**COURSE OUTCOME**
LLB 102	Law of Contract - II	**CO1:** to encourage students to critically think, identify and appreciate the special kind of contracts differently titled and serving different purposes; CO2: being aware of the nuances and peculiarity of particular kind of contract (indemnity, agency, etc.) would enable them to draft better contracts as professionals; CO3: to enhance their knowledge as to drawing and operations of negotiable instruments grooming them to tackle business-transaction related issues which are critical to the economy.
LLB 104	Law of Torts and Consumer Protection	CO1 : to be efficient to identify and apply the elements of all the major torts while helping clients solving the legal disputes ; CO2: to critically analyse best avenues for relief available to both the sides and to ascertain which defences are most likely to lead to success; CO3: to evaluate the usage of tort law in providing relief for victims of large-scale disasters; CO4: to develop the skill of critical self-reflection and evaluation of the policy issues in consumer law to find solutions to practical issues and problems occurring in the professional practice.
BA LLB 106	History-II	CO1: learn to appreciate the present constitution and representative democracy; and CO2:understand the contemporary challenges of the present Indian state and its governance.
BA LLB 108	Sociology-II	CO1: reflect upon the inter-disciplinary approach throwing light upon the 'law' and 'society'; CO2: undertake teaching of sociology in close nexus with allied subjects like cyber crime, domestic violence, drug abuse, juvenile delinquency, and white collar crimes; and CO3: enhancing analytical skills; and CO4- train law students in handling cases of social delinquency.
BA LLB 110	Political Science-I	CO1- to think creatively and devise ways to ensure independence of judiciary; CO2- to appreciate the role and influence of different political groups and institutions; and CO3- to be able to use the acquired knowledge in professional practice.

SECOND YEAR

Third Semester

Paper Code	**SUBJECTS**	**COURSE OUTCOME**
LLB 201	Family Law-I	**CO1:** Develop independent thinking on Uniform Civil Code in pragmatic sense CO2: critically assessthe present status of women and children in family relations; and CO3: mould them into professionally qualified persons to handle and resolve family matters such as divorce, maintenance, adoption, and custody of children.
LLB 203	Constitutional Law-I	CO1: Students would find themselves equipped with ability to interpret and appreciate the constitutional issues; CO2: enable students to develop multicultural competence appreciating the operation of Indian legal system within society having diverse outlook with global perspectives; CO3: enrich their outlook as a future professionals to appreciate and respect the co-relation and differences among the various organs and machineries of state administration; and CO4: inculcate the letter and spirit of the Constitution for application in tasks of nation building undertaken by them as responsible citizens of this nation.
LLB 205	Law of Crimes-I	CO1: form independent thinking on crime and criminality as socio-legal phenomena and its social impact; CO2: develop skillset required for criminal lawyering through PSD activities; and CO3: Make them aware of socially relevant jurisprudential concerns.
BA LLB 207	Economics-I	CO1: to make students to appreciate application of microeconomic principles to develop accurate assessments of markets; CO2: to train them to analyse how individual decision-makers, both consumers and producers, behave in a variety of economic environments; CO3: to become aware about labour exploitation, wage determination and role of trade unions; and CO4: make them competent for fiscal decision-making.
BA LLB 209	Political Science-II	CO1: demonstrate the ability to outline a vision of politics in areas such as justice and democracy; CO2: be in a position to critically evaluate law, policy and power dynamics in contemporary times; and CO3: apply political acumen to contemporary legal cases.

Fourth Semester

Paper Code	**SUBJECTS**	**COURSE OUTCOME**
LLB 202	Family Law-II	**CO1 :** promote independent thinking on a Uniform Civil Code and equality among sexes in property relations within the family; CO2: gain requisite knowledge and lawyering skills to handle family law matters of different communities.
LLB 204	Constitutional Law-II	CO1: Sensitize students about the vulnerable groups' rights and the related constitutional protections; CO2: apprise students about the ideals and objectives of good governance incorporated in Constitution; and CO3: change their perception towards violations of constitutional rights taking place in society through concepts like public interest litigation and various writs.
LLB 206	Law of Crimes-II	**CO1:** The study of this paper will provide fair understanding of crime in society; CO2: instil analytical skills and expertise to take up and prosecute criminal matters in courts of law.

LLB 208	Administrative Law	**CO1 :** interpret statutes upholding principles of natural justice; CO2: analyze the impact and operation of administrative law from policy perspectives; CO3: successfully challenge unfair/malafide administrative actions; and CO4: examine their potentialities to own responsibility as an efficient administrative decision maker with procedural fairness.
BA LLB 210	Economics-II	CO1: The successful completion of this course will impart the students knowledge, ability and skill to examine how economy of a country works, relate it with economies of other countries in the world and accurately predict economic future. CO2: The knowledge and skill, in addition to the legal skills, is essential for corporate and business management in financial sectors including banking, investment and insurance. CO3: This course fulfills specialist requirements in the BBA Law programme.

THIRD YEAR

Fifth Semester

Paper Code	**SUBJECTS**	**COURSE OUTCOME**
LLB 301	Environmental Studies and Environmental Laws	CO1: to create critical awareness on contemporary environment and allied topics such as trans-boundary pollution, carbon trading, sustainable development, waste management; and CO2: incept pro bono environmental lawyering skills through PSD activities.
LLB 303	Law of Evidence	CO1: to develop reflective thinking among students inculcating in them the critical sensibility as to life experiences gathered from societal interactions; CO2: to prepare them for court room practice of taking evidence on record, examination-in-chief, cross-examination and qualitative analysis of the evidences; and CO3: overall personality grooming to be smart lawyer capable of handling legal matters of all concerns.
LLB 305	Corporate Law	**CO1 :** After the completion of the course, students will be able to take up legal issues related to company law; CO2 : assess the role of NCLT/ NCALT to protect creditors or shareholders and investors; CO3: evaluate the contents of Management of Company, and corporate governance, incorporating new concepts of corporate accountability; CO4: Undertake company law matters before statutory authorities and courts of law
LLB 307	Code of Civil Procedure	CO1: to familiarise them with important concepts and practical application of the same in the courts which would enable them to harvest skills applicable in litigations; CO2: to enhance their drafting skills; and CO3: to prepare students for practically applying judicial procedures.
LLB 309	Alternative Dispute Resolution (ADR)	**CO1:** trained future professionals in the area of alternative dispute resolution to ease out the burden of litigation in courts; CO2: encourage them to learn procedural complexities, specific hard and soft skills and techniques tailored to suit specific ADR models; and CO3: to encourage them to focus towards incorporating therapeutic paradigms of legal practice.

Sixth Semester

Paper Code	**SUBJECTS**	**COURSE OUTCOME**
LLB 302	Jurisprudence	**CO1:** to develop a broad and open co-relation of the fundamentals under jurisprudential studies pertaining to other law and social science subjects; COP2: to make law socially relevant for the future legal professionals; and COP3: to develop an independent jurist and scholar.
LLB 304	International Law	**CO1:** to develop a knowledge of several key areas of public international law including the law surrounding the use of force and human rights and treaty interpretation; CO2: critically examine the operation and application of international law in practical contexts; CO3: to undertake further specialization in the field of international law' and CO4: to develop requisite lawyering skills in public international law, preparing them as global professionals.
LLB 306	Property Law	CO1: to provide practical skills to handle property matters before courts; CO2: to polish drafting skills pertaining documents related to property like sale deed, gift deed, will, lease agreement, and mortgage, in the light of specific requirements of a particular kind of transfer; and CO3: update the students on the latest changes in law for handling such cases.
LLB 308	Investment and Competition Law	**CO1 :** Upon successful completion of this course, students will have advanced understanding of foundation principles, substantive provisions, economic concerns behind the anti-competitive conduct prohibitions, abuse of dominance, associated institutions like CCI, procedures involved in enforcement, penalties and remedies for breach of the rules; and CO2: students get job opportunities in related field; and CO3: synthesise and critically analyse international instruments and emerging issues at national and global level.
LLB 310	Code of Criminal Procedure	**CO1:** to undertake in-depth study of procedures adopted before magistrate courts; and CO2: to develop capacity to solve real life problems through PSD activities rendering valuable addition to the administration of justice system.

FOURTH YEAR

Seventh Semester

Paper Code	**SUBJECTS**	**COURSE OUTCOME**
LLB 401	Labour Law-I	CO1: critically appraise the latest labour legislations; CO2: compare and contrast the positions of employer- employee in labour relations; and COP3: (iii) equip to handle labour disputes confidently.
LLB 403	Tax Law	CO1 : evaluate the system of tax assessment, recovery and administration, the incidence of tax in production, consumption saving and income distribution through provisions and case laws; CO2: develop sustained interest in tax law and keep abreast with new tax regulations and policies; and CO3: evolve into tax professionals competent to face the intricacies of profession.
LLB 405	Law and Emerging Technologies	**CO1 :** to provide guidance for articulating the challenges posed by advancing technologies into the various realms of society including law and means to combat the same; CO2: to provide a clear demonstration of inter-disciplinary approach of learning acquainting students about fundamental as well as procedural knowledge of amalgamation of law with technology helping them to attain relevant skills for employment opportunities; and CO3: to undertake further researches into the fields of advancing technology which is novel to legal regime.

LLB 407	Human Rights	CO1: to sensitise students towards handling all legal matters with human right approach; CO2: to undertaking pro-bono lawyering in human rights matters by applying critical thinking and problem solving skills gained through PSD activities; COP3: to make them apply their knowledge of Human Rights Law in their profession; CO4: to equip the students with sufficient knowledge and tools for human rights lawyering to fight against human right violations; and CO 5: to enable them to evaluate the effectiveness of statutes in its implementations and formulate pragmatic suggestions.

Eighth Semester

Paper Code	*SUBJECTS*	*COURSE OUTCOME*
LLB 402	Intellectual Property Rights	CO1: to equip students to handle practical operations on field; CO2: lay down the foundations of the subject for every student which would help them in future endeavors, academic and commercial; CO3: prepare students, with practical approach, to help clients/organization in the matters of acquisition, maintenance or infringement of such rights; and CO4: impart required skills to become IPR practitioner.
LLB 404	Labour Law-II	CO 1: critically appraise the latest labour legislations; CO 2: compare and contrast the positions of employer- employee in labour relations; and CO 3: equip to handle labour disputes confidently.
LLB 406	Interpretation of Statutes	CO 1: students will acquire the required knowledge and skills of understanding, explaining, interpreting, distinguishing, constructing and applying the principles and process of statutory interpretation in professional practice; CO 2: learn to compare, contrast and reflect on the theoretical concepts underlying the statutes on one hand, and plan, differentiate and prioritise approaches and materials to be used in statutory interpretation on the other hand.
LLB 408	International Trade Law	CO1: reflect on and critically examine the operation of international trade law in practical contexts; and CO2: To gain understanding, knowledge and professional skills to handle legal matters relating to international trade law in legal and para legal fields.

FIFTH YEAR

(Ninth Semester)

Paper Code	**SUBJECTS**	**COURSE OUTCOME**
LLB 501	Legal Ethics and Court Crafts	CO1: take appropriate decisions when faced with any dilemma of professional ethics; and CO2: fully equipped to demonstrate a great commitment to professionalism, critical and pragmatic thinking, ethical behaviour, court crafts and leadership.
LLB 503	Drafting, Pleading and Conveyancing	CO1 : implement effective writing techniques to draft different types of legal documents in clear and concise way.
LLB 505	Land and Real Estate Laws	CO 1: students will be confident to handle real estate matters; and CO2: update themselves with the Real Estate Regulatory Act 2016, rent laws and dispute settlement mechanisms.

(Tenth Semester)		
LLB 502	Dissertation	20 credit
LLB 504	Internship (Lawyer/Law Firms)	08

B.B.A.LL.B.

Programme Outcomes & Course Outcomes

Offered by

University School of Law & Legal Studies

Guru Gobind Singh Indraprastha University
Sector 16C, Dwarka, Delhi – 110 078 [INDIA]
www.ipu.ac.in

First Semester

Paper Code	Subject	Course Outcome
LLB 101	**Legal Method**	CO1: Trained in identifying legal problems and issues in a client-centered legal environment, with an approach towards problem solving; CO2: To be able to exhibit a comprehensive understanding of a variety of methods and materials for conducting effective legal research; and CO3: To prepare briefs and summaries
LLB 103	**Law of Contract-I**	CO1: To inculcate skills into students to solve real life contractual problems applying legal acumen; CO2: To enable them to produce a clear, rational, coherent and professional written responses to a contract law question using appropriate legal authority and citation; CO3: To wisely select from a range of approaches to written communication, and critically think to bring about creative solutions to complex legal problem in the area of contract law; and CO4: To formulate and draft well-structured written agreements in response to a given set of facts
LLB 105	**English I: Language, Law and Literature(Western**	CO1: Command over language, legal terms and terminologies are of primary importance in legal profession; CO2: The course will enable the student to polish his speaking, writing, listening, and reading abilities into the kind of multifaceted, communicative skill-set that is expected from legal professionals'; and CO3: To understand the complexity of any society
LLB 115	**Principles of Management**	CO1: Enhanced disciplinary knowledge with core understanding of basic and principal concepts with clarity and precision; CO2: Equip students about kinds of planning and its interrelationship with process of controlling; CO3: Polished communication skills and in-depth understanding as to dimensions and barriers to communication enabling them to handle management related problems tactfully and professionally.
LLB 117	**Managerial Economics**	CO1: students become aware about various fundamental concepts and techniques of economic analysis which polishes their managerial decision-making power; CO2: understanding as to market equilibrium and price mechanism enables them to opt for apt strategies while helping their clients in solving real-life problems; CO3: the in-depth understanding of theory of demand and production together with conceptual clarity of market operations enables them to excel at professional front in practical terms.
LLB 119	**Financial Accounting**	CO1: understanding of concepts related to financial accounting enables students to inculcate the practise of applying relevant accounting standard to financial problems and reach most appropriate outcome; CO2: acquaintance about the importance of journalising transactions into systematic forms enhances students' skills about preparation of accounts books helping their client in protecting their assets.
LLB 121	**Quantitative Techniques**	CO1: learning of statistical tools and techniques assist in resolving complex problems which serves as a valuable guide to the decision makers; CO2: knowledge as to correlations assists students in determining relationships between variables by which they can help their clients in deciding future course of actions; CO3:the discussions in linear programming techniques equip students to achieve optimum utilization of available productive resources which is crucial to transform them into a skillful professional.

Second semster

LLB102	**Law of Contract-II**	**CO1:** to encourage students to critically think, identify and appreciate the special kind of contracts differently titled and serving different purposes; CO2: being aware of the nuances and peculiarity of particular kind of contract (indemnity, agency, etc.) would enable them to draft better contracts as professionals; C)3: to enhance their knowledge as to drawing and operations of negotiable instruments grooming them to tackle business-transaction related issues which are critical to the economy.
LLB104	**Law of Torts and Consumer Protection**	CO1: to be efficient to identify and apply the elements of all the major torts while helping clients solving the legal disputes ; CO2: to critically analyse best avenues for relief available to both the sides and to ascertain which defences are most likely to lead to success; CO3: to evaluate the usage of tort law in providing relief for victims of large-scale disasters; CO4: to develop the skill of critical self-reflection and evaluation of the policy issues in consumer law to find solutions to practical issues and problems occurring in the professional practice.
LLB 106	**Constitutional Law-I**	CO1: Students would find themselves equipped with ability to interpret and appreciate the constitutional issues; CO2: enable students to develop multicultural competence appreciating the operation of Indian legal system within society having diverse outlook with global perspectives; CO3: enrich their outlook as a future professionals to appreciate and respect the co-relation and differences among the various organs and machineries of state administration; and CO4: inculcate the letter and spirit of the Constitution for application in tasks of nation building undertaken by them as responsible citizens of this nation.
LLB 108	**Legal History**	CO1: enable the students to appreciate how the shaping of law occurs through historical experiences of a country and its people; CO2: to understand the concepts of imperialism, colonialism, nationalism; and CO3: foreground the historical context of the Indian Constitution.
LLB 116	**Financial Management**	CO1: enable students to critically analyze the financial decision making in the light of risks and returns dimensions; CO2: prepare them to handle capital budgeting issues and help their clients in solving real life problems related to the same; CO3: groom students to be profession ready with in-depth knowledge as to core financial management concepts.
LLB 112	**English II: Language, Law and Literature(Indian)**	C)1: Role enactments prepare students for better interpersonal communications; and CO2: Literature helps in understanding a particular society to make law students socially informed.
LLB 114	**Legal Research and Moot Court**	CO1: train students in identification of issues in legal problems, research method, framing and advancing arguments convincingly; CO2: make them confident enough to argue in actual courts; CO3: equip students with the attributes of an effective and successful professional lawyer; and CO4: prepare them in legal research techniques.

Third Semester

LLB 201	**Family Law-I**	CO1: Develop independent thinking on Uniform Civil Code in pragmatic sense CO2: critically assessthe present status of women and children in family relations; and CO3: mould them into professionally qualified persons to handle and resolve family matters such as divorce, maintenance, adoption, and custody of children.
LLB 203	**Law of**	CO1: form independent thinking on crime and criminality as socio-legal

	Crimes-I	phenomena and its social impact; CO2: develop skillset required for criminal lawyering through PSD activities; and CO3: Make them aware of socially relevant jurisprudential concerns.
LLB 205	**Constitutional Law-II**	CO1: Sensitize students about the vulnerable groups' rights and the related constitutional protections; CO2: apprise students about the ideals and objectives of good governance incorporated in Constitution; and CO3: change their perception towards violations of constitutional rights taking place in society through concepts like public interest litigation and various writs.
LLB 213	**Business Environment**	CO1: students become aware about the environments surrounding the busi organisation which helps them making relevant decisions beneficial for t organisation and society; (ii) understanding as to social responsibility business grooms one to undertake social considerations while being s professional in orientation; CO2: the detailed discussions as to technological environment impac business upgrades students' knowledge and equip them to tackle technolog challenges to smooth business operations.
LLB 215	**Organization Behaviour**	CO1: Students become aware of the various theoretical perspectives drawn from multiple disciplines; CO2: enhance their knowledge and their ability to analyze Organization Behaviour with an interdisciplinary approach; and CO3: prepare them for the dynamics of a workplace in a corporate setup.
LLB 217	**Marketing Management**	CO1: The course would enable law professionals to enter the corporate world and business world with an understanding of the working of the market with legal expertise; CO2: secure jobs in multinational companies with informed opinion on market analysis and law; and CO3: develop a niche in the field of business law, in a competitive world based on skill specialisation.
LLB 202	**Family Law-II**	**CO1:** promote independent thinking on a Uniform Civil Code and equality among sexes in property relations within the family; CO2: gain requisite knowledge and lawyering skills to handle family law matters of different communities.
LLB 204	**Law of Crimes-II**	**CO1:** The study of this paper will provide fair understanding of crime in society; CO2: instilanalytical skills and expertise to take up and prosecute criminal matters in courts of law.
LLB 206	**Administrative Law**	**CO1:** interpret statutes upholding principles of natural justice; CO2: analyze the impact and operation of administrative law from policy perspectives; CO3: successfully challenge unfair/malafide administrative actions; and CO4: examine their potentialities to own responsibility as an efficient administrative decision maker with procedural fairness.
LLB 214	**Human Resource Management**	CO1: The course would enable students an expertise in law and human resource management skills; CO2: as professionals they can appreciate the preparation of effective training modules with legal insights; and CO3: they will be better equipped to prepare ethical human resource policies for a better understanding between an employer and an employee.
LLB 216	**Business Ethics and CSR**	CO1: Prepared with best work ethis and practices; and CO2: ensure that the organisation adheres to the compliance of the corporate social responsibility in sync with the requirements of sustainable development and societal needs..

LLB 218	**Entrepreneurship in the Global Era**	CO1: Inspire the students to set up start up and take entrepreneurial initiatives, combining their knowledge of law and business studies; and CO2: be at the frontline of innovative changes in dealing with the global challenges.

