मेडी-केप्स विश्वविद्यालय, इन्दौर
Medi-Caps University, Indore

Program outcome (PO) of all programs

मेडी-केप्स विश्वविद्यालय, इन्दौर

Medi-Caps University, Indore

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Program Outcomes - B.Tech.

PO01	**Engineering knowledge:** Apply the knowledge of mathematics, science, engineering, fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO02	**Problem analysis:** Identify, formulate, review, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO03	**Design / development of solutions:** 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.
PO04	**Conduct investigations of complex 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.
PO05	**Modern tool usage:** 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.
PO06	**The engineer and society:** 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.
PO07	**Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO08	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO09	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** 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.

PO_{11}	**Project management and finance:** 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.
PO_{12}	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Outcomes - M.Tech

P_{01}	Ability to devise, conduct experiments and apply simulation, analysis and design tools to problems so as to analyse and interpret data in Electrical and allied Engineering.
P_{02}	Ability to analyse complex engineering projects and design a component, a system or a process to meet the desired specification within the realistic constraints such as economics, energy, environment, ethics, health, safety and manufacturability in Electrical Engineering related to power systems.
P_{03}	Ability to analyse the impact of the professional engineering solutions in economic, energy, societal and environmental contexts and to spread the knowledge of, and for the need of sustainable development.
P_{04}	To solve professional, legal and ethical issues pertaining to core Electrical and allied engineering and its related field and to show commitment to ethical responsibilities.
P_{05}	Ability to communicate effectively along with ability to comprehend and write effective technical reports and deliver effective presentations.
P_{06}	Ability to function effectively as a team member or as a leader in multidisciplinary team and ability to engage in life-long learning.

Program Outcomes - Ph.D. Engineering	
PO01	Have a strong foundation in the fundamentals of basic as well as current scientific theories and their applications in real life.
PO02	Be capable in designing and carrying out scientific experiments related to electrical engineering and related areas, as well as accurately recording and analyzing the results of such experiments.
PO03	Have proficiency in analytical reasoning, critical thinking and problem solving, as applied to scientific problems.
PO04	Have ability of communicating the results of scientific work in oral, written and electronic formats to both scientists and masses at large.
PO05	Have skills to explore new areas of research in fields of science and technology.
PO06	Have an ability to adopt ethical practices in developing scientific solutions for the Environmental issues and key issues being faced by our society in energy, health and medicine.
PO07	Have ability to utilise research for addressing social, economic, and environmental problems.
PO08	Have ability to extend his/her research experiences in socio-economic and cultural development.
PO09	To function as a member of an interdisciplinary problem solving team.
PO10	Have ability of developing innovative and cost effective techniques and products.

Program Outcomes - BBA Management	
P_{01}	Identify and define problems and opportunities.
P_{02}	Demonstrate problem solving skills by gathering and assessing appropriate information.
P_{03}	Demonstrate use of appropriate techniques to effectively manage business challenges.
P_{04}	Effectively communicate management concepts, plans and decisions in oral and written form.
P_{05}	Demonstrate professional conduct within any team activities.
P_{06}	Write effective business documents.
P_{07}	Understand, prepare and deliver effective oral business presentations using a variety of appropriate technologies.
P_{08}	Identify and analyse social responsibility issues involving different stakeholders.
P_{09}	Develop viable alternatives and make effective decisions relating to social responsibility.
P_{10}	Demonstrate competency in the underlying concepts, theory and tools taught in the core undergraduate curriculum.
P_{11}	Devise appropriate strategies for their own ongoing professional development and implementation of these strategies upon successful completion.
P_{12}	Engage in independent and life-long learning in the broadest context of business and society.

Program Outcomes - MBA Management

P_{01}	Make data-driven decisions demonstrating the ability to identify alternatives and evaluate results.
P_{02}	Demonstrate leadership skills by identifying goals and directing followers toward them by providing the necessary information and resources to the team, clarifying performanceexpectations, and timeframes and by Empowering them.
P_{03}	Demonstrate an understanding of how global competitive environments are changing business practice.
P_{04}	Identify, compare and contrast cultural differences and how these differences affect best practice.
P_{05}	Demonstrating the ability to integrate management techniquesto aid planning and control in a changing environment
P_{06}	Understand how to effectively manage conflicts in organisations.
P_{07}	Demonstrate professionalism, self-awareness, leadership, and effective communication skills.
P_{08}	Understand ethical issues and dilemmas that businesses often face.
P_{09}	Describe current practices, issues, and concerns in business administration.
P_{10}	Understand the concepts of information technology (IT) and how IT can improve organizational performance.
P_{11}	Carry out a detailed literature search of business administration using relevant bibliographical resources from print and online resources.
P_{12}	Devise appropriate strategies for their own ongoing professional development and implementation of these strategies upon successful completion of the MBA.

Program Outcomes - B.Pharm

PO01	**Pharmacy Knowledge:** Apply knowledge of Pharmacy to find solution of various health related problems and understand principles and their applicationsin the area of Pharmaceutical Sciences.
PO02	**Technical Skills:** Develop an ability to use various instruments and equipmentswith in-depth knowledge on standard operating procedures (SOP) for the same.
PO03	**Modern tool usages:** Apply appropriate knowledge, resources and IT tools to complex health issues and medicine effect along with their limitations.
PO04	**Research and Development**: Demonstrate knowledge of identifying a problem, critical thinking and should provide rational solutions in various disciplines of Pharmaceutical Sciences.
PO05	**Lifelong Learning:** Develop an aptitude for continuous learning and professional development with ability to engage in pharmacy practice and healtheducation programs.
PO06	**Communication:** Communicate effectively on health care activities with the medical community and society at large, to comprehend drug regulations and provide drug information.
PO07	**The Pharmacist and Society**: Apply reasoning informed by the contextual knowledge to comprehend medical prescription, perform patient counselling andissue or receive clear instructions on drug safety and the consequentresponsibilities relevant to the professional pharmacy practice.
PO08	**Ethics:** Follow the code of ethics and commit to professional values and responsibilities and norms of the pharmacy practice.
PO09	**Individual and Teamwork:** Function effectively as an individual and as member or leader in diverse multidisciplinary settings.
PO10	**Environment and sustainability:** Understand the impact of pharmaceutical profession in society and environment context and demonstrate knowledge for need for the sustainable developments
PO11	**Project management and finance**: Demonstrate knowledge and understanding of management principles and apply these to work, as a member and leader in a team, to manage projects and multidisciplinary environments.
PO12	**Conduct investigation of complex problems**: Use research-based knowledge and methods including the design of experiments/analyses and interpretation ofdata to provide valid conclusions.

Program Outcomes - Ph.D. Pharmacy

PO01	Develop deep methodological skill and understanding of contemporary research in their respective area of emphasis and be able to implement innovative research practices under guidance of their faculty advisor and in concert with the research team.
PO02	Apply contemporary research in their respective area of emphasis to industry contexts and be able to engage in innovative practices informed by such research pertinent to pharmaceutical sciences and their area of emphasis in diverse contexts.
PO03	Complete dissertation and defend the same based on original investigation and supervised by their dissertation committee showing mastery of an area of emphasis within pharmaceutical sciences, and in capacity for independent research.
PO04	Prepare each student to actively participate in development and growth of Pharmaceutical Sciences in industry or in research and academics in University or research organization
PO05	Impart skill in handling and operation of instruments for research in Pharmaceutical Sciences.
PO06	Impart specialized practical skill and knowledge in different research areas of Pharmaceutical Sciences and develop research-oriented skills.
PO07	Integrate and apply knowledge of pharmaceutical and biomedical sciences towards problem solving in drug discovery and development.
PO08	Conduct research with skill and competence, including hypothesis development, experimental design, data analysis and interpretation.
PO09	Critically evaluate scientific literature, analyze contemporary scientific issues, and solve problems by scientific approach.
PO10	Demonstrate professionalism and ethical conduct in society.

Program Outcomes - Commerce

P_{01}	Identify and define the business problems and opportunities in changing global business environment.
P_{02}	Focus on social responsibility issues of different stake holders of society.
P_{03}	Develop commerce concepts and principles to address business development issues with competency.
P_{04}	Apply ethical principles, commit to professional ethics, responsibilities and business norms.
P_{05}	Demonstrate problem solving skills by gathering and analysing appropriate information.
P_{06}	Lead at global level successfully in a continuously changing business environment.
P_{07}	Effectively communicate business plans and decisions in oral and written form.
P_{08}	Use IT, analytical and research skills in planning, execution and monitoring the business.
P_{09}	Develop holistic approach by the contextual knowledge to assess social and cultural issues in concern with business practices.
P_{10}	Use various concepts and theories of commerce to sustainable development of business and society.
P_{11}	Develop self-confidence and provide a way of thinking about the general issues prevailing in the society.
P_{12}	Engage in independent and life-long learning in the broadest context of business and society.

Program Outcomes - B.Sc. Science/Agriculture	
P_{01}	Apply knowledge of sciences.
P_{02}	Design and conduct experiments, as well as to analyze and interpret data.
P_{03}	Design a system, component or process to meet desired needs within realistic constraints such as economic, environmental, social, political, criminal justice, ethical, healthy and safety, manufacturability and sustainability.
P_{04}	Acquire required skills, formulate and solve practical problems.
P_{05}	Understand of professional and ethical responsibility.
P_{06}	Communicate effectively.
P_{07}	Function in multidisciplinary teams.