Fifth Semester

LLB 301	**Environmental Studies and Environmental Laws**	CO1: to create critical awareness on contemporary environment and allied topics such as trans-boundary pollution, carbon trading, sustainable development, waste management; and CO2: incept pro bono environmental lawyering skills through PSD activities.
LLB 303	**Code of Civil Procedure – I**	CO1: to undertake in-depth study of procedures adopted before magistrate courts; and CO2: to develop capacity to solve real life problems through PSD activities rendering valuable addition to the administration of justice system.
LLB 305	**Code of Criminal Procedure-I**	**CO1:** to undertake in-depth study of procedures adopted before magistrate courts; and CO2: to develop capacity to solve real life problems through PSD activities rendering valuable addition to the administration of justice system.
LLB 307	**Human Rights**	CO1: to sensitise students towards handling all legal matters with human right approach; CO2: to undertaking pro-bono lawyering in human rights matters by applying critical thinking and problem solving skills gained through PSD activities; CO3: to make them apply their knowledge of Human Rights Law in their profession; CO4: to equip the students with sufficient knowledge and tools for human rights lawyering to fight against human right violations; and CO4: to enable them to evaluate the effectiveness of statutes in its implementations and formulate pragmatic suggestions.
LLB 309	**ADR: Arbitration Mediation and Conciliation**	CO1: trained future professionals in the area of alternative dispute resolution to ease out the burden of litigation in courts; CO2: encourage them to learn procedural complexities, specific hard and soft skills and techniques tailored to suit specific ADR models; and CO3: to encourage them to focus towards incorporating therapeutic paradigms of legal practice.
LLB 218	**Strategic Management**	CO1: Prepare professionals with an understanding of strategy formulations; and CO2: Identify the best model of strategic management that would suit the different work spaces.
LLB 351	**Summer Internship Assessment**	Students have to undergo a Compulsory Summer Internship for one month and on that a report has to be submitted by each student separately
LLB 302	**Jurisprudence**	(i) to develop a broad and open co-relation of the fundamentals under jurisprudential studies pertaining to other law and social science subjects; (ii) to make law socially relevant for the future legal professionals; and (iii) to develop an independent jurist and scholar.
LLB 304	**Law of Evidence**	(i)to develop reflective thinking among students inculcating in them the critical sensibility as to life experiences gathered from societal interactions; (ii) to prepare them for court room practice of taking evidence on record, examination-in-chief, cross-examination and qualitative analysis of the evidences; and (iii) overall personality grooming to be smart lawyer capable of handling legal matters of all concerns.
LLB 306	**Code of Criminal Procedure-II**	(i)to develop of capacity building among students to tackle real-life legal problems through classroom teachings coupled with PSD activities of visiting courts, police station, mock trials; and (ii) understand concepts like plea bargaining, framing of charges, compounding ofoffences,

		limitation for taking cognizance which have the potential to hone the or professional skills and help becoming smart legal professionals.
LLB 308	**Property Law**	(i) to provide practical skills to handle property matters before courts; (ii) to polish drafting skills pertaining documents related to property like sale deed, gift deed, will, lease agreement, and mortgage, in the light of specific requirements of a particular kind of transfer; and (iii) update the students on the latest changes in law for handling such cases.
LLB 310	**Code of Civil Procedure – II**	(i)train them in judgment writing, drawing of decree, execution proceedings, appeals, reference, review; and (ii) acquaint them about the after trial procedures like drawing of decree, execution petitions, appeals, review, revision, etc. preparing them to be profession ready.
LLB 312	**Public International Law**	**:**(i) to develop a knowledge of several key areas of public international law including the law surrounding the use of force and human rights and treaty interpretation; (ii) critically examine the operation and application of international law in practical contexts; (iii) to undertake further specialization in the field of international law' and (iv) to develop requisite lawyering skills in public international law, preparing them as global prfessionals

seventh Semester

: LLB 401	**Labour Law –I**	Students will be in a position to (i) critically appraise the latest labour legislations; (ii) compare and contrast the positions of employer-employee in labour relations; and (iii) equip to handle labour disputes confidently.
LLB 403	**Competition Law**	(i)Upon successful completion of this course, students will have advanced understanding of foundation principles, substantive provisions, economic concerns behind the anti-competitive conduct prohibitions, abuse of dominance, associated institutions like CCI, procedures involved in enforcement, penalties and remedies for breach of the rules; and (ii)students get job opportunities in related field; and (iii) synthesise and critically analyse international instruments and emerging issues at national and global level.
LLB 405	**Company Law**	(i)After the completion of the course, students will be able to take up legal issues related to company law; (ii) assess the role of NCLT/ NCALT to protect creditors or shareholders and investors;(iii) evaluate the contents of Management of Company, and corporate governance, incorporating new concepts of corporate accountability; (iv) Undertake company law matters before statutory authorities and courts of law
LLB 407	**Law and Emerging Technology**	(ii) to provide guidance for articulating the challenges posed by advancing technologies into the various realms of society including law and means to combat the same; (ii) to provide a clear demonstration of inter-disciplinary approach of learning acquainting students about fundamental as well as procedural knowledge of amalgamation of law with technology helping them to attain relevant skills for employment opportunities; and (v) to undertake further researches into the fields of advancing technology which is novel to legal regime.
LLB 409	**Intellectual Property Rights-I**	(i)to equip students to handle practical operations on field; (ii) lay down the foundations of the subject for every student which would help them in future endeavors, academic and commercial; (iii) prepare students, with practical approach, to help clients/organization in the matters of acquisition, maintenance or infringement of such rights; and (iv) impart required skills to become IPR practitioner.
LLB 411 (a)	**Election Law**	(i) Students become aware of the current trends in election law regime, and also become informed citizens; and (ii) Learn about the procedures for filing election petitions and making them aware about the correct forum to approach.
LLB 411 (b)	**Socio-Economic Offences**	The course will (i)harness student's natural desire for fairness and equity; and (ii)sensitize students on public integrity with knowledge, skills and behaviors to fight corrupt practices and establish new behavioral norms and values for society

LLB 411 (c)	**Private International Law**	(i) enhance clarity and vision as to core and principal concepts under private international law; (ii) students become aware about jurisdiction of courts in matters involving foreign parties or subject matters-legal or non-legal; (iii) acquaintance about choice of laws as well as jurisdictions in matrimonial disputes which would enable them to effectively guide their clients for the benefit; (iv) prepare them to handle foreign judgment related matters wherein execution of the same is sought in India; (v) groom students to be profession ready with in-depth knowledge as to core concepts related to trans-border operation of legal systems in certain specific cases which is of great importance in this globalized world; (vi) application of their disciplinary knowledge in solving real life intricate family law related issues wherein different nationalities, jurisdictions, citizenships, domicile status and legal systems are involved.
LLB 411 (d)	**Law, Poverty and Development**	(i) sensitize students to the crucial role of judiciary in protecting and empowering poor and vulnerable such as impoverished women, children and disabled persons so that they can proactively work for these underprivileged when they assume positions and power in their profession; and (ii) to find interface between various problems and issues associated with poverty, constitutional perspectives, criminal justice system.

Eight semester

LLB 402	**Intellectual Property Rights-II**	(i) develop research - oriented skills as to various upcoming areas in the field of IPR like- artificial intelligence, traditional knowledge; and (ii) confident professionals armed with knowledge to become an IPR lawyer/consultant.
LLB 404	**Interpretation of Statutes**	(i) students will acquire the required knowledge and skills of understanding, explaining, interpreting, distinguishing, constructing and applying the principles and process of statutory interpretation in professional practice; (ii) learn to compare, contrast and reflect on the theoretical concepts underlying the statutes on one hand, and plan, differentiate and prioritise approaches and materials to be used in statutory interpretation on the other hand.
LLB 401	**Labour Law – II**	Students will be in a position to (i) critically appraise the latest labour legislations; (ii) compare and contrast the positions of employer-employee in labour relations; and (iii) equip to handle labour disputes confidently.
LLB 408	**International Trade Law**	The course will enable students to (i) reflect on and critically examine the operation of international trade law in practical contexts; and(ii) gain understanding, knowledge and professional skills to handle legal matters relating to international trade law in legal and para legal fields.
LLB 410	**Income Tax Law**	On completion, the students will be in position to (i) evaluate the system of tax assessment, recovery and administration, the incidence of tax in production, consumption saving and income distribution through provisions and case laws; (ii) develop sustained interest in tax law and keep abreast with new tax regulations and policies; and (iii) evolve into tax professionals competent to face the intricacies of profession.
LLB 412 (a)	**Criminology, Victimology and Penology**	On the course completion, the students would be able to(i) Comprehend the characteristics of the criminal law, the extent of crime; the effects of crime on victims and society; the attributes of the criminals, methods of crime prevention, and the characteristics and working of the criminal justice system; (ii) Analyze and evaluate varied theoretical understandings and underpinnings of crime causation characterizing criminals and criminality; (iii) Construct a fresh perspective on the field of criminology and its current overall organization; (iv) Appreciate the difference between formal and informal sanction and their role in maintaining the social order; (v) Develop critical thinking about the form and extent of punishment ideal in contemporary times; (vi) Understand the fast-emerging concepts of victimology and the present challenges in the field.

LLB 412 (b)	**Socio-Political Systems in India**	(i) enrich understanding of students about inter-disciplinary approach of studying law as social science subject for holistic comprehension; (ii) Exposure to social issues to Business Administration students to upgrade their multicultural competence to tackle socio-legal matters as professionals; and (iii) political awareness would help in enlarging current global perspectives.
	Women and Law	(i)The knowledge that the students will gain from this course will help them to work for emancipation and empowerment of women to achieve gender equality.
LLB 412 (d)	**International Commercial Law**	(i) Prepare students to global commercial economics exchange and law in a highly interconnected world; and (ii) training law students for international legal regime in commercial exchange
LLB 412 (e)	**Comparative Constitutional Law**	(i) Well-informed on the different dimensions of governance as modern legal professionals; and (ii) Develop critical appreciation of different constitutions of the world.

Ninth Semester

LLB 501	**Legal Ethics and Court Craft**	After getting familiarized with legal provisions, guidelines, and judicial decisions on the subject, students will be able to (i)take appropriate decisions when faced with any dilemma of professional ethics; and (ii) fully equipped to demonstrate a great commitment to professionalism, critical and pragmatic thinking, ethical behaviour, court crafts and leadership.
LLB 503	**Drafting, Pleading and Conveyancing**	On completion, the student will: (i) implement effective writing techniques to draft different types of legal documents in clear and concise way.
LLB 505	**Land and Real Estate Laws**	On completion of the course (i)students will be confidnt to handle real estate matters; and (ii)update themselves with the Real Estate Regulatory Act 2016, rent laws and dispute settlement mechanisms.
LLB 507/509/511 (a)	**Banking, Insolvency and Insurance Laws**	i) inculcate high quality academic rigour; (ii) be endowed with banking and insurance knowledge and skills together with technology-familiarity, customer-orientation and hands-on application skills; and (iii) up-to-date knowledge in the subject which can lead to systematic training of students for taking up banking and insurance related cases in today's globally competitive market
LLB 507/509/511 (b)	**Indirect Tax Laws**	(i) Follow the procedural compliance under GST and its practical application; (ii) enhance their perceptive knowledge and augment their professional ambit in future under indirect taxes; and (iii) be confident to thrive as tax professionals
LLB 507/509/511 (c)	**Law of International Organizations**	(i) Follow the procedural compliance under GST and its practical application; (ii) enhance their perceptive knowledge and augment their professional ambit in future under indirect taxes; and (iii) be confident to thrive as tax professionals.
LLB-507/509/5 (d)	**Legal Research and Methodology**	(vii) apply their learning in dissertation writing and future academic and professional research (ii) undertake and execute independent research work (iii) carry out advanced legal research, and (iv)reflect critically on their own learning
LLB-509/511. (e)	**Socio-Legal Dimensions of Gender and Gender Justice**	(i) to reflect upon some specific gender related issues like witch hunting, honour killing, prostitution, trafficking, male victimisation to strive for betterment of society; and (ii) to assist legislator/policy makers with the issues of gender.
LLB 507/509/5	**Sports and Media Law**	(i) apprise on the commercialization of sports, legal hurdles created thereof and its solutions;(ii) one of fastest growing and upcoming career option; and (iii) gain adequate knowledge and skills to take up sports matters in their legal career.
LLB 507/509/5	**Health Care Law**	(i) It is one of the fastest growing disciplines in India and the students as legal experts will have an edge after doing this paper; and (ii) there is an urgency to upgrade and modernise health care systems, in which the law graduates with the knowledge of health care laws can play a crucial role.
LLB 507/509/5	**Right to Information,**	(i) Law students will be well-equipped with the latest knowledge of the most recent Acts to protect disclosures by public servants in public

	Vigilance and Whistle Blowers Protection	interest; and (ii) be well-informed of the structure, powers and formalities of the Central Vigilance Commission.
LLB 507/509/511(i)	**Public Employment and Service Laws**	i) Prepare the students for public service; and (ii) to take up service related matters
LLB 507/509/5	**TelecommunicationLaws**	(i) be well-prepared legal professional with expertise and specialisation in the upcoming and rapidly expanding Telecommunications; and (ii) be at the forefront in the advanced research in Telecommunication Laws.
LLB 507/509/511.(k)	**International Humanitarian and Refugee Laws**	(i)learn to apply international humanitarian law as an important component in present-day conflict management and resolution (ii) imbibe requisite knowledge as professionals in dealing with situations of international or internal armed conflicts.
LLB 507/509/511.(l)	**Law and Empowerment of Marginalised Sections**	Students will be able to: Gain a theoretical understanding of different approaches towards marginalisation and social justice. Apply human rights framework for understanding issues and understand empowering processes for the marginalized sections of the society. Acquire a critical understanding of institutional mechanisms and systems for attainment of social justice and protection of human rights.
LLB 513	**Entrepreneurship Development**	On successful completion of this course, students should be able to: 1) Define basic terms, 2) Analyse the business environment in order to identify business opportunities, 3) Identify the elements of success of entrepreneurial ventures, 4) Consider the legal and financial conditions for starting a business venture, 5) Evaluate the effectiveness of different entrepreneurial strategies, 6) Specify the basic performance indicators of entrepreneurial activity, 7) Explain the importance of marketing and management in small businesses venture, Interpret own business plan.
LLB 551	**Summer Internship Assessment**	Students have to undergo a Compulsory Summer Internship for one month and on that a report has to be submitted by each student separately.
LLB 502	**Dissertation**	

Tenth Semester

LLB 504 **Paper Code: LLB**

Subject: Internship (Lawyers / Law firms) **C8**

(100 marks) (75 + 25 Viva) Internal

Evaluation Pattern:

After the completion of internship by the students, the work done by the candidate as recorded in his/her daily diary along with a consolidated internship report would be evaluated by a Board of examiners consisting of Dean, an External Examiner, one faculty member nominated by APC and the supervisor concerned.

B-TECH BIO-TECHNOLOGY

Programme Outcomes & Course Outcomes

Offered by

University School of Bio-Technology

Guru Gobind Singh Indraprastha University
Sector 16C, Dwarka, Delhi – 110 078 [INDIA]
www.ipu.ac.in

Vision of the School

To Foster Excellence in Biotechnology Education, Research and Industry for Sustainable Development Through Global Thought and Local Action

Mission of the School

To Generate Globally Competitive Manpower and Knowledge-base for Biotechnology, Industry, Education, Research and Development Based on National Values, Social Awareness and Conscience

Programme Outcomes

1. ***Engineering Knowledge*** (**PO01**): Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complexengineering problems.
2. ***Problem Analysis*** (**PO02**): Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. ***Design/Development of Solutions*** (**PO03**): Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural,societal,and environmental considerations.
4. ***Conduct Investigations of Complex Problems*** (**PO04**): Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusionsfor complex problems:
    a. that cannot be solved by straightforward application of knowledge, theories and techniques applicable to the engineering discipline as against problems given atthe end of chapters in a typical text book that can be solved using simple engineering theories and techniques;
    b. that may not have a unique solution. For example, a design problem can be solved in many ways and lead to multiple possible solutions;
    c. that require consideration of appropriate constraints / requirements not explicitly given in the problem statement such as cost, power requirement, durability, product life, etc.;
    d. which need to be defined (modelled) within appropriate mathematical framework; and
    e. that often require use of modern computational concepts and tools, for example,in the design of an antenna or a DSP filter.
5. ***Modern Tool Usage*** (**PO05**): Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding ofthe limitations.
6. ***The Engineer and Society*** (**PO06**): Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. ***Environment and Sustainability*** (**PO07**): Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. ***Ethics*** (**PO08**): Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. ***Individual and Team Work*** (**PO09**): Function effectively as an individual, and as amember or leader in diverse teams, and in multidisciplinary settings.
10. ***Communication*** (**PO10**): Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear

instructions.

11. ***Project Management and Finance*** (**PO11**): Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. ***Life-long Learning*** (**PO12**): Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context oftechnological change.

Programme Specific Outcomes (PSOs)

PSO01: Acquire knowledge about fundamentals of biotechnology for sound and solid base tounderstand the emerging and advanced engineering concepts in life sciences.

PSO02: Acquire knowledge in domain of biotechnology enabling their applications in industry andresearch.

PSO03: Empowering students to acquire technological knowhow by connecting disciplinary and interdisciplinary aspects of biotechnology.

PSO04: Recognize the importance of Bioethics, IPR, entrepreneurship, communication and management skills so as to usher next generation of global industrialists.

Programme Educational Objectives (PEOs)

PEO01: Understand and apply concepts of biotechnology, chemical engineering, computational techniques, instrumentation and related aspects of science and technology for pursuing higher studiesand building successful careers in industry.

PEO02: Apply acquired practical skills and broad biotechnological trainings in product, process andtechnique development to meet societal demands at large.

PEO03: Participate in individual and team oriented, open ended activities aiding constructive thinking to provide opportunity for students to manage and work on multidisciplinary projects.

PEO04: Demonstrate professional and ethical attitude with awareness of current issues and think about the social entailment of their work, especially its impact on safety, health and environment forsustainable development.

PEO05: To promote student awareness for life-long learning and to introduce them to professionalethics and codes of professional practice.

For Course outcome please refer to: http://www.ipu.ac.in/usbt/syllbtechbt220920.pdf

(PROGRAMME OUTCOMES AND COURSE OUTCOMES)

MASTER OF SCIENCE

(NATURAL RESOURCE MANAGEMENT)

Offered by

University School of Environment Management GGSIPU University Campus, Dwarka

GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

Guru Gobind Singh Indraprastha University
Sector 16C, Dwarka, Delhi – 110 078 [INDIA]
www.ipu.ac.in

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
UNIVERSITY SCHOOL OF ENVIRONMENT MANAGEMENT
SECTOR-16C, DWARKA, NEW DELHI-110078

M.Sc. Natural Resource Management (NRM) Degree

Program Education Objectives: - (PEO)

PEO_1: - To create natural resource professionals equipped with in-depth knowledge and understanding of natural resources and how to conserve natural resources in a sustainable manner.

PEO_2: - To provide in-depth theoretical and hands-on practical knowledge on subjects ranging from ecology, natural resources, energy, water, earth, GIS, remote sensing, watershed, natural disaster and wild life management

PEO_3: - To appreciate the role of a natural resource managers in effective conservation interventions

Program Specific Objectives: - (PSO)

PSO_1: - Critically engage with concepts and theory in natural resources science and management from interdisciplinary perspectives

PSO_2: - Critically assess the modes through which conservation builds and extends power and describe in detail the factors that explain the emergence and performance of different types of governance.

PSO_3: - Evaluate the implications of emergent technologies for the future of natural resource management.

First Semester

EMNRM 601 (Foundation Course)	Fundamentals of Natural Resource Management
EMNRM 603	Ecology and Ecosystems
EMNRM 605	Earth, Water Resources and Natural Disaster
EMNRM 607	Energy Resources and Environment
EMNRM 609	Elements of Geoinformatics
Practical	
EMNRM 651	Ecology and Ecosystems Lab
EMNRM 653	Geoinformatics Lab
EMNRM 655	Soil, Rock and Mineral Lab
	Seminar/Term Paper

EMNRM 601: FUNDAMENTALS OF NATURAL RESOURCE MANAGEMENT

Course Outcomes

CEO_1	Understanding overall resource management situation in the country with reference to natural resources.
CEO_2	Understanding various resources and their contribution to socio-economic condition of the country.
CEO_3	Student will be able to understand how resource management paradigm has changed globally.
CEO_4	Overall understanding about linkages between different resources on the Earth.

EMNRM 603 : **ECOLOGY AND ECOSYSTEMS**

Course Outcomes:

CEO_1	Graduated students will be have clear understanding of ecosystem function and integrity
CEO_2	At the end of this course, students will be empowered to take informed and judicious decision towards restoration and management of ecosystem.
CEO_3	Students will be have clear understanding of ecosystem function and integrity
CEO_4	Graduated students will be understand the sustainable development practices

EMNRM 605 : **EARTH, WATER RESOURCES AND NATURAL DISASTERS**

Course Outcomes:

CEO_1	Understanding of earth and water resources will be enhanced.
CEO_2	The learner would be able to utilize the scientific and technological skill for soil and water conservation.
CEO_3	The learner would also be able to know the causative factors of natural disasters.
CEO_4	Students would be able to understand the implementation of scientific methods to minimize the impact of natural disaster through suitable mitigation measures on natural resources and society.

EMNRM 607 : **ENERGY RESOURCES AND ENVIRONMENT**

Course Outcomes:

CEO1	Students shall learn to visualize energy use scenario and development issues
CEO2	Students will be able to enhance their skills on renewable and conventional energy technologies
CEO3	Students will acquire the knowledge on bioenergy technology and rural energy systems
CEO4	Students will learn the various aspects of environmental pollution associated with energy production and use.

EMNRM 609 : **ELEMENTS OF GEOINFORMATICS**

Course Outcomes:

CEO_1	After completing the course students will enable to understand the basic principles of Remote Sensing, Geographic Information System and Global Positioning System.
CEO_2	The course will immensely help students to understand the functionality and contributions of different satellite series worldwide.

CEO_3 This will help the students to analyse the spatial data and link them with other attribute data.

CEO_4 Once basic is clear students will have overall idea how this technology can be utilized in different fields of environment with emphasis on natural resource management.

EMNRM 651 : **ECOLOGY AND ECOSYSTEMS**

Course Outcomes:

CEO_1 Graduated will be trained professional and independently carry out research activities in the field of ecology

CEO_2 They will be effective managers of ecosystem.

EMNRM 653 : **GEOINFORMATICS**

Course Outcomes:

CEO_1 After completing the course students will enable to handle both the image processing and GIS software.

CEO_2 Students will be able to generate geodata base and how different queries could be applied on these databases to solve certain problem.

CEO_3 Students also be able to interpret the raw image using different digital image processing techniques.

CEO_4 Students will be confident how field data can be collected with the help of GPS and to bring them on the map.

EMNRM 655: **SOIL, ROCK AND MINERAL**

Course Outcomes:

CEO_1 Students will be able to learn how one can identify rocks and minerals in the field.

CEO_2 Students will be able to learn about the porosity, bulk density and water holding capacity of soil.

CEO_3 Students will be able to learn about the different methods to assess the availability of soil nutrients and status of soil fertility.

SECOND SEMESTER

EMNRM 602 Biodiversity & Biosystematics

EMNRM 604 Forest Resources, Planning and Management

EMNRM 606 Environmental Economics and Ecosystem Services

EMNRM 608 Environmental Statistics

Generic/ Core Elective (Any one)

EMNRM 616 Environmental Modelling

EMNRM 618	Ecotechnology for Natural Resource Management
EMNRM 620	Climate Change and Carbon Management
EMNRM 622	Aquatic Ecosystem and Management
EMNRM 624	Urban Forestry, Biodiversity & Landscape
EMNRM 626	Watershed Management
Practicals	
EMNRM 652	Taxonomy Lab
EMNRM 654	Forest Inventory & Mensuration Lab
EMNRM 656	Environmental Statistics and Computer Applications Lab
	Summer Training/ Field Visit

EMNRM 602 : **BIODIVERSITY AND BIOSYSTEMATICS**

Course Outcomes:

CEO_1	By the end of the course, students will be fully equipped in working independently in the field of conservation and management of biodiversity and natural resources.
CEO_2	They can also go for higher studies in the field of research and development with full confidence.
CEO_3	Graduated students will take a lead in any conservation activities in any capacity

EMNRM 604: **FOREST RESOURCE, PLANNING AND MANAGEMENT**

Course Outcomes:

CEO_1	Understanding the overall contribution of forest resources in India.
CEO_2	Understanding the need for forest resource management and their various approaches.
CEO_3	How forest resource planning is done in the field?
CEO_4	Learning from field projects of participatory forest management.

EMNRM 606 :**ENVIRONMENAL ECONOMICS AND ECOSYSTEM SERVICES**

Course Outcomes:

CEO_1	Student will understand the contribution of environmental economics and their services.
CEO_2	Understanding various methods of accounting the contribution of ecosystem services.

CEO_3	Approaches of augmentation of natural resource management through environmental accounting.
CEO_4	The contribution of international and national organization for promoting natural resource management in India.

EMNRM 608 : **Environmental Statistics**

Course Outcomes:

CEO_1	Collating and treating data through various statistical methods
CEO_2	Understanding the application of statistical techniques to specific problems
CEO_3	Learning which test shall be applied where
CEO_4	Interpreting the results obtained after application of statistical parameters

EMNRM 616 : **Environmental Modelling**

Course Outcomes:

CEO_1	Imparting a basic understanding of various environmental systems
CEO_2	How the systems can be categorized for modelling
CEO_3	Prediction of fate and transport of pollutants in the environmental matrices.
CEO_4	Overview of application of generic models of air and water quality.

EMNRM 618 : **ECOTECHNOLOGY FOR NATURAL RESOURCE MANAGEMENT**

Course Outcomes:

CEO_1 The students will develop a systemic approach to address environmental problems

CEO_2 The students will learn the principles and application of ecotechnology tools

CEO_3 The students will learn basic and applied approaches to restore various types of polluted and environmentally degraded systems in eco-friendly manner

CEO_4 The students will learn the latest eco-efficient approaches to be used in industry to promote circular economy and sustainable development

EMNRM-620: **CLIMATE CHANGE AND CARBON MANAGEMENT**

Course Outcomes:

CEO1 Students will be able to learn and understand the concept of climate change and its impacts on various ecosystems.

CEO2 Students will be able to enhance their knowledge about international programmes and their importance in climate change.

CEO3 Students will be able to get knowledge about various carbon sequestration techniques for better management of climate.

CEO4 Students will be able to learn about the current management practices and some climate change mitigation programme.

EMNRM 622 : **AQUATIC ECOSYSTEMS AND CONSERVATION**

Course Outcomes:

CEO_1 Upon completion of this course students will be able to reliably demonstrate understanding of how aquatic ecosystems function, analyze and interpret limnological data, and apply limnological information to surface water management.

CEO_2 Explain how physics, biology, geology and nutrient cycles interact in aquatic ecosystem.

CEO_3 Students will be able to communicate effectively with the community of aquatic scientists, managers and policy makers

CEO_4 Students will identify the skills required to understand and address aquatic ecosystem management challenges.

EMNRM 624: URBAN FORESTRY, BIODIVERSITY AND LANDSCAPE

Course Outcomes:

CEO_1 Understanding the overall concept of urbanization, urban landscape and urban forestry.

CEO_2 How urban biodiversity contribute in reference to health, culture and environment for the people live in urban area.

CEO_3 Learning in reference to urban landscape planning, maintenance and management in city environment.

CEO_4 Understanding the concept of smart cities and role of urban green. Understanding from case study, how green space management is taken up in various important cities in India.

EMNRM 626 : **WATERSHED MANAGEMENT**

Course Outcomes:

CEO_1 Students will be able to learn about the importance of Govt guidelines and policies about the watershed management.

CEO_2 Students will be able to acquire the knowledge about the role of various watershed characteristics and their importance in watershed conservation.

CEO_3 Students will be able to learn about the different methods of rainfall, streamflow measurements and sediment load estimation.

CEO_4 Students will be able to get the knowledge **about systematic approach to apply different catchment area conservation methods for watershed development and implemental of Govt. policies for sustainable watershed management for natural resource conservation and societal benefit.**

EMNRM 652: **BIODIVERSITY ASSESSMENT AND TAXONOMY**

Course Outcomes:

CEO_1 Graduated students will gain practical knowledge about dynamics of biodiversity and plant identification

CEO_2 Graduated students will become skilled professional in assessment of biodiversity index in any given area

MNRM 654: FOREST INVENTORY AND MANSURATION

Course Outcomes:

CEO_1	Graduated students will gain practical knowledge about dynamics of forest ecosystem
CEO_2	Graduated students will become skilled professional in restoration and management of forest ecosystem in sustainable ways

EMNRM 656: **ENVIRONMENTAL STATISTICS AND COMPUTER ALLICATIONS**

Course Outcomes:

CEO_1	Understanding the basics of sampling and data generation techniques
CEO_2	Learning various parametric and non-parametric tests
CEO_3	Application of various statistical tests on environmental data
CEO_4	Interpretation of the results

THIRD SEMESTER

EMNRM 701	Environemental Impact Assessment and Auditing
EMNRM 703	Agro-ecosystems and Agroforestry
EMNRM 705	Natural Resource Policy, Governance and Livelihood
EMNRM 707	Wild Life Management
EMNRM 709	Project Management and Financial Analysis

Open Elective (Any One)*

Open-Electives

EMOE 731	Climate change mitigation & adaptation
EMOE 733	Sustainable Ecotourism
EMOE 735	Corporate Social Responsibility
EMOE 737	Disaster Risk Reduction
EMOE 739	Urban Biodiversity Strategies for Conservation
EMOE 741	Human aspects of Biodiversity and Environment
EMOE 743	Advanced Environmental Geomatics

EMNRM-701 : **ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND AUDITING**

Course Outcomes:

CEO1	Students will be equipped with the systematic procedure of EIA
CEO2	Students will get acquainted with various EIA methodologies
CEO3	Students will be able to familiarize themselves with environmental impact mitigating methods and practical implications based on EIA case studies
CEO4	Students will learn the procedure and principles of environmental auditing

EMNRM 703: **AGRO-ECOSYSTEMS AND AGRO-FORESTRY**

Course Outcomes:

CEO_1	Understanding the overall concept of agro ecosystem and agro forestry to adopt sustainable agricultural practices.
CEO_2	Various types of agro forestry system practiced in our country in different agro ecological zone.
CEO_3	Understanding the technical aspect of agro forestry management.
CEO_4	Learning from case studies, how different approaches of agro forestry help in sustainable land development practices and support the income generation for the society.

EMNRM 705: **NATURAL RESOURCES POLICY, GOVERNANCE AND LIVELIHOOD**

Course Outcomes:

CEO_1	This course will provide understanding of natural resource governance, characteristics of good governance and various strategies for managing natural resources.
CEO_2	Understanding of key policy provision for natural resource management through act, policy, notification and guidelines issued by state and central government.
CEO_3	How various stakeholders (government, civil societies, industries and international community) contribute for promotion of natural resource sustainability?
CEO_4	This course will provide understanding of natural resource governance, characteristics of good governance and various strategies for managing natural resources.

EMNRM 707: **WILDLIFE CONSERVATION AND MANAGEMENT**

Course Outcomes:

CEO_1 Student will learn various issues and dimensions of wildlife conservation.

CEO_2 They will be able to make judicious decision to wildlife management in human dominated landscape

CEO_3 Students will come out with better understanding of wildlife population monitoring programs.

CEO_4 They will be able to become a good field biologist with sound knowledge of various field methods.

EMNRM 709: **PROJECT MANAGEMENT AND FINANCIAL ANALYSIS**

Course Outcomes:

CEO_1 After reading Unit-I of this course the student will be able to identify, screen, select, plan, do feasible studies and allocate resources to the best available project.

CEO_2 After reading Unit-II of this course the student will be able to make project presentation, do risk management, compute different types of costs and identify best available source of finance to make the project operational.

CEO_3 After reading Unit-III of this course the student will be able to identify financial analysis related problems with best available solution within the given limitations

CEO_4 After reading Unit-IV of this course the student will be able to understand the marketing concept, market environment and market related problems and their solutions within known parameters.

EMNRM 751 : **Water Quality Analysis**

Course Outcomes:

CEO_1 The course will provide necessary information and knowledge about the various water quality parameters to check the current status of water resources.

CEO_2 Students will be able to learn about types, sources and impacts of water pollutants

CEO_3 Course will help them to learn about the analytical techniques and importance of water resources.

CEO_4 Students will learn to perform on various instruments by their own to improve their skills.

EMOE 731: **Climate change mitigation & adaptation**

Course Outcomes:

CEO_1 Students will be able to learn and understand the concept of climate change and its impacts on various ecosystems.

CEO_2 Students will be able to get knowledge about various carbon sequestration techniques for better management of climate

CEO_3 Students will be able to learn about impacts related to climate change and Indian response to climate change

CEO_4 Students will be able to enhance their knowledge about international and national programmes and their importance in climate change.

EMOE 733: **Sustainable Ecotourism**

Course Outcomes:

CEO_1	Student will understand, what is ecotourism how it is different from mass-tourism?
CEO_2	What are the challenges in ecotourism implementation? Understanding the role of stakeholders in ecotourism.
CEO_3	How ecotourism practices help to improve biodiversity conservation and livelihood promotion for the society?
CEO_4	Understanding ecotourism implementation prospect through case studies from field.

EMOE-737: **Disaster Risk Reduction**

Course Outcomes:

CEO_1	Students will be able to understand the fundamental causes, vulnerability and risk assessment and consequences of disasters.
CEO_2	Students will be able to get the knowledge about the utility and importance of disaster management cycle.
CEO_3	Students will be able to learn how capacity building and risk reduction tools are important in disaster management
CEO_4	Students will be able to understand about the significance of Disaster Risk Reduction and management (DRR), role of different Government institutions for the benefit of natural resource management and society.

EMOE 739: Urban Biodiversity Strategies and Environment

Course Outcomes:

CEO_1	The students would be able to understand how and why world is getting urbanized.
CEO_2	They will learn about the urban species and communities and their relationship with the human beings and how they have adapted different habitats within human dominated biomes.
CEO_3	They would be able to understand that in urban planning,environment, biodiversity and their conservation should be substantially incorporated for cities to be sustainable and biophilic.
CEO_4	They will become learned professionals to inculcate the need of nature, motivate and educate the urban Society for their well being.

EMOE 741: Human Aspects of Biodiversity and Environment
Course Outcomes:

CEO_1	To make conservation professionals informed citizens about various dimensions of human activities impacting biodiversity/ environment that will enable them to actively participate and contribute in various capacities to reduce/mitigate such impacts through direct participation in conservation related activities at grassroot level or policy making.
CEO_2	To address the linkages between environment, biodiversity and mankind for a healthy and sustainable local/ national/ global ecosystem that will make proper understanding of the gap areas where environmentalist/conservationist has to play a role and find/create job opportunity.

EMNRM 755: INDUSTRY AND FIELD VISITS-REPORTS AND PRESENTATION

Course Outcomes:

CEO_1	Graduated students will be well equipped with practical approaches to solving the problems of natural resource management
CEO_2	Students are expected to be champions for rural communities in terms of creation of livelihood enhancement opportunities
CEO_3	The graduated students will be leaders in conservation and sustainable utilization of available natural resources
CEO_4	Students are expected to create linkages between local communities and government agencies on any policy frameworks related to natural resource management

EMNRM 757: SUMMER INTERNSHIP/TRAINING REPORT AND PRESENTATION

Course Outcomes:

CEO_1	Students have opportunity to apply acquired knowledge, gain experiences and formulate practical solutions.
CEO_2	In addition to learning the specialized skills of a particular field, skills such as communication, teamwork, and computer proficiency are also obtained in an internship, fully preparing interns to enter the workforce.
CEO_3	Taking on an internship allows students to work in their desired field, helping them decide if the field is right for them.
CEO_4	Internship should prove the ability of student to learn and work in an organization, understand and present specific information and to develop overall communication skills.

FOURTH SEMESTER

EMNRM 702	Seminar and Progress Report
EMNRM 704	Dissertation

EMNRM 702: SEMINAR AND PROGRESS REPORT

Course Outcomes:

CEO_1	Student will develop their dissertation proposal and plan of work
CEO_2	Suggested changes in the dissertation proposal, if any; shall be incorporated
CEO_3	Students will gain understanding and clarity regarding the process of completing the dissertation

EMNRM 704: DISSERTATION

Course Outcomes:

CEO_1	Student will be able to produce a dissertation thesis following the prescribed format given by the university
CEO_2	To systematically identify relevant theory and concepts, relate these to appropriate methodologies and evidence, apply appropriate techniques and draw appropriate conclusions
CEO_3	To engage in critical review of appropriate and relevant literature and theories.
CEO_4	To appropriately apply qualitative and/or quantitative evaluation processes to original data

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY
Sector 16C, Dwarka
New Delhi 110078

M.Sc. (Environment Management)

(PROGRAMME OUTCOMES AND COURSE OUTCOMES)

Academic Session 2015-16 - Onwards

UNIVERSITYT SCHOOL OF ENVIRONMENT MANAGEMENT
GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

M.Sc. (Environment Management)

Programme Outcomes (POs)

- To provide quality education and training in environment management.
- To pursue and facilitate contemporary research in various facets of bioresources and environment using modern analytical and other tools such as geospatial techniques.
- To establish working linkages with industry and undertake research on environment related issues.
- To foster environmental awareness and promote the principles and practices of sustainable development.

Programme Specific Outcomes (PSOs)

- To provide in-depth and comprehensive knowledge about ecosystem functions, services, pollution management, environmental impact assessment, restoration, climate change, environmental policies and regulation.

- To train the students as environmental professionals well-equipped to work in different sectors like industry, developmental projects as EIA professionals, climate change mitigation, energy technologies, pollution and health safety, areas of ecosystem integrity and biological remediation.

FIRST SEMESTER

M.Sc. (EM) 601 Foundation Course Fundamentals of Ecology, Biodiversity and Sustainable Development
M.Sc. (EM) 603 Environmental Chemistry
M.Sc. (EM) 605 Environmental Geosciences & Natural Disasters
M.Sc. (EM) 607 Fundamentals of Geoinformatics
M.Sc. (EM) 609 Energy Resources and Technology
M.Sc. (EM) 611 Environmental Statistics
M.Sc. (EM) 613 Seminar/Term Paper *
M.Sc. (EM) 651 Geoinformatics Lab
M.Sc. (EM) 653 Environmental Chemistry and Energy Lab
M.Sc. (EM) 655 Environmental Statistics and Computer Application Lab

M.Sc. (EM) 601 Foundation Course Fundamentals of Ecology, Biodiversity and Sustainable Development

Course Outcomes:

CO1: Understanding overall ecology, biodiversity and ecosystem linkages.
CO2: Understanding various components of ecosystem and its application environment management.
CO3: Student will be able to understand the new paradigm of sustainable development and global issues of environment management.

M.Sc. (EM) 603 Environmental Chemistry

Course Outcomes:

CO1: This course will help students to understand chemistry of different segments of the environment including soil, water and atmosphere.
CO2: The students will be able to learn fundamentals and scope of environmental chemistry.
CO3: The students will get proper knowledge about chemical composition of different environment segments and reactions occurring therein.
CO4: The students will be able to learn about different principles of green chemistry and its application in improving environmental quality.

M.Sc. (EM) 605 Environmental Geosciences & Natural Disasters

Course Outcomes:

CO1: At the end of the course the student will be able to understand structure and composition of the earth; details about the atmospheric and aquatic environments.

CO2: The subject will give in depth knowledge about the characteristics and types of different natural disasters and their global distributions.

CO3: The subject will also give inside about the mitigation measures of different natural disasters, which will help in minimizing the impact on environment and society.

M.Sc. (EM) 607 Fundamentals of Geoinformatics

Course Outcomes:

CO1: After completing the course students will enable to understand the basic principles of Remote Sensing, GIS and GPS.

CO2: The course will immensely help students to understand the functionality and contributions of different satellite series worldwide.

CO3: This will help the students to analyse the spatial data and link them with other attribute data.

CO4: Once basic is clear students will have overall idea how this technology can be utilized in different fields of environment with emphasis on natural resource management.

M.Sc. (EM) 609 Energy Resources and Technology

Course Outcomes:

CO1: Students will learn basics of energy units and relation of energy with development.

CO2: Students will be able to learn the utilization of various technologies used in non-renewable energy systems.

CO3: Students will develop know-how different renewable energy technologies.

CO4: Students will develop concepts and competence on energy conservation and energy economics.

M.Sc. (EM) 611 Environmental Statistics

Course Outcomes:

CO1: Collating and treating data through various statistical methods.

CO2: Understanding the application of statistical techniques to specific problems.

CO3: Learning which test shall be applied where.

CO4: Interpreting the results obtained after application of statistical parameters.

M.Sc. (EM) 613 Seminar/Term Paper

Course Outcomes:

CO1: Students will write a paper that locates and synthesizes relevant primary and secondary sources of data and has a clear, coherent and plausible argument, logical structure, correct grammar and proper references (footnotes and bibliography).

CO2: Students will learn new research methods and review existing literature, which will enable them to understand their topics in-depth and critically think regarding solutions.

CO3: Use writing to learn and synthesize new concepts- the students receive feedback that helps them develop their research, writing and presentation skills, evidence and support an argument.

CO4: Formulate and express opinions and ideas in writing- the contents should be critical and analytical, hence encouraging students to develop critical thinking skills.

M.Sc. (EM) 651 Geoinformatics Lab

Course Outcomes:

CO1: After completing the course students will enable to handle both the image processing and GIS software.

CO2: Students will be able to generate geodata base and how different queries could be applied on these databases to solve certain problem.

CO3: Students also be able to interpret the raw image using different digital image processing techniques.

CO4: Students will be confident how field data can be collected with the help of GPS and to bring them on the map.

M.Sc. (EM) 653 Environmental Chemistry and Energy Lab

Course Outcomes:

CO1: The students will be able to understand the significance of determining water quality.

CO2: The students will be able to measure water quality parameters and check their compliance with

standards. They will also get knowledge on tertiary water treatment methods.
CO3: The students will learn to determine volatile matter, ash content and mineral matter of fuels.
CO4: The students will learn how PV module characteristics change with radiation and temperature conditions.

M.Sc. (EM) 655 Environmental Statistics and Computer Application Lab

Course Outcomes:

CO1: Understanding the basics of sampling and data generation techniques.
CO2: Learning various parametric and non-parametric tests.
CO3: Application of various statistical tests on environmental data.
CO4: Interpretation of the results.

SECOND SEMESTER

M.Sc. (EM) 602 Air Pollution, Meteorology and Control
M.Sc. (EM) 604 Water Pollution and Waste Water Treatment
M.Sc. (EM) 606 Basic and Applied Environmental Microbiology
M.Sc. (EM) 608 Solid and Hazardous Waste Management
M.Sc. (EM) 610 (value added course) Environmental Policies, Ethics and Legislation
M.Sc. (EM) EMGE 616 Environmental Modelling
M.Sc. (EM) EMGE 618 Ecotechnology for Environment Management
M.Sc. (EM) EMGE 620 Environmental Biotechnology
M.Sc. (EM) EMGE 622 Aquatic Ecosystems and Wetland Management
M.Sc. (EM) EMGE 624 Geospatial Technology for Environment Management
M.Sc. (EM) EMGE 626 Watershed Management
M.Sc. (EM) EMGE 628 Essentials of Urban Forestry and Biodiversity
M.Sc. (EM) 652 Environmental Microbiology Lab
M.Sc. (EM) 654 Air and Water Pollution Lab
M.Sc. (EM) 656 Field Visit/Industry Visit

M.Sc. (EM) 602 Air Pollution, Meteorology and Control

Course Outcomes:

CO1: Understand the basics of air pollution and their effects on human health.
CO2: Develop and understand theories of air pollution meteorology and atmospheric stability.
CO3: Develop concepts of air pollution models and understand sampling of indoor and outdoor air pollutants.
CO4: Understand and learn application of various air pollution control technologies in gaseous and particulate emissions.

M.Sc. (EM) 604 Water Pollution and Waste Water Treatment

CO1: The students will be able to understand the current status of surface and ground water quality in India along with the impacts of various water pollutants.
CO2: Students will be able to understand the importance of treatment of water collected from natural resources and in-depth knowledge of various water treatment processes.
CO3: Course will impart knowledge about the characteristics of sewage wastewater and importance of its treatment before disposal.
CO4: Students will gain knowledge and acquire in-depth understanding on sewage treatment and sludge management methods so as to protect human health and environment.

M.Sc. (EM) 606 Basic and Applied Environmental Microbiology

Course Outcomes:

CO1: The students will be able to understand the habitats and diversity of microorganisms in different types of environment.
CO2: The students will learn about the role of microbes in various biogeochemical cycles.
CO3: The students will get knowledge about potential applications of microbes in pollution abatement and resource recovery.
CO4: The students will learn about the role of microbes in sustainable agriculture and energy production.

M.Sc. (EM) 608 Solid and Hazardous Waste Management

Course Outcomes:

CO1: After studying this course, the students will be able to understand different types of solid wastes, their sources and characterization.
CO2: The students will be able to understand the problems associated with solid and hazardous wastes and importance of its proper management.
CO3: The students will get detailed knowledge on resource recovery options from solid wastes.
CO4: The students will acquire in-depth understanding on different processes for treatment and safe disposal of different types of solid wastes so as to protect human health and environment.

M.Sc. (EM) 610 (value added course) Environmental Policies, Ethics and Legislation

Course Outcomes:

CO1: Students will be able to learn about the importance of National and International environmental laws and policies for environment management.
CO2: Students will be able to acquire the knowledge about the role of regulatory agencies in environment management and National Action Plan on Climate Change.
CO3: Students will be able to learn about the different existing environmental legislations and policies of our country to control pollution.
CO4: Students will be able to acquire the knowledge how environment management principles, systems and landmark judgments works for the conservation of environment in our country.

M.Sc. (EM) EMGE 616 Environmental Modelling

Course Outcomes:

CO1: Imparting a basic understanding of various environmental systems.
CO2: How the systems can be categorized for modelling.
CO3: Prediction of fate and transport of pollutants in the environmental matrices.
CO4: Overview of application of generic models of air and water quality.