Program Outcomes - Language

PO_{01}	Appreciate the plot construction, characterization and narrative technique in the context of varied novelists and their works.
PO_{02}	Analyse discourses of various genres about social, cultural, political and historical contexts.
PO_{03}	Accomplish themselves active readers who appreciate ambiguity and complexity, and who can articulate their own interpretations with an awareness and curiosity for other perspectives.
PO_{04}	Recognize and designate the nature and function of language as a human attribute, including language acquisition, language and society, language and culture, language and thought.
PO_{05}	Pen clearly, effectively and imaginatively and to accommodate writing style to the content and nature of the subject. Students shall be able to write effectively for a variety of professional and social settings. They will practice writing as a process of motivated inquiry, engaging other writers' ideas as they explore and develop their own.
PO_{06}	Scrutinize the structure and evolution of English words and texts from the point of view of morphology, phonology, grammar, syntax and semantics.
PO_{07}	Understand basic commands of computer and its functions in order to be able to format and create presentations.
PO_{08}	Acquire a wider aspect of personality development through communication skills and soft skills.
PO_{09}	Understand managerial concept and applying the same in practical life to increase employability.

Program Outcomes - M.Sc. Science

PO_1	Understand, analyse and critically evaluate the scientific problems.
PO_2	Design and conduct experiments to generate, analyze and interpret data of a system and process.
PO_3	Model, simulate and use the techniques, skills and modern scientific tools to solve the real-life problems.
PO_4	Understand the impact of scientific solutions in a global, economic, environmental and societal context.
PO_5	Adopt ethical practices in developing scientific solutions.
PO_6	Acquire analytical skills in organizing data or studying patterns and making decisions.
PO_7	Adapt for changes and innovations in technology and products.
PO_8	Function individually as well as in multidisciplinary teams.
PO_9	Establish effective communication with leadership quality within their profession their communities.
PO_{10}	Engage in life-long learning by adapting knowledge of contemporary issues.

Program Outcomes - Ph.D. Science

PO01	Have a strong foundation in the fundamentals of basic as well as current scientific theories and their applications in real life.
PO02	Equip with the skills to analyze problems, formulate a hypothesis, evaluate and validate results, and draw reasonable conclusions.
PO03	Articulate ideas and strategies for addressing a research problem.
PO04	Have proficiency in analytical reasoning, critical thinking and problem solving, as applied to scientific problems.
PO05	Effectively communicate research, through journal publications and conference presentations, to the community.
PO06	Have skills to explore new areas of research in fields of science and technology.
PO07	Have an ability to adopt ethical practices in developing scientific solutions for the key issues being faced by our society.
PO08	Develop an ability to identify unsolved yet relevant problem in a specific field.
PO09	Participate as a member of interdisciplinary problem-solving team.
PO10	Have an ability of developing innovative and cost-effective techniques and products.
PO11	Commit to the professionals, legal and social responsibilities of a researcher.
PO12	Develop an ability to engage in life-long learning by adapting knowledge of contemporary issues.

Program Outcomes - BCA Computer Science

PO_{01}	Design and develop reliable software applications for social needs and excel in IT enabled services.
PO_{02}	Analyze and identify the customer requirements in multidisciplinary domains, create high level design and implement robust software applications using latest technological skills.
PO_{03}	Understand computing principles and business practices in software solutions, outsourcing services, public and private sectors.
PO_{04}	Function effectively as an individual, and as a member or leader or project manager in project team.
PO_{05}	Adapt to new technologies and constantly upgrade their skills with an attitude towards independent and lifelong learning.
PO_{06}	Communicate effectively on complex activities and with the society at large and write effective documentation, make effective presentation and give and receive clear instructions.
PO_{07}	Effectively manage project work according to time scheduling, cost scheduling and also satisfy customer needs.
PO_{08}	Have ethical responsibilities, human and professional values and make their contribution to the society.
PO_{09}	Understand the impact of scientific solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Program Outcomes - Ph.D. Computer Science	
PO_{01}	Synthesize knowledge and contribute to original research that broadens the frontier of knowledge.
PO_{02}	Adapt practical skills leading to innovative ideas in the relevant field.
PO_{03}	Generate solutions to problems using scientific and critical thinking skills.
PO_{04}	Demonstrate leadership qualities through communicating and working effectively with peers and stakeholders.
PO_{05}	Relate ideas to societal issues in the relevant field.
PO_{06}	Conduct research with minimal supervision and adhere to legal, ethical and professional codes of practice.
PO_{07}	Manage information for lifelong learning.

Program Outcomes - MCA Computer Application

PO_{01}	An ability to apply knowledge of mathematics, computer science and management in practice
PO_{02}	An ability to identify, critically analyze, formulate and develop computer applications.
PO_{03}	An ability to design a computing system to meet desired needs within realistic constraints such as safety, security and applicability
PO_{04}	An ability to apply knowledge of design of experiment and data analysis to derive solutions in complex computing problems.
PO_{05}	An ability to select modern computing tools and techniques and use them with dexterity.
PO_{06}	An ability to recognize the social, professional, cultural and ethical issues involved in the use of computer technology and give them due consideration in developing software systems
PO_{07}	An ability to understand the impact of system solutions in a contemporary, global, economical, environmental, and societal context for sustainable development.
PO_{08}	Applying ethical principles and commitment to ethics of IT and software profession.
PO_{09}	An ability to work effectively as an individual as well as in teams.
PO_{10}	An ability to communicate effectively with technical community and society.
PO_{11}	Demonstrating and applying the knowledge of computer application and management principles in software project development and in multidisciplinary areas.
PO_{12}	An ability to appreciate the importance of goal setting and to recognize the need for life-long learning.

Program Outcomes - BCA+MCA Integrated Program (CA)

PO_{01}	Apply knowledge of mathematics, computer science and management in practice
PO_{02}	Design and develop reliable software applications for social needs and excel in IT enabled services.
PO_{03}	Identify, critically analyze, formulate and develop computer applications in multidisciplinary domain.
PO_{04}	Provide the students about computing principles and business practices in software solutions, outsourcing services, public and private sectors.
PO_{05}	Function effectively as an individual, and as a member or leader or project manager in project team.
PO_{06}	Adapt to new technologies, modern computing tools and constantly upgrade their skills with an attitude towards independent and lifelong learning.
PO_{07}	Communicate effectively on complex activities and with the society at large and writeeffective documentation, make effective presentation and give and receive clear instructions.
PO_{08}	Effectively manage project work according to time scheduling, cost scheduling and also satisfy customer needs.
PO_{09}	Have ethical principles, human and professional values of IT and software profession.
PO_{10}	Understand the impact of scientific solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO_{11}	Design a computing system to meet desired needs within realistic constraints such as safety, security and applicability.
PO_{12}	Apply knowledge of design of experiment and data analysis to derive solutions in complex computing problems.

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238. FT3EL11 Safety in Petroleum and Petrochemical Industries 202
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252. CS3ED04 Data Mining and Warehousing 210

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254. CS3ES12 Software Workshop-I Internet and Web Technology 211
255. CS3EW01 Internet and Web Technology 211
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260. OE00016 Block chain Architecture 214
261. OE00071 Server Administration 215
262. CS3CO15 Object Oriented Analysis & Design 215
263. EN3ES06 Computer Programming-I 216
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265. EN3ES06 Computer Programming 218
266. CS3EA01 Artificial Intelligence 218
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282. CS3CC11 Cloud Application Development 227

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362. AG3MC01 Human Values & Ethics 269
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366. AG3CO09 Soil and Water Conservation Engineering 271
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537. BC3EC06 Internet Technologies 364

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576. CE3CO18 Engineering Geology 383
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580. CE3CO21 Building Planning Drawing 385
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585. CE3CO10 Hydraulics and Hydraulic Machines 388
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587. CE3CO13 Geotechnical Engineering 389
588. CE3CO15 Quantity surveying & Estimation 389
589. CE3EL01 Environmental Engineering 390
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591. CE3CO07 Water Resources Engineering 391
592. CE3CO11 Structural Analysis -II 391
593. CE3CO14 Design of Steel Structures 392
594. CE3EC05 Construction Project Management 392
595. CE3EE09 Water Distribution System 393
596. EN3HS04 Fundamentals of Management, Economics and Accountancy 393
597. CE3EC01 Advanced Construction Equipment & Materials 394

598. CE3EC06 Construction Quality Control & Management 394
599. CE3EC02 Construction Law & Regulation 395
600. CE3ET02 Advanced Design of RCC Structures 395
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605. CE3ES04 Bridge Engineering 398
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607. CE3ES07 Experimental Stress Analysis 398
608. CE3ES08 Prestressed Concrete 399
609. CE3EE01 Air and Noise pollution 399
610. CE3EE02 Energy Efficient Buildings 400
611. CE3EE08 Solid Waste Management 400
612. CE3EC01 Advanced Construction Equipment & Materials 401