M.Sc. (EM) EMGE 618 Ecotechnology for Environment Management

Course Outcomes:

CO1: The students will develop a systemic approach.
CO2: The students will learn the principles and application of ecotechnology tools.
CO3: The students will learn basic and applied approaches to restore various types of polluted and environmentally degraded systems in eco-friendly manner.
CO4: The students will learn the latest eco-efficient approaches to be used in industry to promote sustainable development.

M.Sc. (EM) EMGE 620 Environmental Biotechnology

Course Outcomes:

CO1: The students will understand the basic concepts and scope of environmental biotechnology.
CO2: The students will learn about the role of microbes in degradation of recalcitrant compounds.
CO3: The students will get knowledge about potential applications of microbes and plants in remediation of toxic environment.
CO4: The students will learn about the role of microbes in development of environment – friendly products.

M.Sc. (EM) EMGE 622 Aquatic Ecosystems and Wetland Management

Course Outcomes:

CO1: Upon completion of this course students will be able to reliably demonstrate understanding of how aquatic ecosystems function, analyze and interpret limnological data, and apply limnological information to surface water management.
CO2: Explain how physics, biology, geology and nutrient cycles interact in aquatic ecosystem.
CO3: Students will be able to communicate effectively with the community of aquatic scientists, managers and policy makers.
CO4: Students will identify the skills required to understand and address aquatic ecosystem management challenges.

M.Sc. (EM) EMGE 624 Geospatial Technology for Environment Management

Course Outcomes:

CO1: After completing the course students will enable to understand the contributions of Geospatial technology in the diverse fields of environment.
CO2: Students will understand the utilities of Geospatial technology in the fields of earth, water and bio resources management.

CO3: For impact assessment studies students will be highly benefitted while utilising this subject.
CO4: The subject will help the students how this technology can be useful in studying different phases of disaster management and possible ways to reduce the risk.

M.Sc. (EM) EMGE 626 Watershed Management

Course Outcomes:

CO1: Students will be able to learn about the importance of Govt guidelines and policies about the watershed management.
CO2: Students will be able to acquire the knowledge about the role of various watershed characteristics and their importance in watershed conservation.
CO3: Students will be able to learn about the different methods of rainfall, streamflow measurements and sediment load estimation.
CO4: Students will be able to acquire the knowledge **about systematic approach of land and water conservation methods and implementation of Govt. policies for sustainable watershed management for the conservation of environment.**

M.Sc. (EM) EMGE 628 Essentials of Urban Forestry and Biodiversity

Course Outcomes:

CO1: Understanding overall issues of urban ecosystem and mitigation of pollution through urban plantation measures.
CO2: Understanding various types of urban landscape and measures to maintain urban biodiversity. Assessment of urban biodiversity and their contribution to human health and environment.
CO3: Student will be able to understand how to improve urban landscape through management of forestry and biodiversity with the contribution of various stake holders.
CO4: Overall understanding about the role of forestry and biodiversity in urban green space planning.

M.Sc. (EM) 652 Environmental Microbiology Lab

Course Outcomes:

CO1: The students will be able to prepare sterilized culture media and culture the microbes in laboratory under aseptic conditions.
CO2: The students will be able to enumerate, isolate, purify and characterize microbial strains.
CO3: The students will learn to isolate microbes from different environmental samples.
CO4: The students will learn how to apply microbes for bioremediation of environmental pollutants and energy recovery.

M.Sc. (EM) 654 Air and Water Pollution Lab

Course Outcomes:

CO1: The course will provide necessary information and practical knowledge about the noise, air and water quality parameters to check their current status in environment.
CO2: Students will be able to learn about types, sources and impacts of noise, air and water pollutants.
CO3: Course will help them to learn about the analytical techniques and to handle different instruments in laboratory.

M.Sc. (EM) 656 Field Visit/Industry Visit – Report/Presentation

Course Outcomes:

CO1: Students will get exposure to different environmental issues in ground scenarios.
CO2: Students will be confidant how filed data can be collected using field instruments and scientific methods.
CO3: Maps prepared using satellite imagery in the laboratory can be validated in the fields using GPS and other instruments.
CO4: Student will be able to compile the data collected from the fields and represent it in report and power-point presentation modes.

THIRD SEMESTER

M.Sc. (EM) 701 Environmental Impact Assessment & Risk Analysis
M.Sc. (EM) 703 Ecosystem Management and Restoration
M.Sc. (EM) 705 Industrial Pollution Prevention and Control
M.Sc. (EM) 707 Environmental Health and Safety
M.Sc. (EM) 709 Environmental Instrumentation
M.Sc. (EM) 751 Ecology and Ecosystem Restoration Lab

M.Sc. (EM) 753 Environmental Instrumentation Lab
M.Sc. (EM) 755 Visits to Industry/ field visits – Reports and Presentation
M.Sc. (EM) 757 Summer Training Report & Presentation
M.Sc. (EM) EMOE 731 Climate Change Mitigation & Adaptation
M.Sc. (EM) EMOE 733 Disaster Risk Reduction and Management
M.Sc. (EM) EMOE 735 Urban Biodiversity Strategies for Conservation
M.Sc. (EM) EMOE 737 Human Aspects of Biodiversity and Environment
M.Sc. (EM) EMOE 741 Sustainable Ecotourism

M.Sc. (EM) 701 Environmental Impact Assessment & Risk Analysis

Course Outcomes:

CO1: Students will be able to understand the need, purpose and regulation of EIA.
CO2: They will be equipped with the understanding of various EIA methods.
CO3: They will be exposed to practical implications from specific EIA case studies.
CO4: They will be able to carry out risk assessment and analysis.

M.Sc. (EM) 703 Ecosystem Management and Restoration

Course Outcomes:

CO1: Outgoing students will be fully empowered with clear idea and concept of ecosystem functions.
CO2: Graduated students can work as restoration managers and practitioners.
CO3: They will be empowered to apply various techniques in restoration processes.

M.Sc. (EM) 705 Industrial Pollution Prevention and Control

Course Outcomes:

CO1: The students will be able to understand the types of industrial pollutants and importance of their toxic effects if discharged untreated which will make them aware of environmental concerns.
CO2: The students will understand the importance of methods of volume and strength reduction and adoption of cleaner technologies to reduce pollution load.
CO3: The students will understand the concept and importance of Common Effluent Treatment Plant.
CO4: The students will get in-depth knowledge on manufacturing processes/basic operations of various major Indian industries along with types, sources, characteristics and environmental impacts of waste generated.

M.Sc. (EM) 707 Environmental Health and Safety

Course Outcomes:

CO1: Environment Health & Safety course will provide necessary information and knowledge about the various aspects in the field of safety, Health and environment.
CO2: Students would be able to learn theory and principle of various national and international health programmes and policies implemented all over the world.
CO3: Students will be able to understand and learn about hazardous chemicals, various pathogens & their life cycle, route of entry into human body as well as short term and long term hazards to individual health & safety and environment.
CO4: Regulatory requirements play an important role in health and safety management of workers in industries. By learning this course students would be able to gain factual knowledge of regulations and their requirement at the work place.

M.Sc. (EM) 709 Environmental Instrumentation

Course Outcomes:

CO1: Shall be able to learn the principle and theory of analytical techniques.
CO2: Shall have fundamental understanding of the chemistry-based instrumentation.
CO3: Will know the methodology of selection of analytical techniques.
CO4: Learn about the basic operation of various instruments like Spectrophotometer, AAS, GC and HPLC.

M.Sc. (EM) USMS 112 (AEES) Entrepreneurial Mindset

Course Outcomes:

CO1: Students form a foundation for basic entrepreneurial skills.
CO2: Students understand creativity and innovation for opportunity recognition.
CO3: Students learn abo opportunity analysis and writing a business plan.
CO4: Students are inspired by examples of successful entrepreneurs.

M.Sc. (EM) 751 Ecology and Ecosystem Restoration Lab

Course Outcomes:
CO1: To equip students with practical knowledge of assessment of ecosystem health.
CO2: To understand the ecosystem integrity and importance of restoration.
CO3: To provide practical and field experience of restoration sites.
CO4: To take appropriate decision towards restoration of degraded ecosystem in future.

M.Sc. (EM) 753 Environmental Instrumentation Lab
Course Outcomes:
CO1: The graduated students will better understand the ecosystem monitoring processes.
CO2: The graduated students will be able to take independent decision on matters related to various restoration projects in future.

M.Sc. (EM) 755 Visits to Industry/ field visits – Reports and Presentation
Course Outcomes:
CO1: Students will get exposure to different environmental issues in ground scenarios.
CO2: Students will be confidant how filed data can be collected using field instruments and scientific methods.
CO3: Maps prepared using satellite imagery in the laboratory can be validated in the fields using GPS and other instruments.
CO4: Student will be able to compile the data collected from the fields and represent it in report and power-point presentation modes.

M.Sc. (EM) 757 Summer Training Report & Présentation
Course Outcomes:
CO1: Student shall be able to prepare various standard and sample solutions.
CO2: Shall be able to determine and decide the appropriate technique to be used for analysis.
CO3: Shall understand the correct operation of the taught instruments.
CO4: Shall be able to understand the limitations of each of these technique and the alternatives available.

M.Sc. (EM) EMOE 731 Climate Change Mitigation & Adaptation
Course Outcomes:
CO1: Students will be able to learn and understand the concept of climate change and its impacts on various ecosystems.
CO2: Students will be able to get knowledge about various carbon sequestration techniques for better management of climate.
CO3: Students will be able to learn about impacts related to climate change and Indian response to climate change.
CO4: Students will be able to enhance their knowledge about international and national programmes and their importance in climate change.

M.Sc. (EM) EMOE 733 Disaster Risk Reduction and Management
Course Outcomes:
CO1: Students will be able to understand the fundamental causes, vulnerability and risk assessment and consequences of disasters. After going through the course The integration of knowledge, our Govt policies and instructional framework would be very helpful in minimizing the disaster risk reduction in all vulnerable locations.
CO2: Students will be able to get the knowledge about the utility and importance of disaster management cycle.
CO3: Students will be able to learn how capacity building and risk reduction tools are important in disaster management.
CO4: Students will be able to understand about the significance of Disaster Risk Reduction and management (DRR), role of different Government institutions for the benefit of natural resource management and society.

M.Sc. (EM) EMOE 735 Urban Biodiversity Strategies for Conservation
Course Outcomes:
CO1: The students would be able to understand how and why world is getting urbanized.
CO2: They will learn about the urban species and communities and their relationship with the human beings and how they have adapted different habitats within human dominated biomes.
CO3: They would be able to understand that in urban planning, environment, biodiversity and their conservation should be substantially incorporated for cities to be sustainable and biophilic.
CO4: They will become learned professionals to inculcate the need of nature, motivate and educate the

urban Society for their well being.

M.Sc. (EM) EMOE 737 Human Aspects of Biodiversity and Environment

Course Outcomes:

CO1: To make conservation professionals informed citizens about various dimensions of human activities impacting biodiversity/ environment that will enable them to actively participate and contribute in various capacities to reduce/mitigate such impacts through direct participation in conservation related activities at grassroot level or policy making.

CO2: To address the linkages between environment, biodiversity and mankind for a healthy and sustainable local/ national/ global ecosystem that will make proper understanding of the gap areas where environmentalist/conservationist has to play a role and find/create job opportunity

M.Sc. (EM) EMOE 741 Sustainable Ecotourism

Course Outcomes:

CO1: Student will understand, what is ecotourism how it is different from mass-tourism.

CO2: What are the challenges in ecotourism implementation? Understanding the role of stakeholders in ecotourism.

CO3: How ecotourism practices help to improve biodiversity conservation and livelihood promotion for the society.

CO4: Understanding ecotourism implementation prospect through case studies from field.

FOURTH SEMESTER

M.Sc. (EM) 752 Seminar and Progress Report

M.Sc. (EM) 754 Dissertation Voce

M.Sc. (EM) 752 Seminar and Progress Report

Course Outcomes:

CO1: Students will get the idea how a research plan can be prepared based on the problem of the study.

CO2: Students will be confident how to go about the research based on the research proposal (Synopsis).

CO3: Students will get the idea how a final dissertation can be prepared including the components of the research proposal.

M.Sc. (EM) 754 Dissertation

Course Outcomes:

CO1: Students will be able to know how proposed objectives can be implemented by selecting appropriate materials and methods.

CO2: Students will get real filed exposure about the subjects they have studied all the years and their applicability.

CO3: The students will have opportunity to develop professional writing skills in the form of scientific research article based on their works during the period.

CO4: Besides, this semester will give the students confidence in carrying out any research of their interest individually as well as in a team.

(PROGRAMME OUTCOMES AND COURSE OUTCOMES)

M.Sc. (Biodiversity & Conservation)

Academic Session 2015-16 - Onwards

Offered by

University School of Environment Management GGSIPU University Campus, Dwarka

GURU GOBIND SINGH
INDRAPRASTHA
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UNIVERSITYT SCHOOL OF ENVIRONMENT MANAGEMENT
GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

M.Sc. (Biodiversity & Conservation)

Program Education Objectives (PEOs)

PEO_1: To create biodiversity professionals equipped with in-depth knowledge and understanding of biodiversity and how to conserve it in a sustainable manner.
PEO_2: To provide in-depth theoretical and hands-on practical knowledge on subjects ranging from taxonomy (plant & animal), ecology, molecular biology, phylogenetics to statistics, GIS, remote sensing and media communication tools.
PEO_3: To appreciate the role of ethics, values and societal norms in producing culturally attuned and effective conservation interventions

Program Specific Objectives (PSOs)

PSO_1: critically engage with concepts and theory in biodiversity science and management from interdisciplinary perspectives
PSO_2: critically assess the modes through which conservation builds and extends power and describe in detail the factors that explain the emergence and performance of different types of governance.
PSO_3: evaluate the implications of emergent technologies for the future of biodiversity science and management.

First Semester

EMBC-601 (Foundation Course)	Fundamentals of Biodiversity and Conservation
EMBC-603	Taxonomy and Systematics of Plants and Microbes
EMBC-605	Species Diversity and Conservation
EMBC-607	Genetic Diversity and Conservation
EMBC-609	Ecosystem Diversity and Conservation
EMBC-611	Seminar/Term Paper
EMBC-651	Plant Taxonomy Lab
EMBC-653	Molecular Genetic Assessment Lab
EMBC-655	Ecology Lab
EMBC-657	Field Work and Report

EMBC-601: FUNDAMENTALS OF BIODIVERSITY AND CONSERVATION (FOUNDATION COURSE)

Course Outcomes:

CEO_1 Students will understand the origin and evolution of the species on the Earth, various components of Biodiversity and its importance

CEO_2 Sensitization regarding the values of biodiversity, effects, and impacts of biodiversity loss

CEO_3 Students will be able to integrate the knowledge of biodiversity with prevalent environmental ethics and conservation

EMBC-603: TAXONOMY AND SYSTEMATICS OF PLANTS AND MICROBES

Course Outcomes:

CEO_1 This course will make them understand that without taxonomy the qualitative loss of species cannot be rightly projected.

CEO_2 Plant taxonomy is important for the conservation of overall biodiversity.

CEO_3 This course will enable the students to contribute on the issues of exotic plant introduction, habitat restoration, development /management of botanical gardens and environment impact assessments.

CEO_4 This course will train skilled taxonomists to overcome the 'taxonomic impediments' at national and international levels as envisaged by the CBD.

EMBC-605: SPECIES DIVERSITY AND CONSERVATION

Course Outcomes:

CEO_1 The students will understand the biotic and abiotic factors that influence the dynamics of populations; how density plays important role in regulating the populations.

CEO_2 Course will explain behavioral and physiological mechanisms of how organisms are interacting with their physical environment and will reflect the importance of metapopulation and their role in maintaining the viable populations.

CEO_3 The students will know the importance of interspecific competition in regulation of communities and role of ex-situ conservation strategies in biodiversity conservation

CEO_4 The importance of the data collection for the conservation of biodiversity will enable students to apply the knowledge in the conservation of species.

EMBC-607: GENETIC DIVERSITY AND CONSERVATION

Course Outcomes:

CEO_1 The fundamentals of population genetics will make conservation professionals to evaluate the anthropogenic/evolutionary pressure in terms of genetic diversity.

CEO_2 Management/ reintroduction of captive populations based on population genetic data.

CEO_3 To recommend necessary conservation action plans for conservation dependent species based on genetic analysis.

EMBC-609: ECOSYSTEM DIVERSITY AND CONSERVATION

Course Outcomes:

CEO_1 After going through the course, you will understand the basic concepts of ecosystems and landscapes along with their functional attributes, the approaches for eco-restoration of degraded ecosystems, and the institutional framework for conserving protected areas and biodiversity

CEO_2 The students will be able to understand the basic concepts of landscape ecology and how different interactions between patches are providing the heterogeneity for the sustenance of the living organisms.

CEO_3 Restoration ecology enables students to basic philosophy of restoration and how manipulation of physical, chemical and biota can restore the degraded ecosystem with the help of case studies.

CEO_4 Protected area concept enables students to understand how different guidelines from the IUCN and national Govt. agencies are helping in the conservation of biodiversity rich ecosystems and landscapes.

EMBC-611: SEMINAR/TERM PAPER

Course Outcomes:

CEO_1 Students will demonstrate the ability to perform close and critical readings.

CEO_2 Students will demonstrate the ability to distinguish opinions and beliefs from researched claims and evidence and recognize that kinds of evidence will vary from subject to subject

CEO_3 Students will demonstrate the ability to ask appropriate questions and recognize when lines of inquiry fall outside of disciplinary boundaries.

CEO_4 Students will demonstrate the ability to offer compelling, articulate oral arguments, showing an understanding of the unique demands of oral presentation as opposed to writing.

EMBC-651: PLANT TAXONOMY LAB

Course Outcomes:

CEO_1 The students will learn to identify the plant groups on the basis of morphological and reproductive features.

CEO_2 They would be able to identify many flowering plant families and their ecological role in a particular geographical area.

CEO3 They will be well versed with the anatomical, micromorphological lab techniques utilized for the identification of various plant groups and taxa.

CEO_4 Learn to use E-flora and e -identification techniques.

EMBC-653: MOLECULAR GENETIC ASSESSMENT LAB

Course Outcomes:

CEO_1 Conservation professional will be able to do valuation of bioresources at molecular level.

CEO_2 Assessment of genetic diversity will help for suggesting necessary conservation action plan for conservation dependent species.

EMBC 655: ECOLOGY LAB

Course Outcomes:

CEO_1 The students are expected to learn design a methodology for analysis community dynamics

CEO_2 The students will learn the practical knowledge of identifying the habitat for analyzing vegetation for its community dynamics

CEO_3 The students are expected to analyze basic water and soil parameters and learn the use of instruments for analyzing them.

EMBC 657: FIELD WORK

Course Outcomes:

CEO1 The students will learn the intricacies of field work discipline and herbarium data, documentation methods

CEO2 They will learn scientific techniques of preparation and management of long-lasting herbarium of aquatic and various group of land plants

CEO3 They will learn the field ecological data collection and collation techniques

CEO4 They will learn Field Report Writing which is important EIA Projects

SECOND SEMESTER

EMBC-602 (Foundation Course)	Animal Taxonomy and Systematics
EMBC-604	Biodiversity Conservation and Climate change
EMBC-606	Biotechnological and Phylogenetic Approaches to Biodiversity Conservation
EMBC-608	Geoinformatics and Biodiversity Assessment
EMBCGE-616	Plant Reproductive Ecology
EMBCGE-618	Animal Ecology and Behaviour
EMBCGE-620	Microbial Ecology
EMBCGE-622	Aquatic Ecosystem and Wetland Conservation
EMBCGE-624	Wildlife Biology
EMBC-652	Animal Taxonomy and Systematics Lab
EMBC-654	Geoinformatics Lab
EMBC-656	Phylogeny Lab
EMBC-658	Field Work

EMBC 602: ANIMAL TAXONOMY AND SYSTEMATICS
Course Outcomes:

- **CEO_1** To create professionals of animal taxonomist.
- **CEO_2** Various dimensions of animal taxonomy will help conservation/ environmental biologist in biodiversity conservation/ environmental impact assessment
- **CEO_3** Taxonomy being basic to all other sciences, knowledge of animal taxonomy will help students in any type of future research on animals.

EMBC 604: BIODIVERSITY CONSERVATION AND CLIMATE CHANGE
Course Outcomes:

- **CEO_1** Understand that climate has major impacts on ecosystems and species distribution
- **CEO_2** Learn how ecosystems have been affected by climate in the more recent past
- **CEO_3** Understand the evidence for human-caused climate change impacting ecosystems and species distributions
- **CEO_4** Understand about the IUCN guidelines regarding species and protected area protection

EMBC-606: BIOTECHNOLOGICAL AND PHYLOGENETIC APPROACHES TO BIODIVERSITY CONSERVATION
Course Outcomes:

- **CEO_1** To train conservation professionals about molecular and phylogenetic applications.
- **CEO_2** To provide knowledge about molecular evaluation of bioresources.
- **CEO_3** Phylogenetic tools will help in integrating evolutionary approaches in conservation.

EMBC 608: GEOINFORMATICS AND BIODIVERSITY ASSESSMENT
Course Outcomes:

- **CEO_1** After completing the course students will enable to understand the basic principles of Remote Sensing, Geographic Information System and Global Positioning System.
- **CEO_2** The course will immensely help students to understand the functionality and contributions of different satellite series worldwide.
- **CEO_3** This will help the students to analyse the spatial data and link them with other attribute data.
- **CEO_4** Once basic is clear students will have overall idea how this technology can be utilised in the field of conservation and management of biodiversity.

EMBC 616: PLANT REPRODUCTIVE ECOLOGY
Course Outcomes:

CEO_1 The students will learn about the Plant Reproductive Ecology of aquatic/terrestrial species of agricultural and horticultural plants.

CEO_2 They would be able to understand and appreciate the Ecological Services of various insect species as pollinators.

CEO_3 They can evolve as a professional Pollination Consultancies to provide farmers and orchard growers to maximize produces.

CEO_4 The students can become a well-informed 'Conservation Managers' after understanding pollination syndrome and biotic seed dispersal mechanisms and how this interaction works at spatial and temporal levels, within and among different plant population communities.

EMBCGE- 618: ANIMAL ECOLOGY AND BEHAVIOUR

Course Outcomes:

CEO_1 To impart conservation professionals importance of integrating animal ecology and behaviour in biodiversity conservation.

CEO_2 To encourage students to opt for successful field biologist as a carrier.

CEO_3 To know how to use knowledge of animal natural history information in management of captive populations.

EMBCGE- 620: ENVIRONNMENTAL STRESS BIOLOGY

Course Outcomes:

CEO_1 The students will understand basic concepts of stress biology and environment.

CEO_2 The students will learn about the response gaseous environment of plants.

CEO_3 The students will get in-depth knowledge on various biogeochemical cycles of plant responses to chemical environment.

EMBCGE-622: AQUATIC ECOSYSTEMS AND WETLAND MANAGEMENT

Course Outcomes:

CEO_1 Upon completion of this course students will be able to reliably demonstrate understanding of how aquatic ecosystems function, analyze and interpret limnological data, and apply limnological information to surface water management.

CEO_2 Explain how physics, biology, geology and nutrient cycles interact in aquatic ecosystem.

CEO_3 Students will be able to communicate effectively with the community of aquatic scientists, managers and policy makers

CEO_4 Students will identify the skills required to understand and address aquatic ecosystem management challenges.

EMBCGE-624: WILDLIFE BIOLOGY

Course Outcomes:

- **CEO_1** The outgoing student will be able to understand the deep meaning of conservation in Indian mythology.
- **CEO_2** They will be able to understand day-to-day issues of wildlife conservation in present scenario.
- **CEO_3** They will be able to become a good field biologist with sound knowledge of various field methods.
- **CEO_4** They will be able to understand the population estimation procedures of wildlife population.

EMBC-652: ANIMAL TAXONOMY AND SYSTEMATICS LAB

Course Outcomes:

- **CEO_1** The outgoing students will be independent to explore and conduct landscape level faunal surveys
- **CEO_2** Students will be empowered enough to conduct field surveys and rapid inventorisation of faunal elements
- **CEO_3** Capacity building of animal taxonomy and creation of future conservation professionals in the field of biodiversity

EMBC-654: GEOINFORMATICS LAB

Course Outcomes:

- **CEO_1** After completing the course students will enable to handle both the image processing and GIS software.
- **CEO_2** Students will be able to generate geodata base and how different queries could be applied on these databases to solve certain problem.
- **CEO_3** Students also be able to interpret the raw image using different digital image processing techniques.
- **CEO_4** Students will be confident how field data can be collected with the help of GPS and to bring them on the map.

EMBC 656: PHYLOGENCY LAB

Course Outcomes:

- **CEO_1** To give insights to future conservationists to integrate evolutionary data into biodiversity conservation.
- **CEO_2** Make traditional taxonomist to use molecular taxonomy/ecology whenever necessary.
- **CEO_3** To prepare basic background how to apply phylogenetic analysis for various other purposes like making primers, tracing of diseases and illegal trades, evaluation of bioresources.

EMBC 658: FIELD WORK

Course Outcomes:

CEO1	The students will learn the intricacies of field work discipline and field data collection and documentation methods
CEO2	They will learn scientific techniques of rapid assessment of faunal species.
CEO3	They will learn the field ecological data collection and collation techniques and field training towards future green technologies.
CEO4	They will learn Field Report Writing which is important EIA Projects

THIRD SEMESTER

EMBC-701 (Value-based Course)	Biodiversity Conservation, Human Society and Ethics
EMBC-703	Conservation Policies and Law
EMBC-705	Development Communication in Conservation
EMBC-707 (Foundation Course)	Biostatistics

EMOE-731	Climate Change Mitigation and Adaptation
EMOE-733	Disaster Risk Reduction and Management
EMOE-735	Urban Biodiversity Strategies for Conservation
EMOE -737	Human Aspects of Biodiversity and Environment
EMOE-739	Sustainable Ecotourism

EMBC-751	Conservation Communications Lab
EMBC-753	Web Designing Lab for Conservation
EMBC-755	Biostatistics and Computer Applications Lab
EMBC-757	Summer Training Report*

Course Expected Outcomes:

CEO_1	In this course, students will learn how to identify and evaluate the competing interests, potential benefits, and possible risks in case studies, as well as analyze cross-cutting themes in the ethics of biodiversity conservation.
CEO_2	Questions about the appropriate way to value biodiversity (e.g., eco-centric, economic, etc.), and concerns about balancing biodiversity conservation goals with economic development, along with issues in the governance of biodiversity and conservation programs will be learnt
CEO_3	Students will be encouraged to incorporate different levels of analysis, critical perspectives, ethical principles, and competing values into a rigorous ethical analysis of biodiversity conservation
CEO_4	The course will enable the students to understand the role of biodiversity in preventing infectious diseases and maintaining human well-being

EMBC 703: CONSERVATION POLICIES AND LAW

Course Expected Outcomes:

CEO_1 Students will be able to explain the range of justifications advanced for the conservation and sustainable use of biological diversity, identify the role played by science and scientists.

CEO_2 Students will be able to analyse the role of international and national law relating to nature conservation

CEO_3 Students will have critical understanding of current legal issues relating to biodiversity conservation and the design of appropriate policy responses

EMBC 705: DEVELOPMENT COMMUNICATION IN CONSERVATION

Course Expected Outcomes:

CEO_1 This course will help students develop oral, visual and written scientific communication skills and to familiarize them with research resources.

CEO_2 This course not only will help students in their course work during their post-graduate studies but also as they transition to their professional lives: communicating at scientific meetings, grant writing, writing manuscripts for professional journals, drafting resumes, interviewing, and sharing techniques with colleagues.

CEO_3 By the end of this course, each student will be able to perform effective literature reviews and accurately cite relevant literature, critiques of written, oral and visual materials and incorporate suggestions and criticisms from critiques into their own work

CEO_4 The students will also be able to develop communication skills required for biodiversity conservation and also in generating awareness through various medias

EMBC-707: BIOSTATISTICS (Foundation Course)

Course Expected Outcomes:

CEO_1 Students will be able to explain general principles of study design and its implications for valid inference and assessing the effectiveness of one or more interventions.

CEO_2 Students will assess data sources and data quality for the purpose of selecting appropriate data for specific research questions; and translate research objectives into clear, testable statistical hypotheses.

CEO_3 Identify appropriate statistical methods to be applied in a given research setting, apply these methods, and acknowledge the limitations of those methods

CEO_4 Describe basic principles and the practical importance of key concepts from probability and inference, inductive versus deductive reasoning, including random variation, systematic error, sampling error, measurement error, hypothesis testing, type I and type II errors, and confidence bounds

EMBC-751: CONSERVATION COMMUNICATION LAB

Course Expected Outcomes:

- **CEO_1** Students will be able to develop communication strategies for creating awareness in conservation science
- **CEO_2** Students will learn to plan campaign and identify target audience
- **CEO_3** Students will learn how to design the report along with visuals and graphics

EMBC-753: WEB DESIGNING LAB FOR CONSERVATION LAB

Course Expected Outcomes:

- **CEO_1** The students will be able to create website / web pages
- **CEO_2** Students will be able to learn the basic concepts of HTML and CSS
- **CEO_3** Students will be able to write a well-formed / valid XML document.

EMBC-755: BIOSTATISTICS AND COMPUTER APPLICATIONS LAB

Course Expected Outcomes:

- **CEO_1** Student knows the basic software and biostatistical methods used in conservation science and databases, spreadsheets and basics of computer graphics
- **CEO_2** Students will be able to select the appropriate statistical test, conducts basic statistical analyses and uses appropriate methods of presenting the results; interprets the results of the meta-analysis, and also analyses the likelihood of survival of species
- **CEO_3** The student knows the basic methods of statistical analysis used in population and studies

EMBC-757: SUMMER TRAINING REPORT & PRESENTATION

Course Expected Outcomes:

- **CEO_1** Students have opportunity to apply acquired knowledge to real experiences
- **CEO_2** In addition to learning the specialized skills of a particular field, skills such as communication, teamwork, and computer proficiency are also obtained in an internship, fully preparing interns to enter the workforce.
- **CEO_3** Taking on an internship allows students to work in their desired field, helping them decide if the field is right for them.

Open-Elective

EMOE-731: CLIMATE CHANGE MITIGATION & ADAPTATION

Course Expected Outcomes:

- **CEO_1** Students will be able to learn and understand the concept of climate change and its impacts on various ecosystems.
- **CEO_2** Students will be able to get knowledge about various carbon sequestration techniques for better management of climate
- **CEO_3** Students will be able to learn about impacts related to climate change and Indian response to climate change
- **CEO_4** Students will be able to enhance their knowledge about international and national programmes and their importance in climate change

EMOE-733: DISASTER RISK REDUCTION AND MANAGEMENT

Course Outcomes:

- **CEO_1** Students will be able to understand the fundamental causes, vulnerability and risk assessment and consequences of disasters.
  After going through the course, the integration of knowledge, our Govt policies and instructional framework would be very helpful in minimizing the disaster risk reduction in all vulnerable locations
- **CEO_2** Students will be able to get the knowledge about the utility and importance of disaster management cycle.
- **CEO_3** Students will be able to learn how capacity building and risk reduction tools are important in disaster management
- **CEO_4** Students will be able to understand about the significance of Disaster Risk Reduction and management (DRR), role of different Government institutions for the benefit of natural resource management and society.

EMOE 735: URBAN BIODIVERSITY STRATEGIES FOR CONSERVATION

Course Outcomes:

- **CEO_1** The students would be able to understand how and why world is getting urbanized.
- **CEO_2** They will learn about the urban species and communities and their relationship with the human beings and how they have adapted different habitats within human dominated biomes.
- **CEO_3** They would be able to understand that in urban planning,environment, biodiversity and their conservation should be substantially incorporated for cities to be sustainable and biophilic.
- **CEO_4** They will become learned professionals to inculcate the need of nature, motivate and educate the urban Society for their well being.

EMOE-737: HUMAN ASPECTS OF BIODIVERSITY AND ENVIRONMENT

Course Outcomes:

CEO_1 To make conservation professionals informed citizens about various dimensions of human activities impacting biodiversity/ environment that will enable them to actively participate and contribute in various capacities to reduce/mitigate such impacts through direct participation in conservation related activities at grassroot level or policy making.

CEO_2 To address the linkages between environment, biodiversity and mankind for a healthy and sustainable local/ national/ global ecosystem that will make proper understanding of the gap areas where environmentalist/ conservationist has to play a role and find/create job opportunity.

EMOE 739: SUSTAINABLE ECOTOURISM

Course Outcomes:

CEO_1 Student will understand, what is ecotourism how it is different from mass-tourism?

CEO_2 What are the challenges in ecotourism implementation? Understanding the role of stakeholders in ecotourism.

CEO_3 How ecotourism practices help to improve biodiversity conservation and livelihood promotion for the society?

CEO_4 Understanding ecotourism implementation prospect through case studies from field.

FOURTH SEMESTER

EMBC-702 Dissertation based Seminar and Progress Report[1]

EMBC-704 Dissertation and viva-voce

EMBC-702: DISSERTATION BASED SEMINAR AND PROGRESS REPORT

Course Outcomes:

CEO_1 Considerably more in-depth knowledge of the major subject/field of study, including deeper insight into current research and development work.

CEO_2 Deeper knowledge of methods in the field of study

CEO_3 A capability to contribute to research and development work.

EMBC-704: DISSERTATION AND VIVA-VOCE

Course Outcomes:

CEO_1	Define, design and deliver an academically rigorous piece of research
CEO_2	Understand the relationships between the theoretical concepts taught in class and their application in specific situations
CEO_3	Show evidence of a critical and holistic knowledge and have a deeper understanding of their chosen subject area and appreciate practical implications and constraints of the specialist subject
CEO_4	Understand the process and decisions to be made in managing a project within strict deadlines

PROGRAMME OUTCOMES AND COURSE OUTCOMES FOR UNDERGRADUATE PROGRAMMES

Bachelor of Technology

a. **Computer Science and Engineering Major Discipline**
b. **Information Technology Major Discipline**
c. **Electronics and Communication Engineering Major Discipline**

(w.e.f. A.S.2019)

Offered by

University School of Information, Communication & Technology at the GGSIPU University Campus, Dwarka

GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

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Vision of the School

Create high-quality engineering professionals

Mission of the School

To serve humanity by creating professionally competent, socially sensitive engineers with high ethical values who can work as individuals or in groups in multicultural global environments.

Programme Outcomes

1. ***Engineering Knowledge*** (**PO01**): Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. ***Problem Analysis*** (**PO02**): Identify, formulate, review research literature, and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
3. ***Design/Development of Solutions*** (**PO03**): Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. ***Conduct Investigations of Complex Problems*** (**PO04**): Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions for complex problems:
    a. that cannot be solved by straightforward application of knowledge, theories and techniques applicable to the engineering discipline as against problems given at the end of chapters in a typical text book that can be solved using simple engineering theories and techniques;
    b. that may not have a unique solution. For example, a design problem can be solved in many ways and lead to multiple possible solutions;
    c. that require consideration of appropriate constraints / requirements not explicitly given in the problem statement such as cost, power requirement, durability, product life, etc.;
    d. which need to be defined (modelled) within appropriate mathematical framework; and
    e. that often require use of modern computational concepts and tools, for example, in the design of an antenna or a DSP filter.
5. ***Modern Tool Usage*** (**PO05**): Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.
6. ***The Engineer and Society*** (**PO06**): Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. ***Environment and Sustainability*** (**PO07**): Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. ***Ethics*** (**PO08**): Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. ***Individual and Team Work*** (**PO09**): Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. ***Communication*** (**PO10**): Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. ***Project Management and Finance*** (**PO11**): Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. ***Life-long Learning*** (**PO12**): Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

Bachelor of Technology (Computer Science and Engineering)

Programme Education Objectives (PEO)

PEO 1: Our students will apply their knowledge and skills to succeed in their careers and/or obtain advanced degrees.

PEO 2: Our students will behave ethically and responsibly, and will remain informed and involved as full participants in their profession and society.

PEO 3: Our students will creatively solve problems, communicate effectively, and successfully function in diverse and inclusive multi-disciplinary teams.

PEO4 4: Our students will apply principles and practices of computing grounded in mathematics and science to successfully complete hardware and/or software-related engineering projects to meet customer business objectives and/or productively engage in research.

Programme Specific Outcomes (PSO)

On completion of the programme of study, the students will have the ability to:

PSO 1: Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

PSO 2: Apply engineering analysis & design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

PSO 3: Communicate effectively with a range of audiences.

PSO 4: Recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

PSO 5: Function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

PSO 6: Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

PSO 7: Acquire and apply new knowledge as needed, using appropriate learning strategies.

PEO to PO Mapping

PEO/PO	*PO01*	*PO02*	*PO03*	*PO04*	*PO05*	*PO06*	*PO07*	*PO08*	*PO09*	*PO10*	*PO11*	*PO12*
PEO 1	3	1	1	1	1	1	1	1	1	1	1	3
PEO 2	1	-	-	-	-	3	3	3	-	-	-	3
PEO 3	3	3	3	3	3	2	2	1	1	3	3	-
PEO 4	3	3	3	3	3	-	-	-	1	1	3	-

(scale 1: low, 2: Medium, 3: High)

PSO to PO Mapping

PSO/PO	*PO01*	*PO02*	*PO03*	*PO04*	*PO05*	*PO06*	*PO07*	*PO08*	*PO09*	*PO10*	*PO11*	*PO12*
PSO 1	3	-	-	-	-	-	-	-	-	-	-	3
PSO 2	-	3	3	3	3	3	3	-	-	-	-	-
PSO 3	-	-	-	-	-	3	-	-	3	3		-
PSO 4	-	-	-	-	-	3	3	3	1	-	-	-
PSO 5	-	-	-	-	-	-	-	1	3	1	3	-
PSO 6	1	2	2	3	3	1	1	1	-	-	-	3
PSO 7	-	-	-	-	-	-	-	-	-	-	-	3

(scale 1: low, 2: Medium, 3: High)

Bachelor of Technology (Information Technology)

Programme Education Objectives (PEO)

PEO 1: Our students will apply their knowledge and skills to succeed in their careers and/or obtain an advanced degree.

PEO 2: Our students will behave ethically and responsibly, and will remain informed and involved as full participants in their profession and society.

PEO 3: Our students will creatively solve problems, communicate effectively, and successfully function in diverse and inclusive multi-disciplinary teams.

PEO 4: Our students will apply principles and practices of information technology to identify, implement, and enable effective technologies and apply fundamental computing knowledge to solve information technology problems and be capable of doing research.

Programme Specifc Outcomes (PSO)

On completion of the programme of study, the students will have the ability to:

PSO 1: Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.

PSO 2: Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.

PSO 3: Communicate effectively in a variety of professional contexts.

PSO 4: Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.

PSO 5: Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

PSO 6: Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.

PEO to PO Mapping

PEO/PO	*PO01*	*PO02*	*PO03*	*PO04*	*PO05*	*PO06*	*PO07*	*PO08*	*PO09*	*PO10*	*PO11*	*PO12*
PEO 1	3	1	1	1	1	1	1	1	1	1	1	3
PEO 2	1	-	-	-	-	3	3	3	-	-	-	3
PEO 3	3	3	3	3	3	2	2	1	1	3	3	-
PEO 4	3	3	3	3	3	-	-	-	1	1	3	-

(scale 1: low, 2: Medium, 3: High)

PSO to PO Mapping

PSO/PO	*PO01*	*PO02*	*PO03*	*PO04*	*PO05*	*PO06*	*PO07*	*PO08*	*PO09*	*PO10*	*PO11*	*PO12*
PSO 1	3	3	-	3	-	-	-	-	-	-	-	3
PSO 2	-	3	3	3	3	1	1	-	-	-	-	3
PSO 3	-	-	-	-	-	3	-	-	3	3	3	-
PSO 4	-	-	-	-	-	3	3	3	1	-	-	-
PSO 5	-	-	-	-	-	-	-	1	3	1	3	-
PSO 6	1	3	3	3	3	1	1	1	-	-	-	3

(scale 1: low, 2: Medium, 3: High)

Bachelor of Technology (Electronics and Communications Engineering)

Programme Education Objectives (PEO)

PEO 1: To be well acquainted with fundamentals of Electronics & Communication Engineering for leading a successful career in industry or as an entrepreneur or pursuing higher education.

PEO 2: To inculcate rational approach towards constantly evolving technologies with ethical responsibilities.

PEO 3: To foster technical skills for innovative solutions in Electronics & Communication Engineering or related areas.

PEO 4: To participate in life-long learning in the relevant domain for addressing global societal needs.

Programme Specifc Outcomes (PSO)

On completion of the programme of study, the students will have the ability to:

PSO 1: To understand and analyse the principles and working of different electronic systems.

PSO 2: To utilize their knowledge, skills and resources to demonstrate and implement technology-based systems as per the requirement.

PSO 3: To offer real time and efficient solutions problems that are directly or indirectly related to Electronics and Communication Engineering areas and will contribute towards the development of society.

PSO 4: Ability to collaborate different fields of science and technology with right blend of attitude and aptitude for placements and higher education or to become a successful Entrepreneur and a worthy global citizen.

PEO to PO Mapping

PEO/PO	*PO01*	*PO02*	*PO03*	*PO04*	*PO05*	*PO06*	*PO07*	*PO08*	*PO09*	*PO10*	*PO11*	*PO12*
PEO 1	3	1	1	1	1	1	1	1	1	1	1	3
PEO 2	3	1	1	-	1	3	3	3	-	-	-	3
PEO 3	3	3	3	3	3	2	2	1	1	1	1	3
PEO 4	1	-	-	-	-	3	1	-	-	-	-	3

(scale 1: low, 2: Medium, 3: High)

PSO to PO Mapping

PSO/PO	*PO01*	*PO02*	*PO03*	*PO04*	*PO05*	*PO06*	*PO07*	*PO08*	*PO09*	*PO10*	*PO11*	*PO12*
PSO 1	3	3	-	-	3	-	-	-	-	-	-	1
PSO 2	2	3	3	3	3	1	1	-	-	-	-	1
PSO 3	2	3	3	3	3	3	3	3	1	3	3	3-
PSO 4	1	1	1	1	1	-	-	1	1	3	-	3

(scale 1: low, 2: Medium, 3: High

Table 1: Course Outcomes for Under Graduate Programmes of Studies (Compulsory evaluator courses).