613. CE3EC03 Construction Equipment & Materials 401
614. CE3EC04 Construction Material Management 402
615. CE3EC06 Construction Quality Control & Management 402
616. CE3EC07 Construction Safety & Management 403
617. CE3EC08 Energy Conservation Techniques in Building Construction 403
618. CE3EE03 Environment and Energy Studies 404
619. CE3EE07 Planning for Sustainable Development 404
620. CE3EE06 Industrial Waste Water Management 404
621. CE3EE05 Hazardous & Bio Medical waste Management 405
622. EN3ES01 Basic Civil Engineering 405
623. CE5CS01 Theory of Elasticity 406
624. CE5CS02 Advanced Structural Analysis 406
625. CE5EL01 Advance Concrete Technology 407
626. CE5CS05 Structural Dynamics 407
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628. CE5EL02 Pre-Stressed Design of Concrete Structures 408
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631. EN3BS01 Engineering Mathematics –I 410
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633. EN3ES01 Basic Civil Engineering 411
634. EN3ES03 Basic Mechanical Engineering 411
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636. EN3ES07 Documentation and Presentation 412
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689. OE00059 Cyber Security 439
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691. OE00081 Robotics and Automation 440
692. EN5BS01 Advanced Mathematics 440
693. EC5CC01 Advanced Digital Communication 441
694. EC5CC02 Advanced Digital Signal Processing 441
695. EC5EL01 Wireless Mobile Communication 442
696. EN5RD01 Research Methodology 442
697. EC5MC01 Values and Ethics 443
698. EC5EL03 Advance Communication Networks 443
699. EC5CC06 Advanced Antenna Engineering 444
700. EC5CC05 Information Theory and Coding 444
701. EN5HS02 Technical Paper Writing 445
702. EC5EL02 VLSI for Wireless Communication 445

703. EN3ES17 BASIC ELECTRICAL ENGINEERING 446
704. EE3CO08 Microprocessors and Microcontrollers 446
705. EE3CO24 Advance Power System Analysis 447
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707. EX3EL12 Electric Vehicle 448
708. OE00049 Industrial Instrumentation and Sensor technology 448
709. EE3CO04 Electrical Machine-I 449
710. FT3CO11 Electrical Tech. & safety in electrical system 449
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712. EE3CO02 Power Electronics Devices & Circuits 450
713. EE3CO05 Magnetic Theory 451
714. EE3CO15 Linear Control System 451
715. EE3CO03 Electrical Measurement & Instrumentation 452
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730. EN3ES11 Principle of Electrical Engineering 460
731. EE3CO30 Analog Electronics 461
732. EE/EX3EW06 Introduction to Smart Grid 462

733. OE00066 Renewable and Photovoltaic System 462
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745. EN6EE02 Advance Power System Theory 468
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www.medicaps.ac.in • e-mail: info@medicaps.ac.in

1. MS6MS01 (T) Marketing Management

CO1	Understand and have a clear insight of marketing mix.
CO2	Deeper understanding of advanced marketing concepts
CO3	Identify and define pertinent research questions
CO4	Critically review the relevant literature and define appropriate methodology

2. MS6MS03 (T) Human Resource Management

CO1	Demonstrate proficiency in fundamental human resources theories and concepts and how they apply to real world situations
CO2	Develop an understanding of the challenges of human resources management and successfully manage and resolve conflicts.
CO3	Identify and define pertinent research questions
CO4	Critically review the relevant literature and define appropriate methodology

3. MS6MS02 (T)Corporate Finance

CO1	Understand modern concepts of corporate finance

CO2	Aapply modern models for the analysis of capital structure, dividend policy, the financial architecture of the company, financial corporate control and corporate governance
CO3	Identify and define pertinent research questions
CO4	Critically review the relevant literature and define appropriate methodology
CO5	Work with large volumes of numerical data

4. MS6RD01 (T)Research Methodology

CO1	Identify a business research problem and its ethical applications in business decisions with scientific approach
CO2	Formulate the business research designs for a real-life business research problem and understand the concept and importance of literature review.
CO3	Construct different types of testable hypotheses and interpret the statistical test outcomes.
CO4	Apply the various types of measurement scales and sampling techniques and their application in the context of business research before administering it to the respondents for data collection.

CO5	Analyze and apply various statistical tools to quantitative data with the use of statistical software (SPSS) and derive actionable inferences for business decision making.
CO6	Design a variety of data collection instruments for contemporary business research issues.
CO7	Prepare research report in desired format to present its findings for implementation of a business research project

5. MU6RD01 (T)Research & Publication Ethics

CO1	Analyse the concept and application of ethical practices in research and publication.
CO2	Have a basic knowledge of intellectual property rights and importance in research.
CO3	Specify scientific conduct and identify wrong practices in research
CO4	Analyse, specify and identification process of standard journals for publication.
CO5	Have a working knowledge of websites for funding process.
CO6	Perform help desk functions to answer user questions and provide user training on application software of palagrism and other research tool.
CO7	Knowledge of submission process of manuscript in research journals.
CO8	Implementation of ethical process and practices in conduction of research experiments/ data collection.

6. CM6CM01(T)Advance accounting & Finance

CO1	Analyse and solve valuation and investment problems
CO2	Work with large volumes of numerical data
CO3	Identify and define pertinent research questions
CO4	Critically review the relevant literature
CO5	Define an appropriate methodology

7. MS5CO01 Management Concepts and Applications

CO_{01}	Explain basic principles and concepts of management
CO_{02}	Outline the nature, purpose and principles of planning
CO_{03}	Apply the process of Management by Objectives (MBO) and Management by Exception (MBE).
CO_{04}	Identify resources and assess its optimum utilization.

CO_{05}	Justify inter and intra- departmental coordination and control.
CO_{06}	Design policies and strategies pertaining to achievement of organizational objectives.
CO_{07}	Recommend appropriate action and managerial decision.

8. MS5CO02 Managerial Economics

CO_{01}	Remember and understand the fundamental nature of managerial economics andcircular flow of income.
CO_{02}	Apply and analyze the various fundamental concepts and theories of managerial economics. They also able to analyze the impact of investment on the aggregatedemand and income of a country
CO_{03}	Understand and explain the consumer behaviour. They also able to analyze the association between demand, supply, price and income. They also able tocreate and evaluate an effective price plan.
CO_{04}	Remember and understand types of costs, production function- law of variable proportions, Iso-Quants, law of returns to scale, law of supply and economies & diseconomies of Scale. They also able to create a plan to achieve the optimumlevel of economies of scale.

CO_{05}	Understand price determination under various market structures, business cycles and stabilization policies. They also able to analyze the macroeconomic policy and create a business plan for the organization to cope up with the stabilizationpolicies and the current business environment

9. MS5CO04 Organizational Behavior

CO_{01}	Explain the basic concepts of Organizational Behavior and Culture
CO_{02}	Identify various challenges and opportunities of Organizational Behavior.
CO_{03}	Recognize and adopt the concept of Attitude, Personality and Perception followed in organizations.
CO_{04}	Apply various Motivational theories in organization.
CO_{05}	Analyze and implement Organizational Change.
CO_{06}	Design various Interpersonal Behavior such as group dynamics, managing team and leadership development.

10. MS5CO05 Business Mathematics and Statistics

CO_{01}	Students will be able to gain knowledge about applications of function in real life.
CO_{02}	Students will get the knowledge about evaluation of different types of limit.
CO_{03}	Students will get the knowledge about application of derivatives and integrations in management.
CO_{04}	Students will be able to use Statistics as a tool in managerial decision making.
CO_{05}	Students will be able to apply various concepts of probability, probability distributions and time-series for managerial decision making.

11. MS5CO06 Business Environment

CO_{01}	Explain concept of Business Environment and its elements to apply in changing business scenario of today's era

CO_{02}	Describe the Economic System of India and its different phases of industrial growth in the country with licencing policy and industrial policy 1991.
CO_{03}	Draw the solutions for problems of Public and private sector Industries. Impact on economy Of government plans
CO_{04}	Aware about the Public and Private sector in India and its evolution with impact of privatisation and liberalization on industrial growth
CO_{05}	Apply Knowledge of business activities to develop new opportunities at global level
CO_{06}	Analyze and apply various rules of Gatt for protection of FDI
CO_{07}	Find legal Remedies against fraud and ways to operate dispute free business organizations with the help of WTO and IMF

12. MS5SE02 Computer Application in Management

CO_{01}	The students will be accomplished to value the basic concepts of Computers.
CO_{02}	The students determination acquire proverbial among the different Software concepts and Operating systems.
CO_{03}	The students will get the awareness regarding Office Automation and Data Base Management concepts
CO_{04}	The student motivation acquire memorable with the various Presentation Tools.
CO_{05}	The student will recognize different applications of Internet in Business and Discuss the computer network and Digital signals for efficient access of information and data.

13. MS5SE06 Corporate Communication

CO_{01}	The students will be able to enhance confidence in their ability to read, comprehend, organize, and retain written and oral information. Improve their communication, learn professional communication skills.
CO_{02}	The students will be able to distinguish between professional communication and understand its importance
CO_{03}	The students will be able to improve upon their language skills, communication skills, group discussion, personality development and confidence level.
CO_{04}	The students will be able to bridge the language gap vital to their success and will be able to communicate effectively.
CO_{05}	The students will develop Report writing skills.