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
1	HS101	Communication Skills-I	IT/CSE/ECE	1. Ability to use tenses and concord; gerunds, participles & infinitives correctly. 2. Ability to use antonyms and synonyms, idioms and foreign phrases correctly. 3. Ability to compose simple technical reports. 4. Ability to present a logical argument.
2	BA103	Chemistry – I	IT/CSE	1. Ability to understand the properties of water. 2. Understand different types of fuels and make simple calorimetric calculations. 3. Understand characteristic properties of polymers. 4. Understand different types of corrosive mechanisms and its prevention.
3	IT 105	Introduction to Computers	IT/CSE/ECE	1. Ability to use computers for word processing, spreadsheet calculation, use operating system commands and understand basic structure of a computing system. 2. Ability to describe an algorithm. 3. Ability to write programs in 'C' using functions, arrays, structure, files etc.
4	BA 105	Theory and Technology of Semiconductors	ECE	1. Understand crystal properties and growth of semi-conductors. 2. Understand band theory of solids and use it to describe energy bands and charge carrier properties in semi-conductors. 3. Understand optical absorption, luminescence, carrier injection and current (electron and holes). 4. Understand the fabrication and properties of different type of junctions in semi-conductors.
5	IT 107	Electrical Science	IT/CSE	1. Ability to analyse simple DC circuit problems. 2. Ability to analyse simple AC Circuits. 3. Understand the working of transformers and electrical measurement devices. 4. Understand the working of DC and AC motors.
6	EC 107	Network Analysis	ECE	1. Understand the concept of an electrical circuits, linear elements, operational amplifiers, voltage and current sources, inductance, capacitance and resistive elements. 2. Ability to analyse electrical networks with DC sources and the theorems and transformations (source and circuits) associated. 3. Ability to analyse electrical networks with AC sources and the theorems and transformations (source and circuits) associated. 4. Ability to describe two-port networks in time and transform domains (Fourier and Laplace).
7	BA109	Mathematics – I	IT/CSE/ECE	1. Ability to solve problems using differential and integral calculus. 2. Ability to analyse convergence of series with emphasis of Taylor's and Maclaurin series. 3. Ability to solve differential and integral problems of many variables. 4. Ability to solve problems of vector calculus.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
8	BA111	Physics – I	IT/CSE/ECE	1. Understanding of wave optics (Polarization, Interference and Diffraction). 2. Understand working of different types of lasers. 3. Understand principles and working optical fibres. 4. Understand and be able to solve problems in special theory of relativity.
9	IT157	Engineering Graphics - I	IT/CSE	1. Ability to project points and lines on reference planes. 2. Ability to project on planes other than reference planes. 3. Ability to project plane figures. 4. Ability to project of solids, sections and surfaces.
10	HS102	Communication Skills – II	IT/CSE/ECE	1. Understand the medium of communication. 2. Ability to write technical reports and business letters. 3. Ability to speak with clarity and fluency. 4. Ability to participate in a group discussion and have effective listening capability.
11	IT104	Engineering Mechanics	IT/CSE	1. Ability to solve problems pertaining to force systems, equilibrium and distributed systems. 2. Ability to solve problems of friction and engineering trusses. 3. Ability to deal with the problems of kinematics and kinetics of particle 4. Ability to deal with the problems of kinematics and kinetics of rigid bodies.
12	EC 104	Analog Electronics - I	ECE	1. Understand the characteristics of junction diodes and transistors. 2. Understand the DC equivalent models of semi-conductor devices (diodes and transistors) and mechanism(s) of biasing, stabilization and compensation. 3. To understand the principle of operation of different amplifier circuits like feedback amplifiers, power amplifiers. 4. To understand the principle of operation of different oscillators circuits.
13	EM106	Environment Studies	ECE	1. The course is designed to impart basic knowledge of the environment and its components. 2. The course deals in creating awareness about the energy resources and current environmental problems faced by the world. 3. To understand and learn about environment pollution. 4. Understand environmental laws and the role and types of polymers.
14	BA108	Mathematics – II	IT/CSE/ECE	1. Ability to use linear algebraic techniques to solve problems. 2. Ability to use ODE techniques to solve problems. 3. Ability to use complex analysis techniques to solve problems. 4. Ability to use probabilistic techniques to solve problems.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
15	BA110	Physics-II	IT/CSE/ECE	1. Understand quantum mechanical systems and solve simple problems. 2. Understand quantum statistical systems and solve simple problems. 3. Understand and use band theory of solids to explain working of diodes and transistors. 4. Understand how planar EM waves are generated.
16	EC112	Signals and Systems	ECE	1. Understand the classification and properties of signals and systems. 2. Ability to understand Fourier series and Fourier transform. Application of Fourier transform to solve partial differential equations and apply to characterize linear systems (continuous and discrete). 3. Ability to understand Laplace and Z transform. Application of Laplace transform and Z-Transform to solve partial differential equations and apply to characterize linear systems (continuous and discrete, respectively). 4. Ability to design the structure of a filter.
17	BA114	Statistics Theory of Probability and Linear Programming	IT/CSE	1. Understand the concept of random variates (discrete and continuous). 2. Ability to calculate moments and their usage for calculation of skewness and kurtosis measures. 3. Ability to do data analysis using linear regression. And to use tests of hypothesis. 4. Ability to solve simple linear programming problems using the simplex methods and problems of transportation and assignment.
18	BA118	Chemistry-II	IT/CSE	1. Understand atomic structure and electron shell structure. 2. Understand different type of bonding mechanisms and structures. 3. Ability to do thermo-chemistry and reaction kinetic calculations. 4. Understand electron chemistry, catalysis phenomena and the phase rule.
19	IT128	Data Structures	IT/CSE	1. Able to understand the concepts of data structure such as stacks, queues, linked list and their applications. 2. Implement Binary Search Trees, Max/Min-Heaps and understand the basic concepts of self-balancing Binary Search Trees such as AVL trees. 3. Able to understand the concept of multi-way trees (B-Tree, B+ Tree and B* Tree) and Graphs representation, traversal and their applications. 4. Able to analyse various Sorting (Selection, Insertion, Exchange and Merging), Searching algorithms (Sequential, Binary and Hashing) and determine their time complexity.
20	IT154	Engineering Graphics Lab. - II	IT/CSE/ECE	1. Ability to perspective, orthographic, isometric and oblique projections. 2. Ability to sketch and describe shapes using techniques of 1st and 3rd angle projections, glass-box concept. 3. Ability to describe size (dimensioning). 4. Elementary understanding of CAD.
Second Year				

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
21	IT201	Computational Methods / Computational techniques	IT/CSE/ECE	1. Ability to find roots of equations. Solve unconstrained one variable minimization problems, and multi-variate minimization problems. 2. Ability to perform numerical interpolation, differentiation and integration. 3. Ability to solve linear equations numerically and to approximate functions using splines. 4. Ability to solve differential equations numerically.
22	IT203	Circuits and Systems	IT/CSE	1. Understand the classification and properties of signals and systems. 2. Ability to use Fourier series, Fourier Transforms and Laplace transforms to analyse continuous systems while for discrete systems have ability to use Discrete Fourier Series, Discrete Time Fourier Transform and Z- Transform. 3. Ability to analyse electrical networks with DC sources and the theorems and transformations (source and circuits) associated. 4. Ability to analyse electrical networks with AC sources and the theorems and transformations (source and circuits) associated.
23	EC203	Communication System - I	ECE	1. Understand the characteristics of a communication systems, bandwidth and information capacity and the role and sources of noise in communication systems. 2. Understand the design and specifications for amplitude modulation systems. 3. Understand the design and specifications for angle and frequency modulation systems. 4. Understand the design and specifications for pulse analog modulation systems.
24	IT205	Electronic Devices and Circuits	IT/CSE	1. Ability to analyse PN junctions in semiconductor devices under various conditions. 2. Ability to design and analyse simple rectifiers and voltage regulators using diodes. 3. Ability to describe the behavior of special purpose diodes. 4. Ability to design and analyse simple BJT and MOSFET circuits.
25	EC205	Engineering Electromagnetics	ECE	1. Appraise need analysis for different coordinate systems in electromagnetics and their interrelations. 2. Apply vector calculus to solve field theory problems. 3. Calculate electric and magnetic fields in different coordinates for various charge and current configurations. 4. Exhibit the concept of time varying fields. 5. Demonstrate different aspects of plane wave in dielectric and conducting media. 6. Realize the analogy of wave with transmission line and determine the transmission line performance.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
26	IT207	Object Oriented Programming Using C++	IT/CSE/ECE	1. Ability to describe the important concepts of object oriented programming like object and class, Encapsulation, inheritance and polymorphism. 2. Ability to write the simple object oriented programs in C++, use features of C++ like type conversion, inheritance, polymorphism, I/O streams and files to develop programs for real life problems. 3. Ability to use advance features like templates and exception to make programs supporting reusability and sophistication. 4. Ability to use standard template library for faster development. 5. Ability to develop applications using object oriented programming with C++.
27	IT209	Computer Graphics	IT/CSE	1. Understand the basic computer graphics primitives as well as able to implement them. 2. Ability to apply various transformation techniques. 3. Ability to implement surface and edge detection and hidden edge and surface removal, shading techniques and illumination techniques. 4. Ability to implement procedural modals, fractals, grammar based models, multi-particle systems and volume rendering.
28	EC209	Digital Electronics	ECE	1. Ability to understand, represent and minimize Boolean Expression for digital circuits. 2. Ability to design circuits for multiplexers, demultiplexers, decoders and encoders, adders and subtractors, code convertors and comparators. 3. Understand the working and design of flip-flops, shift registers, ripple counters, synchronous counters and sequence detectors. Understand the working of 555 timer and its use as mono-stable and astable multi-vibrator. 4. Understand different logic families and their characteristics along with the knowledge of different types of memories.
29	IT211	Database Management Systems	IT/CSE	1. Ability to identify and define the information that is needed to design a database management system for a business information problem. 2. Ability to create conceptual and logical database designs for a business information problem. 3. Ability to build a database management system that satisfies relational theory and provides users with business queries. 4. Understand the core terms, concepts, and tools of relational database management systems. 5. Ability to create, maintain and query databases and tables.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
30	EC211	Analog Electronics II	ECE	1. Ability to design and analyse multi-stage and power amplifiers. 2. Understand working of analog ICs as differential amplifiers, differentiators, integrators, inverting and non-inverting amplifiers and voltage to current and vice-versa convertors. 3. Understand linear and non-linear wave shaping. 4. Understand and ability to use and design active filters.
31	IT202	Java Programming	IT/CSE	1. Understand and gain knowledge of characteristics of java, its compilation, JVM as an emulator, instruction set, control flow, programming and the sandbox model. 2. Learn the fundamentals of java programming and will apply the knowledge of exceptional handling in writing the program. Clearly understand the concepts like wrapper classes inheritance. 3. Have sufficient knowledge about threads & thread synchronization and will thoroughly understand the AWT components and event handling mechanism. 4. Have a clear understanding of concepts of I/O streams, IDBC, object serialization, sockets, RMI, JNI, Collection API interfaces, Vector, Stack, Hash table classes, list etc
32	EC202	VHDL Based Design	ECE	1. Ability to demonstrate the use and application of Boolean Algebra in reduction, expansion, factoring. 2. Ability to use VHDL software to analyse and synthesize digital circuits. 3. Ability to simulate and debug digital systems described in VHDL. 4. Ability to synthesize complex digital circuits at several level of abstractions.
33	IT204	Multimedia Applications	IT/CSE	1. Understand multimedia streams, systems, storage and H/W/ and S/W requirements. 2. Understand audio, video, text and animation techniques and their amalgamation to create a multimedia system. 3. Understand lossy and lossless compression techniques. 4. Ability to use Maya to create multi-media applications.
34	EC204	Communications Systems -II	ECE	1. Understand random variables and processes and their relevance in a communication system. 2. Understand the techniques of baseband modulation detection. 3. Understand the techniques of bandpass modulation and demodulation. 4. Understand techniques of line coding and the mathematical theory of communication.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
35	IT206	Switching Theory and Logic Design	IT/CSE	1. Ability to understand, represent and minimize Boolean Expression for digital circuits. 2. Ability to design circuits for multiplexers, demultiplexers, decoders and encoders, adders and subtractors, code convertors and comparators. 3. Understand the working and design of flip-flops, shift registers, ripple counters, synchronous counters and sequence detectors. 4. Understand the working of 555 timer and its use as mono-stable and astable multi-vibrator. 5. Understand different logic families and their characteristics along with the knowledge of different types of memories.
36	EC206	Transmission Lines, Waveguides and Antennas	ECE	1. Understand various types of transmission lines and analyze the lumped circuit model of a transmission line and their characteristics. And the ability to use the smith chart as a graphical tool to solve impedance matching issues 2. Ability to solve Maxwell's equations using vector calculus in three standard coordinate systems. Understand the power flow mechanism of plane wave 3. Deduce EM wave propagation in free space and in dielectric medium. 4. Analyze the electromagnetic wave propagation in guiding structures 5. Have an understanding of antenna radiating principle and the fundamental characteristics and parameters of antennas.
37	MS208	Organization Behaviour	IT/CSE	1. Have an understanding of management principles and processes. 2. Have an understanding of the organizational structure and processes 3. Understand the behavioural dynamics in an organization. 4. Understand how decisions are made in an organization.
38	EC208	Control Engineering	ECE	1. Familiarization with various components and building blocks of a control system and their transfer function in open loop as well as closed loop configurations. 2. Time domain analysis (Transient as well as steady state) as also knowledge of error constant. 3. Frequency Domain Analysis, specifications and graphical methods to study stability of the system in terms of its parameters/variables. 4. Algebraic and graphical techniques to analysis various systems for stable operation. 5. Concept of controllers and compensation methods to achieve desirable performance of the system.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
39	IT210	Foundations of Computer Science	IT/CSE	1. Ability to use formal logic to present a mathematical proof. Ability to perform deductive as well as inductive proofs. 2. Understand the properties and usage of the mathematical structures and principles: Sets, operations on sets, counting principles (combinatorics), relations and functions. 3. Understand lattices and Boolean algebra. And, also the properties of recurrence relations and growth of functions for analysis of algorithms. 4. Understand elementary number theory and its applications. 5. Understand the properties of the graph structures and the algorithms defined on the graph structure like spanning tree, minimal path etc.
40	EC210	Data Structures and Algorithms	ECE	1. Ability to design programs using stacks and queues (array based). And, use them for expression representation and evaluation and sparse matrix representation. Also ability to write recursive programs. 2. Ability to utilise linked list (single, doubly linked and circular) to write programs. And, to represent polynomials using lists with addition implementation. 3. Ability to design operations on the tree structure for insertion, deletion and traversal. Ability to use the trees for searching applications. 4. Ability to design operations on the graph structure for insertion, deletion and traversal. Ability to use the trees for searching applications.
41	IT212	Software Engineering	IT/CSE	1. Ability to differentiate between various Software Development Life Cycle (SDLC) Models and Requirement elicitation. 2. Ability to define, formulate and analyse a problem. 3. Ability to analyse, design, verify, validate, software systems. 4. Ability to construct software of high quality – software that is reliable, and that is reasonably easy to understand, modify and maintain.
42	EC212	Computer Architecture and Operating Systems	ECE	1. Understand the basic architecture of a computer. 2. Understand different architecture families, instruction sets, and the concept of micro-programmed control and the different types of bus architecture. 3. Understand the types, roles, functions, and architecture of an operating systems. 4. Understand techniques of process, scheduling and management and memory management by an OS.
Third Year				

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
43	IT301	Theory of Computation	CSE	1. Understand the language hierarchy. 2. Ability to construct an automata for any given pattern and find its equivalent regular expressions 3. Ability to design a context free grammar for any given language. 4. Understand Turing machines and their capability 5. Understand undecidable problems and NP class problems
44	EC301	Microwave Devices and Circuits	ECE	1. Learn the basics of S parameters and use them in describing the components. 2. Understand the working of Microwave semiconductor devices and tubes. 3. Realize the importance of the theory of Microwave circuit theory. 4. Work out the complete design aspects of various M.I.C. filters 5. Understand the principles of radar engineering
45	IT303	Analog and Digital Communication	CSE	1. Understand the working of analog and digital communications. 2. Understand the working and design of amplitude modulation and demodulation systems. 3. Understand the working and design of digital communications systems. 4. Understand the limitations and the capability of a communication system from the perspective of information theory
46	EC303	Microprocessors and Interfacing	ECE	1. Understand the architecture of Intel 8086 processor. 2. Ability to write assembly language programs and interface with C/C++. 3. Ability to design and implement systems interfacing with 8255, 8254, 8251, 8279, 8087 and 8089. 4. Understand and appreciate the architecture and capability of Intel 80186, 80286, 80386, 80486, Pentium I, II, III and IV processors
47	IT305	Computer Architecture	IT/CSE	1. Ability to identify various components of computer and their interconnection and identify basic components and design of the CPU: the ALU and control unit. 2. Ability to compare and select various Memory devices as per requirement. 3. Ability to compare various types of IO mapping techniques 4. Ability to critique the performance issues of cache memory and virtual memory and I/O organization
48	EC305	Microelectronics	ECE	1. Compute carrier concentrations for semiconductor materials under a variety of doping conditions. 2. Compute conductivity and resistivity of semiconductor materials under a variety of condition. 3. Silicon wafer processing and formation of P N junction using diffusion and Ion Implantation technique 4. Wet and Dry oxidation process required for photolithography process. 5. Manufacturing process for P N junction, BJT, MOS, and IC fabrication.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
49	IT307	Digital Signal Processing	IT/CSE	1. Ability to analyse Continuous and Discrete time signals/systems and evaluate the frequency response of a discrete time signals/ systems using fourier transforms. 2. Ability to calculate Z-transforms for discrete time signals and system functions. 3. Ability to develop Fast Fourier Transform (FFT) algorithms for faster realization of signals and systems. 4. Ability to understand the design of Digital IIR filters and Digital FIR filter.
50	EC307	Relational Database Management Systems	ECE	1. Ability to understand advantages of database systems and use them 2. Ability to design databases for specific use. 3. Ability to write programs in SQL and PL/SQL for data processing. 4. Understand principles of good database design and transaction processing.
51	IT309	Object Oriented Software Engineering	IT/CSE	1. Ability to dentify requirements, analyze and prepare models. 2. Ability to select a suitable architecture for the project. Also plan, schedule and track the progress of the project. 3. Ability to design and develop software project and understand the maintenance concept of object oriented systems. 4. Ability to apply testing principles on object oriented software project and understand the methods to determine reliability in software.
52	EC309	Stochastic Systems and Processes	ECE	1. Ability to understand working of stochastic systems and model them. 2. Ability to develop stochastic models based on data and perform hypothesis testing. 3. Ability to apply stochastic modelling techniques to electronic and communications systems.
53	IT311/IT314	Digital Design Using VHDL/Digital System Design	IT/CSE	1. Ability to design Basic Logic Circuits and Evaluate Combinational-Circuit Building Blocks. 2. Ability to design and Test Circuits Employing Flip-Flops, Registers, Counters, and a Simple Processor 3. Ability to design FSM and implement in VHDL. 4. Ability to design digital circuits in VHDL
55	IT313	Communication Systems	IT	1. Understand the working and characteristics of linear systems. 2. Understand the working and design of amplitude modulation and demodulation systems. 3. Understand the working and design of digital communications systems. 4. Understand the limitations and the capability of a communication system from the perspective of information theory
56	IT315	Linux and Win32 Programming	IT	1. Understand linux system architecture, commands and system calls. 2. Ability to write system calls to write programs. 3. Understand Win32 architecture and programming model. 4. Ability to write event driven programs on the Win32 platform.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
57	IT317/IT310	Operating Systems	IT/CSE	1. Understand OS types, and process management techniques. 2. Understand CPU scheduling and process synchronization techniques. 3. Understand Primary and Secondary memory management techniques. 4. Understand techniques for file system management and system security and protection.
58	IT302	Microprocessors	IT/CSE	1. Understand evolutional history of microprocessors from Intel. 2. Understand Intel 8086 architecture. 3. Ability to program the Intel 8086 processor in assembly language. 4. Ability to interface 8086 with semiconductor memory and other micro-controllers.
59	EC302	Digital System Processing and Applications	ECE	1. Ability to use different transforms (DFT, FFT, Hilbert) to solve DSP problems. 2. Ability to design IIR filters 3. Ability to design and optimize filters. Also design adaptive filters. 4. Ability to use DSP techniques to solve problems in the field of speech and radar systems.
60	IT304	Computer Networks	IT/CSE	1. Understand the concepts of computer networks, OSI model and TCP/IP model. 2. Understand the physical layer concepts and signal encoding/decoding techniques. 3. Understand the data link layer functions and protocols. 4. Understand standards for LAN / WAN technologies and concepts of network layer.
61	EC304	Computer Networking	ECE	1. Understand the concepts of computer networks, OSI model and TCP/IP model. 2. Understand the physical layer concepts and signal encoding/decoding techniques. 3. Understand the data link layer functions and protocols. 4. Understand working of the upper layers of the TCP/IP stack..
62	IT306	Algorithm Analysis and Design	IT/CSE	1. Ability to understand time complexity and disjoint sets. 2. Ability to differentiate between dynamic programming and greedy programming methodologies. 3. Have a knowledge of graphs and applications of graphs. 4. Have basic knowledge of string matching and NP complete problems using few examples of NP complete problems
63	EC306	Information Theory and Coding	ECE	1. Comprehend the quantitative theory of information in conceptualizing a reliable and efficient communication system. 2. Understand the principles of data compression, channel capacity of common communication channels. 3. Design and evaluate the performance linear, Cyclic and Quaternary codes.

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
64	IT308	Compiler Design	CSE	1. Understanding of concepts, techniques, and different phases used for developing a simple language compiler. 2. Ability to specify and analyse the lexical, syntactic and semantic structures of advanced language features. 3. Ability to separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation. 4. Ability to write a scanner, parser, and semantic analyser.
65	EC308	Telecommunications Networks	ECE	1. Understand fundamentals of telecomm switching system 2. Understand the concept of Time division Switching and traffic engineering 3. Understand telephone and data networks 4. Understand concepts of SONET, ISDN ATM, Frame relay
66	EC310	Opto – Electronics and Optical Communications	ECE	1. Understand the working of optical communication channel components. 2. Understand the transmission characteristics of optical fibre. 3. Understand the principles and working of optical sources and circuits. 4. Understand optical communication multiplexing strategies and optical fibre network working principles and standards.
67	EC312	Mobile Communications	ECE	1. Understand the working and design of mobile communication systems. 2. Understand the different modulation techniques in mobile communication systems. 3. Understand the GSM architecture and protocols. 4. Ability to design a mobile communications system architecture.
68	IT316	Digital Communications	IT	1. Understand the principles and practices of Pulse modulation. 2. Understand baseband pulse transmission techniques. 3. Understand passband data transmission techniques. 4. Understand principles of error control coding and spread spectrum modulation. 5. Ability to design a digital communication system.
69	IT401	Advanced Computer Networks	IT/CSE	1.Understand network layer and routing protocols. 2.Understand network address resolution protocols and IPV6. Understand transport layer protocols. 3.Understand different application layer protocols. 4.Understand security issues and protection methods in TCP/IP. 5.Ability to design and implement a computer network

Sr.No.	Paper Code	Paper Name	Programme of Study	Course Outcomes
70	EC401	Satellite Communication	ECE	1.Understand the basics of satellite communications. 2.Understand the subsystems of satellite communications system. 3.Understand satellite link design 4.Understand the multiple access technique and network aspects of satellite and its applications
71	IT403	Software Testing	IT/CSE	1.Ability to describe the basic taxonomy, key techniques and its limitation in software testing. 2.Ability to produce and execute test cases at various levels of testing using different problem solving techniques. 3.Ability to practice several object oriented testing methods and web application testing approaches. 4.Ability to express how to lower the time and cost of software testing while increasing the software quality.
72	IT413	Front End Design Tools and Web Technologies	IT/CSE	1.Ability to design a website using HTML, CSS and Javascript. 2.Ability to use XML, Java Beans and EJB for development of websites. 3.Ability to use servlets, configure webservers and use JSP. 4.Ability to use database systems for development of interactive websites.