14. MS5CO17 Accounting For Manager

CO_{01}	Discussing the fundamental's principles & concepts of financial accounting.
CO_{02}	Identifying knowledge about the techniques for preparing final accounts in different business organizations.
CO_{03}	Executing to prepare analyses and interpret depreciation accounts & bank reconciliation statements.
CO_{04}	Describing the various cost concepts for implementing the right decisions for cost control & cost reduction
CO_{05}	Designing the various financial statements in accordance with management accounting for examine & selecting the information's

15. MS5SS01 Contemporary Issues in Management – I

CO_{01}	To understand and solve industry specific problems.
CO_{02}	To improve their decision-making skills.
CO_{03}	To identify potential opportunities in the Global market.

16. MS5CO07 Marketing Management

CO_{01}	Explain marketing concepts, tools and techniques to perform the marketing functions.
CO_{02}	Identify emerging marketing trends in the domestic and international markets.
CO_{03}	Describe the concepts related to product attributes, branding and pricing strategies.
CO_{04}	Justify the marketing strategies related to market segmentation, targeting and positioning with the marketplace needs and opportunities.
CO_{05}	Analyze the role of competition plays and how companies position themselves relative to competitors.
CO_{06}	Design the various tools and techniques of distributing and promoting the products in reaching out to the consumers.

17. MS5CO09 HUMAN RESOURCE MANAGEMENT

CO_{01}	Students will attain the concept of the Human Resource Management and the importance of HR in the organization.
CO_{02}	The course helps the students to reach the need of a Human Resource Management in an organization and attain the objective along with functions placed by HR in the organization.

CO_{03}	They will be able to achieve the concept of recruitment, selection and its process held by different organization and skill required so to get selected in any organization.
CO_{04}	They will be able to reach the concept performance appraisal, training and development and method used in performance appraisal and reward given after the appraisal in the organization.
CO_{05}	Students will be able to attain the compensation and employee retention approaches and strategies along the Industrial Relation with its issue and how those issues have been settle down.

18. MS5CO10 Operations Management

CO_{01}	Knowledge and Comprehension: Understand the core features of the operations and production management function at the operational and strategic levels, specifically the relationships between people, process, technology, productivity and quality and how it contributes to the competitiveness of firms.
CO_{02}	Explain the various parts of the operations and production management processes and¬ their interaction with other business functions (strategy, engineering, finance, marketing, HRM, project management and innovation)
CO_{03}	Intellectual Skills (Analysis and Synthesis) Students will develop an integrated framework for strategic thinking and decision making
CO_{04}	Be ready to engage in a career path into senior operational management that can eventually lead to a C-Level role in a small to very large enterprise

CO_{05}	Practical Skills (Application and Evaluation) Students will be able: Develop the ability to identify operational methodologies to assess and improve an organizations performance
CO_{06}	Assess the OPM function performance and capabilities in various organizations
CO_{07}	To gather, organize and deploy evidence, data and information to make decisions.
CO08	To plan and carry out work independently and to be self-disciplined and self-directed.
CO09	To develop the skills of insight and critical evaluation.

19. MS5CO11 Operations Research

CO_{01}	Recognize the importance and value of Operations Research and its applications in business decisions with scientific approach. Formulate real-world problems as a linear programming model and demonstrate process of graphical, simplex method manually.
CO_{02}	Describe the theoretical workings of transportation and assignment problems, demonstrate solution process manually.

CO_{03}	Apply different queuing models for different queuing situations and apply concept of markov theory in business application
CO_{04}	Apply the knowledge of game theory concepts to articulate real-world decision situations for identifying, analyzing, and practicing strategic decisions to counter the consequences And Simulate different real life probabilistic situations using Monte Carlo simulation technique
CO_{05}	Apply the concept of different replacement models in business applications.

20. MS5CO12 Legal Aspects of Business

CO_{01}	The students will understand the legally importance & existence of making a contract in daily business life.
CO_{02}	The students will get familiar with the compliances of contract of sale in commercial transactions.
CO_{03}	The students will get the knowledge about using various negotiable instruments and their utility.
CO_{04}	The student will get familiar with the consumer protection arrangements and rights.

CO_{05}	The student will understand the Information Technology uses for business.

21. MS5CO13 Business Research Methods

CO_{01}	Identify a business research problem and its ethical applications in business decisions with scientific approach.
CO_{02}	Formulate the business research designs for a real-life business research problem and understand the concept and importance of literature review.
CO_{03}	Construct different types of testable hypotheses and interpret the statistical test outcomes.
CO_{04}	Apply the various types of measurement scales and sampling techniques and their application in the context of business research before administering it to the respondents for data collection.

CO_{05}	Analyze and apply various statistical tools to quantitative data with the use of statistical software (SPSS) and derive actionable inferences for business decision making.
CO_{06}	Design a variety of data collection instruments for contemporary business research issues.
CO_{07}	Prepare research report in desired format to present its findings for implementation of a business research project.

22. MS5CO18 Corporate Finance

CO_{01}	Students will learn basic concepts of corporate finance and Time Value of Money.
CO_{02}	Students will understand the different sources of finance, leasing & Hire purchasing.
CO_{03}	Students will understand the cost of different sources of finance.
CO_{04}	Students will develop the understanding of Working Capital Management.

CO_{05}	Students will study the concept of dividend and leverage.

23. MS5SE03 Entrepreneurship

CO_{01}	To develop Entrepreneurship Skills in the Students
CO_{02}	To inculcate the spirit and perspective of entrepreneurship among students
CO_{03}	To make the students aware about various methods of becoming entrepreneurs.
CO_{04}	To enable the students to critically examine and handle issues in entrepreneurship
CO_{05}	To familiarize the students about the role of government in entrepreneurship

24. MS5SS02 Contemporary Issues in Management – II

CO_{01}	To understand and solve industry specific problems.
CO_{02}	To improve their decision-making skills.

CO_{03}	To identify potential opportunities in the Global market.

25. MS5C014 Strategic Management

CO_{01}	Explain basic concepts and process of strategic management.
CO_{02}	Classify internal and external factors of business.
CO_{03}	Apply tools like SWOT, TOWS, VRIO and VCA in business.
CO_{04}	Analyze strengths, weaknesses, opportunities and threats of a business.
CO_{05}	Formulate strategies using various business tools.
CO_{06}	Evaluate performance of business.
CO_{07}	Recommend appropriate strategies for a business.

26. MS5CO15 Management Information System

CO_{01}	Explain the basic concepts and technologies used in the field of management information systems.
CO_{02}	Identify various decision-making models in solving business problems.
CO_{03}	Analyze information systems like DBMS and others to accomplish the information objectives of an organisation.
CO_{04}	Describe the concepts related to System analysis design and Decision support systems.
CO_{05}	Design different applications of Management Information Systems.

27. MS5EF01 Retail Banking

CO_{01}	They will understand the asset & liability management in retail Banking.
CO_{02}	Their knowledge will be increase by the using of various retail banking Products & services.

CO_{03}	Student will understand the various way of serving banking products & services to the Customer.
CO_{04}	Student will help to know about the customer relationship importance & marketing trends of banks.
CO_{05}	Student will get the knowledge about the recent Changes & developments of retail banking.

28. MS5EF02 Security Analysis and Portfolio Management

CO_{01}	Explain the fundamental principles of Investment.
CO_{02}	Familiarized with the Valuation of Investments.
CO_{03}	Have knowledge about the Security analysis and various theories related to it.
CO_{04}	Equipped with the Portfolio concept
CO_{05}	Have knowledge about the Portfolio Management process.

29. MS5EF07/ MS5ET11 International Finance

CO_{01}	To Inculcate Managerial skills in the students
CO_{02}	To inculcate the spirit and perspective of Cross border trade among students.
CO_{03}	To make students job creators instead of job seekers.
CO_{04}	To enable the students to manage the Multinational business organizations.
CO_{05}	To get the knowledge of international trade regulatory bodies, cross border currency.

30. MS5EM02 Sales and Channel Management

CO_{01}	Explain the basic concept of Sales & Channel Management.
CO_{02}	Examine different sales territories for better revenue generation
CO_{03}	Identify various distribution channel and their conflicts.
CO_{04}	Compare between digital and traditional sales.

CO_{05}	Recommend appropriate sales strategies for various Businesses.

31. MS5EM05 Social Media Marketing

CO_{01}	Explaining the basic concepts of social media marketing and comparing contemporary practices of Social Media Marketing on various platforms
CO_{02}	Communicating messages by developing content matching with needs of various platforms on social media
CO_{03}	Segmentation of the market to effectively target the prospects on various social media platforms.
CO_{04}	Assessing the outcome of marketing efforts by using analytical tools available for social media platforms
CO_{05}	Designing the social media campaign and selecting the appropriate mix of platforms for marketing on social media

32. MS5EM08/ MS5ET04 International Marketing

CO_{01}	Explain basic concepts of International Marketing.
CO_{02}	Classify International Environmental factors.
CO_{03}	Prepare export documentation.
CO_{04}	Formulate strategies related to International product and pricing.
CO_{05}	Recommend appropriate strategies for International product distribution and promotion.

33. MS5EH02 Organization Development

CO_{01}	Explain the various components of OD and their importance for organizations.
CO_{02}	Identify the theories and concepts that direct change approaches to managing organizational change and its implications for organizations.

CO_{03}	Adopt a consultant's perspective and be in a position to apply organizational development theories to a variety of organizational situations and contexts.
CO_{04}	Identify the key roles and responsibilities of an OD consultant needed to develop and sustain long-term OD interventions.
CO_{05}	Analyze and apply various OD interventions according to organisational situations and judge their usefulness against other change tools and techniques.
CO_{06}	Demonstrate/Gain knowledge of emerging aspects of OD approaches and techniques and their application in organisations.

34. MS5EH03 Industrial Relation and Employee Welfare

CO_{01}	To introduce the basic concepts, functions and processes of Industrial Relations and Employee Welfare.
CO_{02}	To create an awareness of the role, function and theories of Industrial Relations and Employee Welfare.

CO_{03}	To build awareness of certain important and critical issues in Industrial Relations and Employee Welfare..
CO_{04}	To develop an understanding of interaction pattern among labour, management and the organization.

35. MS5EH07 International HRM

CO_{01}	Identify and Understand issues and practices pertaining to the major HRM functions within the context of a multinational environment
CO_{02}	Recognize International staffing and training methods
CO_{03}	Describe the performance management and understand cultural differences
CO_{04}	Develop successful programs for international assignees (short term/long term)
CO_{05}	Understand issues and practices of repatriation

36. MS5OE01 Mutual Fund Management

CO_{01}	Explain concepts and functioning of mutual fund.
CO_{02}	Recognize the role of Securities and Exchange Board of India and fund risks.
CO_{03}	Identify types of mutual fund, documents required and associated risk.
CO_{04}	Analyze fund performance and elementary applicability of capital gain.
CO_{05}	Recommend investment schemes based on Investor needs, preferences and risk-profile.

37. MS5OE02 Customer Relationship Management

CO_{01}	Explain the elements of CRM and analyse customer's satisfaction models.
CO_{02}	Interpret the evolution of relationship marketing approach.
CO_{03}	Explore technological dimensions of CRM in business.

CO_{04}	Analyse the significance of database management in effective CRM.
CO_{05}	Review emerging concepts in CRM.
CO_{06}	Recommend appropriate tools for various businesses.

38. MS5OE11 Talent & Knowledge Management

CO_{01}	Explain the basic concept of Talent and Knowledge Management.
CO_{02}	Identify the critical success of talent management cycle.
CO_{03}	Recognize the talent acquisition element along with its impact on organization.
CO_{04}	Identify the selection errors and how to minimize those errors.
CO_{05}	Recognize and apply the action to hold the talented employee in the organization.
CO_{06}	Absorb the concept of Integrated reward philosophy.

39. MS5PC02 Project / Dissertation

CO_{01}	To understand and solve industry specific problems.
CO_{02}	To improve their research and decision-making skills.
CO_{03}	To identify potential opportunities in the Global market.
CO_{04}	To improve report making skills

40. MS5CO16 Income Tax practice and Management

CO_{01}	The students will understand the fundamentals provisions of Income tax.
CO_{02}	The students will get familiar with the calculating income from Salary & Different Provision.
CO_{03}	The students will get the knowledge about calculating income from House property.
CO_{04}	The student will get familiar with the calculating income from business and profession and Capital Gain .
CO_{05}	The student will understand the Return filing procedure &, Deduction available from gross total income.

41. MS5EM07 Consumer Behaviour

CO_{01}	Students will be able to explain consumer Behavior concepts, models and techniques to perform the marketing functions.
CO_{02}	Students will able to justify the consumer Behavior strategies related to understanding customer Behavior, and assist in segmentation, targeting and positioning with the marketplace needs and opportunities.
CO_{03}	Students will be able to describe the concepts related to different Behavioral and learning theories, factors affecting consumer Behavior and build strategies to achieve the long-term organizational marketing objectives.

CO_{04}	Students will be able to use various tools and techniques for understanding consumers and developing the products for the consumers.
CO_{05}	Students will be able to examine the relationship between consumer Behavior and market competition, and how companies position themselves relative to competitors by better understanding their consumers.
CO_{06}	Students will identify emerging consumer Behavior trends in the domestic and international markets.

42. MS5EM09 Service Marketing

CO_{01}	Explain the concept of service marketing and differentiate between service and goods.

CO_{02}	Illustrate concept of customer quality perception using various theoretical models.
CO_{03}	Apply theoretical knowledge of service marketing and its strategies into different service sectors
CO_{04}	Analyse internal, external and interactive marketing strategies.
CO_{05}	Determine service marketing strategies by critically evaluating seven components of services marketing mix.
CO_{06}	Design and manage service delivery processes.
CO_{07}	Formulate measurements of quality dimension in service.
CO8	Develop customer relationship management, feedback and recovery systems

43. MS5EM12/MS5ET10 Global Logistics & Supply Chain Management

CO_{01}	Student will be able to understand the concept of International trade, international infrastructure and concept of supply chain management.

CO_{02}	Student can explain IT and different methods of entry in international trade
CO_{03}	Student can use number of entry methods in international market as well as different payment methods.
CO_{04}	Student can differentiate supply chain distribution network in all stages of SCM.

44. MS5EH04 COMPENSATION MANAGEMENT

CO_{01}	Understand the fundamentals of design, funding, administration, and communication of compensation programs. And can explain different wage theories
CO_{02}	Student will be able to understand different incentive plans and understand the discrimination in labor market.
CO_{03}	Will be able to understanding of the wage policy and pay progression associated with compensation programs.
CO_{04}	Student will be able to explain the job analysis and job evaluation. Also can explain the role of wage board and method of payment to workers.

CO_{05}	How compensation fits within a total rewards strategy. Be able to analyse a compensation program internationaly, identify problem areas and make recommendations for improvement to the program.

45. MS5EH06 Strategic HRM

CO_{01}	Understand the basic SHRM concepts
CO_{02}	Understand the process of HR Planning and Performance
CO_{03}	Apply different methods of HR Strategies and Practices
CO_{04}	Apply Cross Cultural Training Programme in organization
CO_{05}	Analyzing Domestic and International labour market

46. MS5EH08 HRD Audit

CO_{01}	Explain the basic concept of HRD Audit in the organization.
CO_{02}	Identify the role of HRD audit in improving Business using various methods.
CO_{03}	Demonstrate the concept of OCTAPACE culture and establish the critical relationship with different management styles.
CO_{04}	Identify the need of competences and evaluate the competency of employee using HRD instruments.
CO_{05}	Design Balanced Scorecard and HR Scorecard.
CO_{06}	Prepare strategies and tool for HRD Audit.

47. MS5EF03 Financial Derivatives

CO_{01}	Students will learn basic concepts and types of Financial Derivatives.
CO_{02}	Students will understand the trading strategies and mechanism of Future Market.

CO_{03}	Students will understand the Options and different trading strategies using Options.
CO_{04}	Develop the understanding of Forward Markets and Trading Mechanism.
CO_{05}	Understand the basic concept of Swap, its nature and features.

48. MS5EF10 Merchant Banking

CO_{01}	Explain the basic concepts of Indian Financial System and Merchant Banking.
CO_{02}	Explain various SEBI norms in relation to merchant banking.
CO_{03}	Explain the basic concepts of Mergers and Acquisitions.
CO_{04}	Identify various challenges related issue management by merchant bankers.
CO_{05}	Identify various challenges and opportunities related mergers and acquisitions.

49. MS5ET06/MS5EF13 Export-Import Finance

CO_{01}	Understand the concept of various payment terms under Export Import trade.
CO_{02}	Familiar with the various sources of EXIM Finance.
CO_{03}	Analyze the mechanism of Pre-Shipment finance (Packing Credit).
CO_{04}	Evaluate the various Finance Scheme of EXIM Bank of India
CO_{05}	Describe the working mechanism & Role of Export Credit Guarantee Corporation

50. MS5ET09 Export-Import Documentation

CO_{01}	Explain the basic concept of Export and Import Documentation.
CO_{02}	Identify the critical Formalities for commencing - obtaining export/import licenses.
CO_{03}	Recognize the processing of export and customs formalities.
CO_{04}	Identify the Commercial (Principal and Auxiliary) and regulatory documents.
CO_{05}	Recognize and apply for Pre and Post Shipment credit shipment formalities and procedures.
CO_{06}	Absorb the Recent EXIM Policy and Provisions.

51. MS5OE07 Digital Marketing

CO_{01}	Explain the basic concepts of digital marketing.
CO_{02}	Describe the various web analytical process and introduction to E-Commerce.

CO_{03}	Formulate the various tools of Search Engine Marketing on digital podium.
CO_{04}	Analyse digital marketing strategies useful for Digital world.
CO_{05}	Design Google Analytics framework for various web sites.

52. MS5OE08 Principles and Practices of General Insurance

CO_{01}	Describe the concepts of General Insurance and its types
CO_{02}	Explain the Regulatory framework of General Insurance.
CO_{03}	Identify the function of different stakeholder such as Agent, Broker, Corporate Agent, Reinsurance Broker etc.
CO_{04}	Identify different kinds of risk associated with Fire, Marine, Health and other type of General Insurance.
CO_{05}	Explain the Process of Underwriting.