PROGRAMME OUTCOMES AND COURSE OUTCOMES FOR POSTGRADUATE PROGRAMMES

Master of Technology (Computer Science and Engineering)

(w.e.f. A.S.2019)

Offered by

University School of Information, Communication & Technology at the GGSIPU University Campus, Dwarka

GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

Guru Gobind Singh Indraprastha University
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Vision of the School

Create high-quality engineering professionals

Mission of the School

To serve humanity by creating professionally competent, socially sensitive engineers with high ethical values who can work as individuals or in groups in multicultural global environments.

Programme Outcomes

PO1: An ability to independently carry out research /investigation and development work to solve practical problems
PO2: An ability to write and present a substantial technical report/document
PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program
PO4: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Programme Educational Objectives

PEO1: To develop students to critically analyze the problems in the field of Computer Science & Engineering and find optimal solutions.
PEO2: To train students to conduct research and experiments by applying appropriate techniques and tools with an understanding of the limitations for sustainable development of society.
PEO3: To prepare students to act as a member and leader of the team to contribute positively to manage projects efficiently in the field of Computer Science & engineering.
PEO4: To train the students to effectively communicate, write reports, create documentation and make presentations by adhering to appropriate standards.
PEO5: To stimulate students for life-long learning with enthusiasm and commitment to improve knowledge and competence continuously.

CO-PEO Matrix*

Filled on a scale of 1 to 3 (3=High; 2=Moderate; 1=Low; '-'for no correlation)

Course Outcomes	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	3	3	2	2	2
PO2	3	1	2	3	1
PO3	3	3	3	2	3
PO4	1	2	3	2	2

Table 1: Course Outcomes for (Theory and associated practical courses).

Sr.No.	Paper Code	Paper Name	Course Outcomes
1	MECS-601	Advanced Data Structures	5. Ability to understand the concept and implement Sparse Matrices, AVL, Red Black trees Heap etc. 6. Learn implementation and application of Data Structures for Disjoint sets used in Graph Algorithms 7. Understand concept and requirement of external searching and sorting. 8. Understand concept and requirement of Search Trees and Tries.
2	MECS -603	Advanced Software Engineering	5. Identify requirements, analyze and prepare models. 6. Select a suitable architecture for the project. Also plan, schedule and track the progress of the project. 7. Design and develop software project and understand the maintenance concept. 8. Apply testing principles on software project and understand the methods to determine reliability in software.
3	MECS -605	Advances in Data & Computer Communications	4. To demonstrate understanding of the state-of-the-art in network protocols, architectures and applications. Able to understand traffic engineering aspects and QOS parameters of computer networks 5. Analyze existing network protocols stack of TCP/IP at physical, data link, network and transport level. To be able to analyze different protocol stacks developed for different LAN, MAN and WAN applications. 6. To demonstrate understanding of application layer protocols for better human machine interface. To understand the advancements in networking and research for developing new protocols for mobile applications such as IOT, Cloud etc.,. 7. Demonstrate an ability to understand existing security features and fire walls and further design new security protocols at each OSI layers particularly at the Application layer for addressing new challenges such as in mobile, IOT and Cloud. To investigate and propose novel ideas in the area of Networking via term-long research projects.
4	MECS -607	Advanced Computer Architecture	5. To be able to describe the various architectural concepts that may be applied to optimize and enhance the classical Von Neumann architecture into high performance computing hardware systems. 6. To be able to describe the design issues relating to the architectural options. 7. To be able to describe the challenges faced in the implementation of these high performance system. 8. To Be able to identify, assess contemporary practical examples and contemporary application areas including multi processors and SIMD computers

Sr.No.	Paper Code	Paper Name	Course Outcomes
5	MECS -609	Enterprise Computing using JAVA	5. After undergoing the course, student would able to understand the meaning and purpose of J2SE, J2ME and J2EE. 6. After undergoing the course students would be able to understand various Advanced Java Technologies and Programming Concepts 7. After undergoing the course, the students would be able to understand concept of Session, State and Persistence of J2EE Objects. 8. After undergoing the course, the students would be able to understand fundamentals of Web Services and MVC(Model View Control Architecture) to students.
6	MECS-611	Computational Techniques using MATLAB	5. The students shall learn the difference between Accuracy and Precision and types of errors. 6. Able to evaluate and apply various numerical methods 7. Able to program numerical differentiation and integration 8. Able to understand the need for optimized solutions
7	MEEC-613	Mathematical Statistics & Data Analysis	5. Understand the concept of probability, probability density and distribution function and to calculate the first two moments for standard distributions. 6. Understand statistical sampling methods, and comparing sample statistics in the mean. 7. Understand and use tests for hypothesis testing using χ^2 test, t-test.and f-test. 8. Fit linear regression (univariate/multivariate) relationships.
8	MECS- 613	Advanced Operating Systems	5. Students should be able to understand the fundamentals of Operating Systems including memory management 6. Students should be able to understand the process management module 7. To gain knowledge on Mutual exclusion algorithms, Deadlock detection algorithms and agreement protocols and storage management 8. To know the components and management aspects of file management.
9	MECS- 615	Theory of Computation	5. Understand the design aspects of “abstract models” of computers like Turing machines and its variants. 6. Comprehend the recognisability (decidability) of grammar (language) with specific characteristics through these abstract models. 7. Decide what makes some problems computationally hard and others easy? 8. Deliberate the problems that can be solved by computers and the ones that cannot?
10	MECS-602	Object Oriented Analysis and Design	5. Ability of students to understand the development of a system by following object oriented life cycle. 6. Ability of students to understand Object oriented analysis and applications of analysis patterns. 7. Ability of students to understand object oriented design and applications of design patterns. 8. Ability of students to develop systems through object oriented methodology.

Sr.No.	Paper Code	Paper Name	Course Outcomes
11	MECS-604	Advanced Data Base Management System	5. To review the basics of database management system along with database design and query languages 6. To introduce to the students the concepts of query processing and optimization and transaction processing 7. To introduce to the students the concepts of distributed databases, client server databases, object oriented and object relational databases 8. To introduce to the students to data warehousing, data mining, multimedia and web databases
12	MECS-606	Advanced Algorithm Analysis & Design	5. To understand the methodology of dynamic programming & Greedy Strategy and their comparison in terms of guaranteed optimized solutions. 6. To understand various graph theory concepts and computational geometry. 7. To understand various matrix operations, Polynomial and number–theoretic algorithms. 8. To understand NP-complete problems and approximation algorithm as a case study to solve NP complete problems.
13	MEEC-618	ESD Using ARM microcontroller	5. Acquire knowledge about fundamental concepts of Embedded system design. 6. Understand ARM processor fundamentals. 7. Understand C compiler and optimization 8. Grasp an understanding of Interrupt handling schemes and Real-Time operating systems
14	MEEC-604	Advanced Signal Processing	5. Understand time domain and frequency domain representation and analysis of the Linear Shift Invariant Systems 6. Design and analyze FIR and IIR filter 7. Understand FFT algorithms, Multirate signal processing 8. Explain Parametric and non-parametric methods for Power Spectrum Analysis
15	MECS-608	Software Requirement & Estimation	5. Gain knowledge about software requirements. 6. Analyze requirement elicitation techniques and prototyping. 7. Gain knowledge about requirement management, their principles and practices and analyze use case modeling and different data diagrams. 8. Estimating the software in terms of size, cost, effort and schedule.
16	MECS-610	Network Programming	5. Ability of students to understand file formats, I/O and inodes 6. Ability of students to understand polling, interrupts and message queues 7. Ability of students to understand client/server, concurrent and iterative servers 8. Ability of students to understand the network programming for XDR and RPC
17	MECS-612	Soft Computing	5. Understand soft computing techniques like Neural Networks and their role in problem solving. 6. Conceptualize and parameterize various problems to be solved through basic soft computing techniques in Fuzzy systems 7. Analyze and integrate various Evolutionary algorithms in order to solve problems effectively and efficiently. 8. Understand use of Rough sets and Hybrid Systems in problem solving

Sr.No.	Paper Code	Paper Name	Course Outcomes
18	MEEC-612	Cellular & Mobile Communication	5. Understand the basic cellular system concepts and evolution of different wireless communication systems 6. Have insight into propagation models for cell coverage and antenna structures. Learn frequency management strategies for interference mitigation. 7. Compare different technologies used for wireless communication systems. 8. To have complete knowledge of second generation mobile system architecture and specifications.
19	MECS-614	Modelling & Simulation	5. Understand the definition of System, models and its types 6. Students will understand the techniques of modeling and different types of simulation techniques 7. Understand the fundamental logic, structure, components and management of simulation modeling 8. Students will learn to simulate the models for the purpose of optimum control by using different software
20	MECS-616	Software Metrics	5. The students would acquire basic knowledge of measurement in Software engineering 6. The would also exemplify Quality measurement and metrics, Quality plan and implementation 7. They would articulate Quality control and reliability of quality process and software measurement and also articulate Complexity metrics and analyzing software measurement data 8. They would be able to control and manage the project and processes, apply configuration management on the basis of collected metrics and aspects of quality
21	MEIT-604	Advanced Software Project Management	5. The students would be able to understand the fundamental principles of Software Project management & will also have a good knowledge of responsibilities of project manager and how to handle these. 6. They would be familiar with the different methods and techniques used for project management including effort estimation and activity planning. 7. Students would have good knowledge of the issues and challenges faced while doing the Software project Management and will also be able to understand resource allocation and tracking. 8. They would be able to do the Project Scheduling, tracking, Risk analysis, and managing developers
22	MECS- 620	Distributed Computing	5. The students would be able to define and explain the distributed parallel computing environment 6. The students would be able to demonstrate the access of remote objects for the service 7. The students would be able to organize processes in a distributed systems 8. The students would be able to define and explain the functionalities of parallel systems

Sr.No.	Paper Code	Paper Name	Course Outcomes
23	MECS-624	Advanced Computer Graphics	5. Ability to understand the basics of various inputs and output computer graphics hardware devices. Exploration of fundamental concepts in 2D and 3D computer graphics. 6. Able to perform geometric transformations in 2D and 3D space and be able to view 3d object on2D screen through viewing transformations. 7. Student should be able to understand and generate curves, surfaces using different techniques like Bezier, B spline, NURBS etc. and show the surface realistic. 8. Be exposed to different advanced modelling techniques and Student should be able to understand the basic principles and techniques used to create computer animations.
24	MESP-612	Processing	5. Ability of students to understand concept of fundamental steps in digital image processing, image sampling, quantization, image compression and enhancement techniques. 6. Ability of students to understand the concept of image restoration and segmentation techniques. 7. Ability of students to understand various concepts of image techniques. 8. Ability of students to understand the concept of image morphological processing.
25	MEIT-608	Web Semantics	7. To be able to understand the evolution of Semantic Web as next generation web. To describe and Analyze different layers of Semantic Web Architecture. 8. Illustrate various technologies and tools of Semantic Web. To be able to describe representation of semantic web data using RDF, RDFS. 9. To be able to describe the need and features of Ontology for incorporating semantics to develop Knowledge base along with various issues and tools of Ontology. 10. To be familiar with services and applications of web semantics in real world with different latest technologies
26	MECS-701	Advanced Data Warehousing & Data Mining	6. Understanding Data Warehouse concepts and Data Warehousing architecture. 7. Design a Data Warehouse at Logical Level using multidimensional dimension modeling. 8. Implementing Data Warehouse through Data Cubes. 9. Evaluate and select appropriate data-mining algorithms and apply, interpret and report the output appropriately
27	MECS-703	Advanced Software Testing	5. To understand the key techniques and tools in software testing. 6. Ability to develop and execute the test plans. 7. To gain knowledge of how to lower the time and cost of software testing while increasing the software quality. 8. Ability to conduct object-oriented and web software testing. To study the fundamental principles and practices associated with agile testing.

Sr.No.	Paper Code	Paper Name	Course Outcomes
28	MEEC-707	Artificial Neural Networks	5. Understand Analogy of Biological neural Networks with ANN, Neural models and learning Paradigms and perceptrons 6. Explain Feed forward networks, Back propagation algorithm and its mapping capability 7. Acquaint with unsupervised learning approaches: PCA, SOM, and LVQ 8. Acquire knowledge about Hopfield networks, associative memories, hybrid networks, applications of neural networks
29	MECS- 705	Cloud Computing	6. Ability of students to understand the meaning and purpose of Cloud Computing. 7. Ability of students to understand Web Services, Mashups, SOAP 8. Ability of students to understand concept of Big Tables, File System and Map Reduce Model 9. Ability of students to understand QoS, Inter Cloud Issues and Security.
30	MECS-707	E-Commerce & Applications	5. Ability of students to understand the meaning and purpose of ECOMMERCE transactions. 6. Ability of students to understand various Business Models like :- B2B,B2G,GTC etc. 7. Ability of students to understand concept of Payment Gateways 8. Ability of students to understand to understand fundamentals of Web Marketing and CRM.
31	MECS-709	Information Storage & Management	5. The students would be able to search, retrieve and synthesize information from a variety of systems and sources. 6. The students would be able to evaluate systems and technologies in terms of quality, functionality, cost-effectiveness and adherence to professional standards. 7. The students would be able to integrate emerging technologies into professional practice. 8. The students would be able to apply theory and principles to diverse information contexts.
32	MECS-711	Software Quality Management	5. Ability of students to understand software quality, Software quality assurance, SQA techniques and issues. 6. Ability of students to apply Software quality assurance program, evaluation types, and configuration management. 7. Ability of students to apply error reporting and trend analysis. 8. Ability of students to apply corrective actions, software quality programme planning, and social factors.
33	MECS-713	Advanced Digital Signal Processing	5. The students would know the analysis of discrete time signals. 6. The students would be able to study the modern digital signal processing algorithms and applications. 7. The students would have an in-depth knowledge of use of digital systems in real time applications and estimation of power spectrum 8. The students would be able to apply the algorithms for wide area of recent applications and parametric modeling methods

Sr.No.	Paper Code	Paper Name	Course Outcomes
34	MECS-715	Advanced Multimedia	5. Ability to understand the concept and applications of multimedia and its making. 6. Ability to understand and perform different compression techniques for Text, Image, Audio and Video. 7. Student should be able to understand and create models using NURBS and polygonal modeling and impart movements in it using different animation techniques. 8. Should be able to use dynamics in created model to make movements realistic and make the character appearance realistic.
35	MECS-717	Cyber Crime Investigations and Cyber Forensics	6. Ability of students to understand the risk and issues of cyber-crime. 7. Ability of students to understand the cyber-crime types 8. Ability of students to understand about tools to be used in Cyber Forensics. 9. Ability of students to understand fundamentals of cryptography, Incident Response and evidence seizing process.
36	MECS-719	Distributed Databases	6. The students would be able to identify the introductory distributed database concepts and its structures. 7. The students would be able to describe terms related to distributed query processing and optimization. 8. The students would be able to produce the transaction management and concurrency control techniques in DDBMS. 9. The students would be able to relate the importance and application of emerging database technology and reliable design.
37	MECS-721	Network Management	5. Understand general concepts and architecture behind standards based network management 6. Understand concepts and terminology associated with SNMP and RMON 7. Understand theoretical and practical knowledge of Telecommunications Management Network 8. Understand Network Management Tools and Systems and Internet Technologies used for network management
38	MEEC-705	Embedded Systems & RTOS	6. Get overview of embedded systems design (ESD) and Role of Real-Time Operating System and issues in Real-time Computing: Architecture, Structure, Properties and performance measures, 7. Understand Real-Time Scheduling & Priority-Driven Scheduling of Periodic Tasks 8. Understand Scheduling Aperiodic and Sporadic Jobs in Priority-Driven systems 9. Acquaint with Resource and Resource Access Control & Multiprocessor scheduling, resource access control and synchronization
39	MEIT-703	Information Theory & Coding	6. Ability of students to understand true meaning of Information and Entropy 7. Ability of students to understand three aspects of information i.e. compression, error control and security. 8. Ability of students to understand various coding techniques and implementation 9. Ability of students to understand fundamentals of cryptography

PROGRAMME OUTCOMES AND COURSE OUTCOMES FOR POSTGRADUATE PROGRAMMES

Master of Technology (Computer Science and Engineering)

(w.e.f. A.S.2019)

Offered by

University School of Information, Communication & Technology at the GGSIPU University Campus, Dwarka

GURU GOBIND SINGH
INDRAPRASTHA
UNIVERSITY

Guru Gobind Singh Indraprastha University
Sector 16C, Dwarka, Delhi – 110 078 [INDIA]
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Vision of the School

Create high-quality engineering professionals

Mission of the School

To serve humanity by creating professionally competent, socially sensitive engineers with high ethical values who can work as individuals or in groups in multicultural global environments.

Programme Outcomes

PO1: An ability to independently carry out research /investigation and development work to solve practical problems
PO2: An ability to write and present a substantial technical report/document
PO3: Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program
PO4: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice

Programme Educational Objectives

PEO1: To develop students to critically analyze the problems in the field of information Technology and find optimal solutions.
PEO2: To train students to conduct research and experiments by applying appropriate techniques and tools with an understanding of the limitations for sustainable development of society.
PEO3: To prepare students to act as a member and leader of the team to contribute positively to manage projects efficiently in the field of information Technology.
PEO4: To train the students to effectively communicate, write reports, create documentation and make presentations by adhering to appropriate standards.
PEO5: To stimulate students for life-long learning with enthusiasm and commitment to improve knowledge and competence continuously.

CO-PEO Matrix*

Filled on a scale of 1 to 3 (3=High; 2=Moderate; 1=Low; '-'for no correlation)

Course Outcomes	PEO1	PEO2	PEO3	PEO4	PEO5
PO1	3	3	2	2	2
PO2	3	1	2	3	1
PO3	3	3	3	2	3
PO4	1	2	3	2	2

Table 1: Course Outcomes for (Theory and associated practical courses).

Sr.No.	Paper Code	Paper Name	Course Outcomes
1	MECS-601	Advanced Data Structures	9. Ability to understand the concept and implement Sparse Matrices, AVL, Red Black trees Heap etc. 10. Learn implementation and application of Data Structures for Disjoint sets used in Graph Algorithms 11. Understand concept and requirement of external searching and sorting. 12. Understand concept and requirement of Search Trees and Tries.
2	MECS-603	Advanced Software Engineering	9. Identify requirements, analyze and prepare models. 10. Select a suitable architecture for the project. Also plan, schedule and track the progress of the project. 11. Design and develop software project and understand the maintenance concept. 12. Apply testing principles on software project and understand the methods to determine reliability in software.
3	MECS-605	Advances in Data & Computer Communications	8. To demonstrate understanding of the state-of-the-art in network protocols, architectures and applications. Able to understand traffic engineering aspects and QOS parameters of computer networks 9. Analyze existing network protocols stack of TCP/IP at physical, data link, network and transport level. To be able to analyze different protocol stacks developed for different LAN, MAN and WAN applications. 10. To demonstrate understanding of application layer protocols for better human machine interface. To understand the advancements in networking and research for developing new protocols for mobile applications such as IOT, Cloud etc.,. 11. Demonstrate an ability to understand existing security features and fire walls and further design new security protocols at each OSI layers particularly at the Application layer for addressing new challenges such as in mobile, IOT and Cloud. To investigate and propose novel ideas in the area of Networking via term-long research projects.
4	MEVS-601	Digital System Design using Verilog	9. Understand the hardware design flow and the constructs of Verilog language. 10. Design and analyze the simulation process of combinational and sequential circuits using Verilog. 11. Design and testing of the digital circuits using Verilog language. 12. Design of data paths and control system for a micro programmed processors.

Sr.No.	Paper Code	Paper Name	Course Outcomes
5	MECS -607	Advanced Computer Architecture	9. To be able to describe the various architectural concepts that may be applied to optimize and enhance the classical Von Neumann architecture into high performance computing hardware systems. 10. To be able to describe the design issues relating to the architectural options. 11. To be able to describe the challenges faced in the implementation of these high performance system. 12. To Be able to identify, assess contemporary practical examples and contemporary application areas including multi processors and SIMD computers
6	MECS-609	Enterprise Computing using JAVA	9. After undergoing the course, student would able to understand the meaning and purpose of J2SE, J2ME and J2EE. 10. After undergoing the course students would be able to understand various Advanced Java Technologies and Programming Concepts 11. After undergoing the course, the students would be able to understand concept of Session, State and Persistence of J2EE Objects. 12. After undergoing the course, the students would be able to understand fundamentals of Web Services and MVC(Model View Control Architecture) to students.
7	MECS- 611	Computational Techniques using MATLAB	9. The students learned the difference between Accuracy and Precision and types of errors. 10. Able to evaluate and apply various numerical methods 11. Able to program numerical differentiation and integration 12. Able to understand the need for optimized solutions
8	MEEC-613	Mathematical Statistics & Data Analysis	9. Understand the concept of probability, probability density and distribution function and to calculate the first two moments for standard distributions. 10. Understand statistical sampling methods, and comparing sample statistics in the mean. 11. Understand and use tests for hypothesis testing using χ^2 test, t-test.and f-test. 12. Fit linear regression (univariate/multivariate) relationships.
9	MECS- 613	Advanced Operating Systems	9. Students should be able to understand the fundamentals of Operating Systems including memory management 10. Students should be able to understand the process management module 11. To gain knowledge on Mutual exclusion algorithms, Deadlock detection algorithms and agreement protocols and storage management 12. To know the components and management aspects of file management.
10	MEIT-601	Introduction to Computer Security	9. Ability of students to understand the risk and issues of cyber-crime. 10. Ability of students to understand the cyber-crime types 11. Ability of students to understand about tools to be used in Cyber Forensics. 12. Ability of students to understand network security and privacy ethics.