CO_{06}	Apply the claim settlement process in General Insurance.

53. MS5OE13 Labour Legislation

CO_{01}	Students will know the development and the judicial provisions of Labour Laws.
CO_{02}	They will learn the salient features of welfare and wage Legislations also to integrate the knowledge of Labour Law in General HRD Practice.
CO_{03}	Students will learn the laws relating to Industrial Relations, Social Security and Working conditions
CO_{04}	Students will learn the enquiry procedure and industrial discipline.
CO_{05}	Students about the various laws relating to Women, Children and Labour.

54. MS3SE08 Fundamentals of Digital Marketing

CO_{01}	Identify the economic variables in general business atmosphere.
CO_{02}	Comprehend Short Run and Long Run Equilibrium of a firm and industry
CO_{03}	Apply marginal cost to the "Firm", under different market conditions
CO_{04}	Analyze different market structure and various pricing techniques
CO_{05}	Create a business model to achieve its Break Even at earliest.

55. MS3CO01 Principles of Management and Organisational Behaviour

CO_{01}	To get acquainted students with the management and behavior of the organization.
CO_{02}	To provide sufficient knowledge about the company's behavior with the economy.
CO_{03}	To share information with students how can they become a leader when working in an organization with a positive attitude.
CO_{04}	To get acquainted students with the rules and regulations of the company and how to manage it with the Organization.

CO_{05}	To get acquainted students with the conditions, procedure and models, culture, and decision making in an organization.

56. MS3SS01 Financial Accounting

CO_{01}	understand the term bookkeeping, accounting and accountancy
CO_{02}	explore the term accounting: journal, subdivision of journal, ledger and trial balance
CO_{03}	learn how to prepare final accounts with basic adjustments
CO_{04}	gain the knowledge to prepare bank reconciliation statement and depreciation
CO_{05}	get acquainted to computerized accounting softwares

57. MS3EG03 Business Economics II

CO_{01}	Students will understand concepts and major issues of macroeconomics.
CO_{02}	The course will give the Students a broad view about the circular flow of income and measurement of national income.

CO_{03}	After the study of theory of employment, consumption and investment. Students will understand the association between these variables and have a broad sight that how these variables affect an economy.
CO_{04}	The course helps the students to understand the value of money and its price. In thatway they have a broad view about the change in money supply by the central bank.
CO_{05}	After having the acquaintance of business cycle, Inflation, monetary policy and fiscal policy students will be able to understand the real phenomenon of an economy and able to correlate the changes in the macro economic variables. Theyalso comprehend that how an economy gets the moment of higher economic growth.

58. MS3CO04 Business Environment

CO_{01}	To analyze the business environment of business.
CO_{02}	To identify the influential factors of specific business environment.
CO_{03}	To develop the strategies to address business environment issues.
CO_{04}	To device the organisation adaptive to external environmental factors.
CO_{05}	Acquit with the knowledge of global business environment.

59. MS3CO06 Financial Management

CO_{01}	Describe concept of finance and role of finance manager.
CO_{02}	Evaluate cost of capital, and Its impact by taxation, leverage and other factors.
CO_{03}	Explain capital structure and outline factors for optimum capital structure.
CO_{04}	Apply time-value calculations.
CO_{05}	Analyze various evaluation methods used in the process of capital budgeting.
CO_{06}	Estimate requirement of cash, receivables, Inventory and working capital.

60. MS3SE03 Business Communication II

CO_{01}	Recognize their ethical responsibilities to their community, society, discipline, and profession based on various perspectives and associated standards of ethical communication.
CO_{02}	Demonstrate intercultural sensitivity.
CO_{03}	Communicate appropriately and effectively within various organizational contexts.
CO_{04}	and effectively within groups.
CO_{05}	Demonstrate the ability to analyze a problem and devise a solution in a group.

CO_{06}	Capable of effectively monitoring, analyzing, and adjusting their own communication behavior.
CO_{07}	Demonstrate the ability to research, analyze, and reason from evidence to reach an effective conclusion or outcome.
CO_{08}	Demonstrate the ability to effectively deliver formal presentations before a variety of live audiences.
CO_{09}	Demonstrate proficiency in the use of written English, including proper spelling, grammar, and punctuation.
CO_{10}	Demonstrate proficiency in formal writing, including correct use of a designated style of source citation.
CO_{11}	Construct appropriate messages for a variety of contexts/situations.
CO_{12}	Utilize the various new techniques such as social media, latest technology for better communication

61. MS3EG05 Material Management

CO_{01}	Describe basic concepts and process of material management.
CO_{02}	Classify centralised and de-centralised Purchasing.

CO_{03}	Apply tools like ABC, VED, EOQ in Material Management.
CO_{04}	Analyze the criteria for selecting material handling equipment.
CO_{05}	Evaluate the different factors influencing Material Required planning
CO_{06}	Designing suitable Material Handling Procedure for prevention of breakdown.
CO_{07}	Recommend appropriate strategies for vender selection and vendor evaluation.

62. MS3CO07 Human Resource Management

CO_{01}	Understand the basic HR concepts
CO_{02}	Understand the process of recruitment, selection, performance appraisal, training & development, compensation and employee retention approaches and strategies
CO_{03}	Apply different methods of training
CO_{04}	Apply Job Evaluation Concepts in organization
CO_{05}	Implement Grievance handling procedure in organization.

63. MS3CO09 COST AND MANAGEMENT ACCOUNTING

CO_{01}	understand the term cost, costing and cost accounting
CO_{02}	explore the term cost, cost sheet and process costing
CO_{03}	learn how to control cost by different techniques and methods
CO_{04}	gain the knowledge to calculate marginal costing, PVR, BEP, CVPA, and MOS
CO_{05}	get acquainted to variance analysis of material and labor including budgeting

64. MS5CO10 Quantitative Techniques

CO_{01}	To Analyze the concept of time series for making managerial decisions
CO_{02}	To Apply Index Number for various real-life Problems
CO_{03}	To use concept of Probability in real world problem
CO_{04}	To use concept of Hypothesis for making Managerial Decisions
CO_{05}	To use decision theory to make decisions in real life problems.

65. MS3SE04 E-Commerce

CO_{01}	To learn E-commerce and its types.
CO_{02}	To apply the internet in E-commerce models.
CO_{03}	To make use of and understand the importance of EPS
CO_{04}	To understand the electronic data transfer and its features.
CO_{05}	To apply the various applications of internet and e-commerce in daily life like shopping, e-learning etc.

66. MS3EG07 Business Strategy

CO_{01}	Explain basic concepts and process of business strategy.
CO_{02}	Examine internal and external factors of business.
CO_{03}	Apply tools like SWOT, TOWS, VRIO and VCA in business.
CO_{04}	Analyze strengths, weaknesses, opportunities and threats of a business.
CO_{05}	Formulate strategies using various business tools.
CO_{06}	Assess performance of business.
CO_{07}	Recommend appropriate strategies for a business.

67. MS3CO11 Business Laws

CO_{01}	The students will understand the legally importance & existence of making a contract in daily business life.
CO_{02}	The students will get familiar with the compliances of contract of sale in commercial transactions.
CO_{03}	The students will get the knowledge about using various negotiable instruments and their utility.
CO_{04}	The student will get familiar with the consumer protection arrangements and rights.
CO_{05}	The student will understand the LLP.

68. MS3CO12 Business Taxation

CO_{01}	Students are able to understand Income Tax terminologies and provisions.
CO_{02}	Students are gaining knowledge about the various heads of Income Sources.
CO_{03}	Students are able to understand basis information for calculation of House Property.

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CO_{04}	Students are acquainted with the calculation of Business and Profession.
CO_{05}	Students are able to gaining basic knowledge of capital gain.

69. MS3CO13 Corporate Accounting

CO_{01}	Explain the basic concepts of issue and redemption of equity shares, preference shares and debentures.
CO_{02}	Explain various liquidation processes.
CO_{03}	Explain the basic concepts of preparation of final accounts of companies.
CO_{04}	The students will able to prepare the consolidated balance sheet of holding company with one subsidiary company.
CO_{05}	The students will get familiar with the process of Internal reconstruction of a company as per Indian Accounting Standard-14

70. MS3CO14 Research Methodology

CO_{01}	Describe the concepts of Research and its types

CO_{02}	Explain the Research Process
CO_{03}	Identify the different types of measurement scales.
CO_{04}	Identify different kinds of data collection methods.
CO_{05}	Apply the process of sampling.
CO_{06}	Apply the process of Report Writing.

71. MS3SE07 Business Communication-III

CO_{01}	Recognize their Professional as well as ethical responsibilities to their community, society, discipline, and profession based on various perspectives and associated standards of ethical communication.
CO_{02}	Demonstrate self confidence and boost up their moral .
CO_{03}	Prompt communicate within various organizational contexts.
CO_{04}	and effectively within groups.
CO_{05}	Demonstrate the ability to analyze a problem and devise a solution in a group.
CO_{06}	Capable of effectively monitoring, analyzing, and adjusting their own communication behavior.

CO_{07}	Demonstrate the ability to research, analyze, and reason from evidence to reach an effective conclusion or outcome.
CO_{08}	Demonstrate the ability to effectively deliver formal presentations before a variety of live audiences.
CO_{09}	Demonstrate proficiency in the use of written English, including proper spelling, grammar, and punctuation.
CO_{10}	Demonstrate proficiency in formal writing, including correct use of a designated style of source citation.
CO_{11}	Construct appropriate messages for a variety of contexts/situations.
CO_{12}	Utilize the various new techniques such as social media, latest technology for better communication

72. MS3EG06 Project Management

CO_{01}	to understand concept of Project Management.
CO_{02}	familiarized with the various technical feasibility component.
CO_{03}	familiarized with the various market feasibility component.
CO_{04}	have good knowledge about financial feasibility analysis element of project.

CO_{05}	Acquit about tools and techniques of project appraisal.

73. MS3EF01 Financial Markets & Institutions

CO_{01}	Describe basic concepts and process of Financial Market.
CO_{02}	Apply Financial Regulations of India in financial investments.
CO_{03}	Classify Capital Market in Primary and Secondary Market.
CO_{04}	Analyze the Money Market Instruments to manage short term money.
CO_{05}	Evaluate depository and Non depository Institutions with its role.

74. MS3EF04 Goods and Service Tax

CO_{01}	To get acquainted the students with the Goods & Service Tax Policy.
CO_{02}	To get acquainted the students with the registration process & levy of taxation
CO_{03}	To get acquainted the students with classification of goods & applicable rates of GST.
CO_{04}	To get acquainted the students with levy of composition & it's provisions.
CO_{05}	To get acquainted the students with the students with the Input Tax Credit provisions.

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75. MS3EM03 Internet & Digital Marketing

CO_{01}	Students will be able to understand the basic introduction of digital world.
CO_{02}	Students will be able to know about the various web analytical process and introduction to E-Commerce.
CO_{03}	Students will be aware about the use of Search Engine Marketing on digital podium.
CO_{04}	Students will be able to understand the importance of Social Media Marketing and it current trends.
CO_{05}	Students will get essential understanding about the Google Analytics and different kind of marketing strategies useful for Digital Marketing.

76. MS5ET06/MS5EF13 Export-Import Finance

CO_{01}	To Inculcate Management skills in the students.
CO_{02}	To inculcate the spirit and perspective of entrepreneurship among students.
CO_{03}	To make students understand diverse functional areas of EXIM management.

CO_{04}	To enable the students to manage the Financial management.
CO_{05}	To use the concepts of management, EXIM financial management structure.

77. MS3EG08 Supply Chain Management

CO_{01}	Students will attain the SCM concepts and the objective along with function of SCM
CO_{02}	The course helps the students to achieve the basic concept of distribution network in Supply Chain Management in an organization along with basic detail of hippment of product.
CO_{03}	They will be able to reach the concept of Push and Pull Based Supply Chain and Bullwhip effect in supply chain networks
CO_{04}	They will be able to attain the concept IT Framework, CRM & SRM in SCM.
CO_{05}	Students will be able to reach the concept of Logistics , its type and factors affecting the cost in the organization.

78. MS3SE08 Investment Analysis & Portfolio Management

CO_{01}	Describe basic concepts and process of Investment Banking.

CO_{02}	Apply Regulations of Capital Market of India.
CO_{03}	Classify Leasing and Hire Purchase for Financial Services.
CO_{04}	Analyze the Public Issue Management and process of new issue
CO_{05}	Evaluate debt securitization and Leasing hire purchase with its role.

79. MS3EM07 Customer Relationship Manager

CO_{01}	Maintain relationships with the customers in order to retain them.
CO_{02}	Understand importance of about Customer information database.
CO_{03}	Learn about elements of CRM & its process.
CO_{04}	Analyse the implementation of CRM in an organization.
CO_{05}	Learn about various e- CRM Solutions.

80. MS3EM08 International Marketing

CO_{01}	Explain basic concepts and process of International Marketing.
CO_{02}	Outline the different modes of entry in the International markets.

CO_{03}	Classify different approaches to product development, segmentation, positioning, branding and development of distribution channel.
CO_{04}	Analyze pricing strategies and methods of payment in International markets.
CO_{05}	Formulate communication strategies using various promotion mix tools.

81. MS3EH08 Organizational Development

CO_{01}	Explain the basic concept of organizational development.
CO_{02}	Identify the critical success of behavioral interventions.
CO_{03}	Recognize the action research and different theories of planned change.along with its impact on organization.
CO_{04}	Identify the competencies of an effective OD practitioner.
CO_{05}	Recognize and apply the techno-structure interventions and process of designing the effective interventions.
CO_{06}	Absorb the concept OD intervention and ethics in OD.

82. MS3ET10 Global Logistics and Supply chain management

CO_{01}	understand logistics concepts and basic activities, Know the history of Logistics. Define basic logistics activities. Associate logistics activities with other business activities.
CO_{02}	Student will learn how to reduce the logistics costs to minimum by applying the techniques of Industrial Engineering. Know the types of transportation in shipping industry and aviation industry.
CO_{03}	Become familiar with current supply chain management trends Understand and apply the current supply chain theories, practices and concepts utilizing case problem and how to use information technology in SCM s and problem-based learning situations.

83. MS3CO08 Marketing Management

CO_{01}	Students will be aware of the various concepts of Marketing
CO_{02}	Students will understand about the marketing environment and its scanning.
CO_{03}	Students will know the importance of Marketing Mix
CO_{04}	Students will have understanding about the Consumer Behaviour.

CO_{05}	Students will learn about Marketing Information System & Marketing Research

84. MS3CO09 COST AND MANAGEMENT ACCOUNTING

CO_{01}	understand the term cost, costing and cost accounting
CO_{02}	explore the term cost, cost sheet and process costing
CO_{03}	learn how to control cost by different techniques and methods
CO_{04}	gain the knowledge to calculate marginal costing, PVR, BEP, CVPA, and MOS
CO_{05}	get acquainted to variance analysis of material and labor including budgeting

85. MS3CO10 Quantitative Techniques

CO_{01}	To Analyze the concept of time series for making managerial decisions
CO_{02}	To Apply Index Number for various real-life Problems
CO_{03}	To use concept of Probability in real world problem
CO_{04}	To use concept of Hypothesis for making Managerial Decisions

CO_{05}	To use decision theory to make decisions in real life problems.

86. MS3SE04 E-Commerce

CO_{01}	To learn E-commerce and its types.
CO_{02}	To apply the internet in E-commerce models.
CO_{03}	To make use of and understand the importance of EPS
CO_{04}	To understand the electronic data transfer and its features.
CO_{05}	To apply the various applications of internet and e-commerce in daily life like shopping, e-learning etc.

87. MS3EG12 Social Media Marketing

CO_{01}	Exposed to Social Media Marketing world.
CO_{02}	Understand and learn the strategy formulation of social media.
CO_{03}	Learn the measurement tools of social media marketing
CO_{04}	Understand the analytic tools.

CO_{05}	Gain knowledge of issues related to social media marketing.

88. MS3CO11 Business Laws

CO_{01}	The students will understand the legally importance & existence of making a contract in daily business life.
CO_{02}	The students will get familiar with the compliances of contract of sale in commercial transactions.
CO_{03}	The students will get the knowledge about using various negotiable instruments and their utility.
CO_{04}	The student will get familiar with the consumer protection arrangements and rights.
CO_{05}	The student will understand the LLP.

89. MS3CO12 Business Taxation

CO_{01}	Students are able to understand Income Tax terminologies and provisions.
CO_{02}	Students are gaining knowledge about the various heads of Income Sources.
CO_{03}	Students are able to understand basis information for calculation of House Property.

CO_{04}	Students are acquainted with the calculation of Business and Profession.
CO_{05}	Students are able to gaining basic knowledge of capital gain.

90. MS3CO13 Corporate Accounting

CO_{01}	Explain the basic concepts of issue and redemption of equity shares, preference shares and debentures.
CO_{02}	Explain various liquidation processes.
CO_{03}	Explain the basic concepts of preparation of final accounts of companies.
CO_{04}	The students will able to prepare the consolidated balance sheet of holding company with one subsidiary company.
CO_{05}	The students will get familiar with the process of Internal reconstruction of a company as per Indian Accounting Standard-14

91. MS3CO14 Research Methodology

CO_{01}	Describe the concepts of Research and its types
CO_{02}	Explain the Research Process
CO_{03}	Identify the different types of measurement scales.
CO_{04}	Identify different kinds of data collection methods.
CO_{05}	Apply the process of sampling.

92. MS3SE05 Entrepreneurship

CO_{01}	To develop Entrepreneurship Skills in the Students
CO_{02}	To inculcate the spirit and perspective of entrepreneurship among students
CO_{03}	To make the students aware about various methods of becoming entrepreneurs.
CO_{04}	To enable the students to critically examine and handle issues in entrepreneurship
CO_{05}	To familiarize the students about the role of government in entrepreneurship

93. MS3EG06 Project Management

CO_{01}	to understand concept of Project Management.
CO_{02}	familiarized with the various technical feasibility component.
CO_{03}	familiarized with the various market feasibility component.
CO_{04}	have good knowledge about financial feasibility analysis element of project.
CO_{05}	Acquit about tools and techniques of project appraisal.