Sr.No.	Paper Code	Paper Name	Course Outcomes
11	MEIT-603	Cellular & Mobile Communication	9. Ability of students to understand frequency reuse, interference reduction factor, cell splitting and antenna parameters 10. Ability of students to understand near distance, long distance propagation, frequency management, handoff analysis and evaluation 11. Ability of students to understand block coding, convolution coding, Turbo coding, cellular CDMA 12. Ability of students to understand GSM mobility, network signalling, mobile IP, WLAN, routing protocols in MANETs
12	MECS- 615	Theory of Computation	9. Understand the design aspects of "abstract models" of computers like Turing machines and its variants. 10. Comprehend the recognisibility (decidability) of grammar (language) with specific characteristics through these abstract models. 11. Decide what makes some problems computationally hard and others easy? 12. Deliberate the problems that can be solved by computers and the ones that cannot?
13	MEIT-602	Advanced Mobile Computing	9. Ability of students to understand the development of a system by following object oriented life cycle. 10. Ability of students to understand Object oriented analysis and applications of analysis patterns. 11. Ability of students to understand object oriented design and applications of design patterns. 12. Ability of students to develop systems through object oriented methodology.
14	MEIT-604	Advanced Software Project Management	9. The students would be able to understand the fundamental principles of Software Project management & will also have a good knowledge of responsibilities of project manager and how to handle these. 10. They would be familiar with the different methods and techniques used for project management including effort estimation and activity planning. 11. Students would have good knowledge of the issues and challenges faced while doing the Software project Management and will also be able to understand resource allocation and tracking. 12. They would be able to do the Project Scheduling, tracking, Risk analysis, and managing developers
15	MEIT-606	Computer Graphics & Animation	9. Ability to understand the basics of various inputs and output computer graphics hardware devices. Exploration of fundamental concepts in 2D and 3D computer graphics. 10. Able to perform geometric transformations in 2D and 3D space and be able to view 3d object on2D screen through viewing transformations. 11. Student should be able to understand and generate curves, surfaces using different techniques like Bezier, B spline etc. and show the surface realistic. 12. Student should be able to understand the principles and techniques used to create computer animations.

Sr.No.	Paper Code	Paper Name	Course Outcomes
16	MEEC-618	ESD Using ARM microcontroller	9. Acquire knowledge about fundamental concepts of Embedded system design. 10. Understand ARM processor fundamentals. 11. Understand C compiler and optimization 12. Grasp an understanding of Interrupt handling schemes and Real-Time operating systems
17	MECS- 602	Object Oriented Analysis & Design	9. Ability of students to understand the development of a system by following object oriented life cycle. 10. Ability of students to understand Object oriented analysis and applications of analysis patterns. 11. Ability of students to understand object oriented design and applications of design patterns. 12. Ability of students to develop systems through object oriented methodology.
18	MEEC-604	Advanced Signal Processing	9. Understand time domain and frequency domain representation and analysis of the Linear Shift Invariant Systems 10. Design and analyze FIR and IIR filter 11. Understand FFT algorithms, Multirate signal processing 12. Explain Parametric and non-parametric methods for Power Spectrum Analysis
19	MECS- 604	Advanced Database Management System	9. To review the basics of database management system along with database design and query languages 10. To introduce to the students the concepts of query processing and optimization and transaction processing 11. To introduce to the students the concepts of distributed databases, client server databases, object oriented and object relational databases 12. To introduce to the students to data warehousing, data mining, multimedia and web databases
20	MEEC-606	Advanced VLSI Design	9. Understand the operation, device structure, design equation and fabrication steps of MOS devices. Understanding of design rules and scaling issues in MOS devices 10. Understand and analyse the performance of CMOS Inverter circuit. To design any given combinational logic with CMOS, pseudo NMOS, PTL and Transmission gate. Understand the concept of transistor sizing. 11. To design and understand various sequential circuit with CMOS. Design the complex sequential circuit with transmission gate concept. Understanding the operation of advanced dynamic logic circuits and associated non ideal effects. 12. To study the design styles, design concept for efficient VLSI system design. Understand the clock generation and distribution for VLSI circuits. To understand the design and operation of SRAM /DRAM cells. Understand the design of adder and multiplier circuits

Sr.No.	Paper Code	Paper Name	Course Outcomes
21	MECS-606	Advance Algorithm Analysis & Design	9. To understand the methodology of dynamic programming & Greedy Strategy and their comparison in terms of guaranteed optimized solutions. 10. To understand various graph theory concepts and computational geometry. 11. To understand various matrix operations, Polynomial and number–theoretic algorithms. 12. To understand NP-complete problems and approximation algorithm as a case study to solve NP complete problems.
22	MECS-608	Software Requirements & Estimation	9. Gain knowledge about software requirements. 10. Analyze requirement elicitation techniques and prototyping. 11. Gain knowledge about requirement management, their principles and practices and analyze use case modeling and different data diagrams. 12. Estimating the software in terms of size, cost, effort and schedule.
23	MECS-610	Network Programming	9. Ability of students to understand file formats, I/O and inodes 10. Ability of students to understand polling, interrupts and message queues 11. Ability of students to understand client/server, concurrent and iterative servers 12. Ability of students to understand the network programming for XDR and RPC
24	MECS-612	Soft Computing	9. Understand soft computing techniques like Neural Networks and their role in problem solving. 10. Conceptualize and parameterize various problems to be solved through basic soft computing techniques in Fuzzy systems 11. Analyze and integrate various Evolutionary algorithms in order to solve problems effectively and efficiently. 12. Understand use of Rough sets and Hybrid Systems in problem solving
25	MESP-612	Processing	11. Ability of students to understand concept of fundamental steps in digital image processing, image sampling, quantization, image compression and enhancement techniques. 12. Ability of students to understand the concept of image restoration and segmentation techniques. 13. Ability of students to understand various concepts of image techniques. 14. Ability of students to understand the concept of image morphological processing.
26	MECS-614	Modelling & Simulation	10. Understand the definition of System, models and its types 11. Students will understand the techniques of modeling and different types of simulation techniques 12. Understand the fundamental logic, structure, components and management of simulation modeling 13. Students will learn to simulate the models for the purpose of optimum control by using different software

Sr.No.	Paper Code	Paper Name	Course Outcomes
27	MECS-616	Software Metrics	9. The students would acquire basic knowledge of measurement in Software engineering 10. The would also exemplify Quality measurement and metrics, Quality plan and implementation 11. They would articulate Quality control and reliability of quality process and software measurement and also articulate Complexity metrics and analyzing software measurement data 12. They would be able to control and manage the project and processes, apply configuration management on the basis of collected metrics and aspects of quality
28	MECS- 620	Distributed Computing	9. The students would be able to define and explain the distributed parallel computing environment 10. The students would be able to demonstrate the access of remote objects for the service 11. The students would be able to organize processes in a distributed systems 12. The students would be able to define and explain the functionalities of parallel systems
29	MEIT-608	Web Semantics	10. To be able to understand the evolution of Semantic Web as next generation web. To describe and Analyze different layers of Semantic Web Architecture. 11. Illustrate various technologies and tools of Semantic Web. To be able to describe representation of semantic web data using RDF, RDFS. 12. To be able to describe the need and features of Ontology for incorporating semantics to develop Knowledge base along with various issues and tools of Ontology. 13. To be familiar with services and applications of web semantics in real world with different latest technologies
30	MECS-701	Advanced Data Warehousing & Data Mining	9. Understanding Data Warehouse concepts and Data Warehousing architecture. 10. Design a Data Warehouse at Logical Level using multidimensional dimension modeling. 11. Implementing Data Warehouse through Data Cubes. 12. Evaluate and select appropriate data-mining algorithms and apply, interpret and report the output appropriately
31	MEIT-703	Information Theory & Coding	9. Ability of students to understand true meaning of Information and Entropy 10. Ability of students to understand three aspects of information i.e. compression, error control and security. 11. Ability of students to understand various coding techniques and implementation 12. Ability of students to understand fundamentals of cryptography
32	MECS-703	Advanced Software Testing	9. To understand the key techniques and tools in software testing. 10. Ability to develop and execute the test plans. 11. To gain knowledge of how to lower the time and cost of software testing while increasing the software quality. 12. Ability to conduct object-oriented and web software testing. To study the fundamental principles and practices associated with agile testing.

Sr.No.	Paper Code	Paper Name	Course Outcomes
33	MEIT-705	Reliability Engineering	9. Ability of students to understand the concepts of reliability and to perform reliability based data analysis. 10. Ability of students to evaluate and predict reliability of a system using different methods. 11. Ability of students to understand maintainability, its factors, and different kinds of availability 12. Ability of students to perform life testing of equipments, modelling and prediction of human reliability.
34	MECS -705	Cloud Computing	9. Ability of students to understand the meaning and purpose of Cloud Computing. 10. Ability of students to understand Web Services, Mashups, SOAP 11. Ability of students to understand concept of Big Tables, File System and Map Reduce Model 12. Ability of students to understand QoS, Inter Cloud Issues and Security.
35	MECS-707	E- Commerce & Applications	10. Ability of students to understand the meaning and purpose of ECOMMERCE transactions. 11. Ability of students to understand various Business Models like :- B2B,B2G,GTC etc. 12. Ability of students to understand concept of Payment Gateways 13. Ability of students to understand to understand fundamentals of Web Marketing and CRM.
36	MEEC-707	Artificial Neural Networks	10. Understand Analogy of Biological neural Networks with ANN, Neural models and learning Paradigms and perceptrons 11. Explain Feed forward networks, Back propagation algorithm and its mapping capability 12. Acquaint with unsupervised learning approaches: PCA, SOM, and LVQ 13. Acquire knowledge about Hopfield networks, associative memories, hybrid networks, applications of neural networks
37	MECS-709	Information Storage & Management	9. The students would be able to search, retrieve and synthesize information from a variety of systems and sources. 10. The students would be able to evaluate systems and technologies in terms of quality, functionality, cost-effectiveness and adherence to professional standards. 11. The students would be able to integrate emerging technologies into professional practice. 12. The students would be able to apply theory and principles to diverse information contexts.
38	MECS-711	Software Quality Management	10. Ability of students to understand software quality, Software quality assurance, SQA techniques and issues. 11. Ability of students to apply Software quality assurance program, evaluation types, and configuration management. 12. Ability of students to apply error reporting and trend analysis. 13. Ability of students to apply corrective actions, software quality programme planning, and social factors.

Sr.No.	Paper Code	Paper Name	Course Outcomes
39	MECS-713	Advanced Signal Processing	10. The students would know the analysis of discrete time signals. 11. The students would be able to study the modern digital signal processing algorithms and applications. 12. The students would have an in-depth knowledge of use of digital systems in real time applications and estimation of power spectrum 13. The students would be able to apply the algorithms for wide area of recent applications and parametric modeling methods
40	MECS-715	Advanced Multimedia	1. Ability to understand the concept and applications of multimedia and its making. 2. Ability to understand and perform different compression techniques for Text, Image, Audio and Video. 3. Student should be able to understand and create models using NURBS and polygonal modeling and impart movements in it using different animation techniques. 4. Should be able to use dynamics in created model to make movements realistic and make the character appearance realistic.
41	MECS-717	Cyber Crime Investigations and Cyber Forensics	1. Ability of students to understand the risk and issues of cyber-crime. 2. Ability of students to understand the cyber-crime types 3. Ability of students to understand about tools to be used in Cyber Forensics. 4. Ability of students to understand fundamentals of cryptography, Incident Response and evidence seizing process.
42	MECS-719	Distributed Databases	1. The students would be able to identify the introductory distributed database concepts and its structures. 2. The students would be able to describe terms related to distributed query processing and optimization. 3. The students would be able to produce the transaction management and concurrency control techniques in DDBMS. 4. The students would be able to relate the importance and application of emerging database technology and reliable design.
43	MECS-721	Network Management	1. Understand general concepts and architecture behind standards based network management 2. Understand concepts and terminology associated with SNMP and RMON 3. Understand theoretical and practical knowledge of Telecommunications Management Network 4. Understand Network Management Tools and Systems and Internet Technologies used for network management
44	MEEC-705	Embedded Systems & RTOS	1. Get overview of embedded systems design (ESD) and Role of Real-Time Operating System and issues in Real-time Computing: Architecture, Structure, Properties and performance measures, 2. Understand Real-Time Scheduling & Priority-Driven Scheduling of Periodic Tasks 3. Understand Scheduling Aperiodic and Sporadic Jobs in Priority-Driven systems 4. Acquaint with Resource and Resource Access Control & Multiprocessor scheduling, resource access control and synchronization

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Master of Computer Applications (Software Engineering)

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Programme Outcomes

1. Computational Knowledge: Apply knowledge of computing fundamentals, computing specialisation, mathematics, and domain knowledge appropriate for the computing specialisation to the abstraction and conceptualisation of computing models from defined problems and requirements.

2. Problem Analysis: Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.

3. Design /Development of Solutions: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

4. Conduct Investigations of Complex Computing Problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. Modern Tool Usage: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

6. Professional Ethics: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.

7. Life-long Learning: Recognise the need, and have the ability, to engage in independent learning for continual development as a computing professional.

8. Project management and finance: Demonstrate knowledge and understanding of the computing and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

9. Communication Efficacy: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

10. Societal and Environmental Concern: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global con-texts, and the consequential responsibilities relevant to professional computing practice.

11. Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environ-ments.

12. Innovation and Entrepreneurship: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large

Programme Educational Objectives

PEO1: Exhibit professional competencies and knowledge for being a successful technocrat.
PEO2: Adopt creative and innovative practices to solve real-life complex problems.
PEO3: Be a lifelong learner and contribute effectively to the betterment of the society.
PEO4: Be effective and inspiring leader for fellow professionals and face the challenges of the rapidly changing multi dimensional, contemporary world.

Table 1: Course Outcomes for (Theory and associated practical courses).

Sr.No.	Paper Code	Paper Name	Course Outcomes
1	IT601	Information Technology	13. Understand the types of machine architectures in a qualitative manner 14. Understand the concept of structured approach to problem solving and overview of common operating systems 15. Understand representation of signals and their communication processes. 16. Understand the working principles of the internet, www and communication systems
2	IT603	Computer Architecture	13. Understand the von Neumann model and digital circuits. 14. Understand number representation and manipulation by a computer. 15. Understand basic computer architecture for an appreciation of how a computer works. 16. Understand the interconnection of I/O devices an
3	IT605	Programming and Data Structure	12. Ability to program in 'C' 13. Ability to use the standard 'C" libraries. 14. Ability to implement stack, queues, linked lists, prefix, infix and postfix conversions and expression evaluation in 'C'. 15. Ability to implement trees and operation on them, and also graphs and traversal algorithms in 'C'
4	IT607	Foundations of computer Science	13. Ability to use formal logic to present a mathematical proof. Ability to perform deductive as well as inductive proofs. 14. Understand the properties and usage of the mathematical structures and principles: Sets, operations on sets, counting principles (combinatorics), relations and functions. 15. Understand lattices and Boolean algebra. And, also the properties of recurrence relations and growth of functions for analysis of algorithms. 16. Understand elementary number theory and its applications. 17. Understand the properties of the graph structures and the algorithms defined on the graph structure like spanning tree, minimal path etc.
5	BA609	Mathematics – I	13. Understand concepts of probability. 14. Understand concept of random variables and for standard distributions evaluate moments and measures of central tendency, dispersion, sknewness and kurtosis 15. Ability to use tests of hypothesis
6	IT602	Software Engineering	13. Ability to differentiate between various Software Development Life Cycle (SDLC) Models and Requirement elicitation. 14. Ability to define, formulate and analyse a problem. 15. Ability to analyse, design, verify, validate, software systems. 16. Ability to construct software of high quality – software that is reliable, and that is reasonably easy to understand, modify and maintain.
7	IT604	Database Management Systems	13. Ability to understand advantages of database systems and use them 14. Ability to design databases for specific use. 15. Ability to write programs in SQL and PL/SQL for data processing. 16. Understand principles of good database design and transaction processing.

Sr.No.	Paper Code	Paper Name	Course Outcomes
8	IT606	Object Oriented Programming	13. Ability to describe the important concepts of object oriented programming like object and class, Encapsulation, inheritance and polymorphism. 14. Ability to write the simple object oriented programs in C++, use features of C++ like type conversion, inheritance, polymorphism, I/O streams and files to develop programs for real life problems. 15. Ability to use advance features like templates and exception to make programs supporting reusability and sophistication. 16. Ability to use standard template library for faster development. 17. Ability to develop applications using object oriented programming with C++.
9	MS608	Organizational Behaviour	13. Have an understanding of management principles and processes. 14. Have an understanding of the organizational structure and processes 15. Understand the behavioural dynamics in an organization. 16. Understand how decisions are made in an organization.
10	BA610	Mathematics - II	13. Ability to solve linear programming problems using simplex, dual simplex and solve transportation and assignment problems 14. Ability to solve integer programming problems 15. Ability to understand and manage an inventory 16. Ability to use CPM/PERT for project management
11	IT701	Java Programming	13. Understand and gain knowledge of characteristics of java, its compilation, JVM as an emulator, instruction set, control flow, programming and the sandbox model. 14. Learn the fundamentals of java programming and will apply the knowledge of exceptional handling in writing the program. Clearly understand the concepts like wrapper classes inheritance. 15. Have sufficient knowledge about threads & thread synchronization and will thoroughly understand the AWT components and event handling mechanism. 16. Have a clear understanding of concepts of I/O streams, IDBC, object serialization, sockets, RMI, JNI, Collection API interfaces, Vector, Stack, Hash table classes, list etc
13	IT703	Algorithm Analysis and Design	13. Ability to understand time complexity and disjoint sets. 14. Ability to differentiate between dynamic programming and greedy programming methodologies. 15. Have a knowledge of graphs and applications of graphs. 16. Have basic knowledge of string matching and NP complete problems using few examples of NP complete problems
14	IT705	Web Technology	13. Identify the concepts of web technology. 14. Construct web-based applications using ASPPHP and JSP for given scenarios. 15. Examine the use of session management, error handling, authentication, etc. in web application development. 16. Design interoperable web-services

Sr.No.	Paper Code	Paper Name	Course Outcomes
14	IT707	Computer Networks	13. Understand the concepts of computer networks, OSI model and TCP/IP model. 14. Understand the physical layer concepts and signal encoding/decoding techniques. 15. Understand the data link layer functions and protocols. 16. Understand principles of communication systems
15	IT709	Operating Systems	13. Understand OS types, and process management techniques. 14. Understand CPU scheduling and process synchronization techniques. 15. Understand Primary and Secondary memory management techniques. 16. Understand techniques for file system management and system security and protection.
16	IT702	Data Warehousing and Data Mining	13. Define business analysis principles using data warehousing concepts. 14. Interpret dimensional modelling for construction of BI applications. 15. Utilize data mining concepts for business analytics. 16. Inspect data mining techniques to build analytical models for given case studies.
17	IT704	Object Oriented Software Engineering	13. Ability to dentify requirements, analyze and prepare models. 14. Ability to select a suitable architecture for the project. Also plan, schedule and track the progress of the project. 15. Ability to design and develop software project and understand the maintenance concept of object oriented systems. 16. Ability to apply testing principles on object oriented software project and understand the methods to determine reliability in software
18	IT706	Computer Graphics	13. Define the Graphics primitives and their applications. 14. Apply the principles of 2D and 3D primitives to generate graphics. 15. Construct scene with different clipping methods, and transform it to graphics display device. 16. Discover various rendering and shading techniques.
19	IT708	Enterprise Computing in Java	13. Explain Java EE architectural components, Servlet creation and session management for web applications. 14. Apply concepts of JavaServer Pages (JSP) and Struts for web-based applications. 15. Appraise Enterprise JavaBean (EJB) architectural components and different types of EJBs. 16. Design reusable software components using EJB to implement business logic for an enterprise application.
20	IT710	Microprocessors	13. Explain the basics of 8086 microprocessor family and assembly language program development. (14. Identify standard structure of 8086 assembly programs and develop programs using procedural constructs. 15. Analyze 8086 system connections, timings and troubleshooting. 16. Assess the interfacing of 8086 with 8255, 8254, 8251, etc.

Sr.No.	Paper Code	Paper Name	Course Outcomes
21	IT716	Digital Signal Processing	13. Ability to analyse Continuous and Discrete time signals/systems and evaluate the frequency response of a discrete time signals/ systems using fourier transforms. 14. Ability to calculate Z-transforms for discrete time signals and system functions. 15. Ability to develop Fast Fourier Transform (FFT) algorithms for faster realization of signals and systems. 16. Ability to understand the design of Digital IIR filters and Digital FIR filter.
22	IT720	.Net Programming	15. Understand the programming paradigm of .Net 16. Ability to program in C# 17. Ability to design windows forms based applications and implement them in C#. 18. Ability to connect with a DBMS for data driven application programming
23	IT801	Software Verification, Validation & Testing	14. Identify the concepts of software testing and its applications through the software life cycle. 15. Discover appropriate software test cases for different stages of the software development life cycle. 16. Evaluate efficiency of the test cases using various testing techniques on chosen specification. 17. Elaborate the advanced software testing techniques and their issues, challenges, and solutions.
24	IT803	Linux administration and Programming	13. Model utilities in Linux system and its configuration. 14. Identify networking concepts in Linux. 15. Inspect resource management features and IPC in Linux. 16. Create quality shell scripts
25	IT805	Advanced Computer Networks	13. Understand network layer and routing protocols. 14. Understand network address resolution protocols and IPV6. Understand transport layer protocols. 15. Understand different application layer protocols. 16. Understand security issues and protection methods in TCP/IP. 17. Ability to design and implement a computer network
26	IT807	Multimedia Applications	14. Understand the components of a multimedia system and their applications 15. Ability to do animation programming in Maya. 16. Understand NURBS, and other modelling techniques. 17. Ability to render and introduce special effects in a multimedia application (in Maya)
27	IT815	Software Project Management	13. Develop a basic understanding of problems associated with software project management. 14. Understand various stages of project development and the techniques used for project planning. 15. Understand risk management and change control management 16. Gain an insight to measurement of project progress and effectively implement the project plans using various software project management tools.

Sr.No.	Paper Code	Paper Name	Course Outcomes
28	IT825	Artificial Intelligence	13. Understand AI, and use state space search, heuristic search and control strategies. 14. Understand and use knowledge representation, statistical reasoning. 15. Understand and use non-monotonic reasoning 16. Understand the principles and working of expert systems.
29	IT829	Software Quality Management	13. Understand the concept of SQA 14. Ability to design an SQA system 15. Ability and understanding of SQA evaluation and configuration process 16. Ability to measure and report errors with their analysis for better management