94. MS3ED01 Mobile Advertising

CO_{01}	Understanding of mobile marketing, including products and services, user behaviors and interests, potential costs and result oriented campaigns.
CO_{02}	Evaluate techniques of mobile sales promotions and campaign, targeting and tracking of customer relationships for business, with latest trends in mobile advertising.
CO_{03}	Evaluate and explain mobile analytics including metrics, key performance indicators and benchmarks.
CO_{04}	Evaluate mobile engagement opportunities with different types of user generated content, calculating the ROI of the same.

CO_{05}	Create and present a mobile advertising campaign plan that declares the appropriate strategy, tactics, and metrics.

95. MS3ED02 Management Information System

CO_{01}	Explain the basic concepts of management information systems.
CO_{02}	Describe various decision-making models of Information Systems.
CO_{03}	Analyse the role of information technology in management information systems.
CO_{04}	Describe the concepts related to DBMS and System Development Life Cycle.
CO_{05}	Design different applications of Management Information Systems.

96. MS3ED05 Content Marketing

CO_{01}	Explain the basic concepts of content & content marketing.
CO_{02}	Discuss the various strategies used to target audience on digital platform.
CO_{03}	Explore content creation framework for producing effective content on a consistent basis.
CO_{04}	Analyse the ways to distribute content on social media platform.

CO_{05}	Examine the tools and techniques to measure content.

97. MS3EG08 Supply Chain Management

CO_{01}	Students will attain the SCM concepts and the objective along with function of SCM
CO_{02}	The course helps the students to achieve the basic concept of distribution network in Supply Chain Management in an organization along with basic detail of hippment of product.
CO_{03}	They will be able to reach the concept of Push and Pull Based Supply Chain and Bullwhip effect in supply chain networks
CO_{04}	They will be able to attain the concept IT Framework, CRM & SRM in SCM.
CO_{05}	Students will be able to reach the concept of Logistics , its type and factors affecting the cost in the organization.

98. MS3ED07 Search Engine Optimisation

CO_{01}	learn how search engine works.

CO_{02}	understand the need of search engine optimization then learn and apply the best practices to optimise different search engine processes that generate organic results.
CO_{03}	learn how to use different available online tools for keyword research, website optimization, image optimization etc
CO_{04}	understand search engine marketing concepts (Pay-Pay-Click (PPC) marketing) and practice on Google Ads
CO_{05}	Develop website/blog using WordPress
CO_{06}	learn tools and techniques to monitor SEO processes

99. MS3ED08 Social and Web Analytics

CO_{01}	Explain the basic concepts of the fundamentals of Social Media Analytics.
CO_{02}	Identify various challenges and opportunities of the Social Network Analytics.
CO_{03}	Recognize and adopt the concept of the Web analytics tools followed in organizations.
CO_{04}	Apply various Motivational theories in data Processing.
CO_{05}	Design various tools about Social Media Analytics.

100. MS3ED10 Display Advertising

CO_{01}	Students will able to identify the core concepts of display advertising and its role in business.
CO_{02}	Students will understand pay per click(PPC), display campaigns
CO_{03}	Students are able to identify the issues and find solutions related to display advertising
CO_{04}	Students will learn different bidding strategies and its application .
CO_{05}	Students will learn optimization search and quality score in optimization.

101. MS3ED11 E-mail Marketing

CO_{01}	Learner will be introduced to E-mail Marketing concept
CO_{02}	Learner will be demonstrated with A/B testing techniques
CO_{03}	To implement the content development strategies
CO_{04}	To effectively utilize the email marketing platforms
CO_{05}	To expose with various email service providers

102. MS5EH07 Digital Media Laws

CO_{01}	Create conceptual understanding about Media Laws, its role and functioning.
CO_{02}	know about various initiatives by government to grow awareness and information about digital media
CO_{03}	Gain knowledge of media information literacy laws and their applications
CO_{04}	Know about media laws and ethics in India.
CO_{05}	Gain knowledge about cyber forensics, cyber security concerns and handling cyber threats.

103. CM3AE01 Environmental Science

CO_{01}	Students will understand the significance of sustainable development and become cognizant with environmental legislations
CO_{02}	Students will gain awareness regarding urgency about the present state of the earth, as well as domestic and global environmental issues
CO_{03}	Students will attain knowledge regarding natural resources and their efficient management. They will also learn to control environmental pollution.

CO_{04}	The students will gain fundamental knowledge of the functioning of ecosystems and the importance of biodiversity
CO_{05}	Students will be introduced to the emerging field of green technology.

104. CM3SE01 English Language

CO_{01}	The students will be able to perfect themselves in Functional Grammar and apply it practically.
CO_{02}	Students can enhance their word-power and further use the right word in the appropriate situation.
CO_{03}	The critical faculty of Reading is improved in the students through reading on a daily basis and enhancing their knowledge.
CO_{04}	Writing is an important area to organize one's thoughts. Students learn to write in a structured and efficient manner.
CO_{05}	Developing Literary Skills is important for the development of creativity in students. Through the reading of Prose, Poetry and Grammar, students can write any creative piece.
CO_{06}	Creative and Critical aspects of Language are imbibed by the students through the reading of Literary pieces.

105. CM3EG01 Micro Economics

CO_{01}	Students will have the in-depth knowledge of theories and concepts of business economics.
CO_{02}	Students will understand the consumer behaviour.
CO_{03}	Students will understand the cost concepts and production function.
CO_{04}	Students will understand the various market structures and price determination.
CO_{05}	Students will understand the price determination of production factors.
CO_{06}	After having the acquaintance of business economics students will able to take significant business decisions.

106. CM3CO01 Principles of Management & Organizational Behavior

CO_{01}	Students will have the in-depth knowledge of theories and concepts of management.
CO_{02}	Students will be able to understand the concept of Planning.
CO_{03}	Students will be familiarized with the various organizing and staffing activities.
CO_{04}	Students will have good knowledge about directing and controlling techniques in business to get the proper decision.
CO_{05}	Students will be able to understand the basic concepts and theories of Organisational Behaviour.

107. CM3CO02 Business Laws

CO_{01}	Explain the concepts in business laws. Ability to apply concepts, principles and theories to understand simple business laws.

CO_{02}	Exposure to the knowledge of trade and commerce specifically to the Sales of Goods Act 1930.
CO_{03}	Learner will get awareness of legal protection and settlement of payments in business with knowledge of different mercantile instruments.
CO_{04}	Student will gather the knowledge of laws meant for consumer protection in India.
CO_{05}	Learner will understand the legal framework of business entities'.

108. MS3SE02 Computer Application in Business

CO_{01}	Students will be able to understand the basics of Computer Applications
CO_{02}	Students will be able to apply internet and its application in daily activities.
CO_{03}	Students will be able to understand about Word processing software and its importance
CO_{04}	Students will be able to understand Spreadsheet and its Business Applications
CO_{05}	Students will be able to apply Presentation Software & Practical applications

109. CM3EG03 Business Environment

CO_{01}	To analyze the business environment of business.
CO_{02}	To identify the influential factors of specific business environment.
CO_{03}	To develop the strategies to address business environment issues
CO_{04}	To device the organization adaptive to external environmental factors.
CO_{05}	Acquit with the knowledge of global business environment.

110. CM3CO04 Corporate Laws

CO_{01}	The students shall be able to prepare the company.
CO_{02}	The students will be able to deal with the legal formalities and necessary documentation and issue of shares.
CO_{03}	The students will get the adequate knowledge and raising of various sources of capital
CO_{04}	The students shall be able to prepare the proper meeting procedurals

CO_{05}	The students will get to know procedure of winding up of the company.

111. CM3CO05 Business Mathematics

CO_{01}	Classify various matrices for data collection in real world situation.
CO_{02}	Apply Function in real life.
CO_{03}	Infer and formulate to Differentiation.
CO_{04}	Discuss the concept of Integration.
CO_{05}	Identify the characteristics of Index Number in real life situation

112. CM3CO06 Financial Accounting –II

CO_{01}	Understanding: Have an idea about the basic concepts of Financial Accounting.
CO_{02}	Remembering and Understanding: Know the need, role, importance of financial accounting.

CO_{03}	Understanding, Evaluating and Applying: Gain knowledge about application of financial accounting in measuring performance and efficiency of any organisation.
CO_{04}	Understanding and Evaluating: Learn how to prepare financial statements.
CO_{05}	understand partnership account from admission to dissolution.

113. MS5SE03 Entrepreneurship

CO_{01}	To develop Entrepreneurship Skills in the Students
CO_{02}	To inculcate the spirit and perspective of entrepreneurship among students
CO_{03}	To make the students aware about various methods of becoming entrepreneurs.
CO_{04}	To enable the students to critically examine and handle issues in entrepreneurship
CO_{05}	To familiarize the students about the role of government in entrepreneurship

114. CM3EG02 Macro Economics

CO_{01}	State development of macroeconomics; they also explain the major issues of macro economics and the role of government in the economy.

CO_{02}	Illustrate circular flow of income and measurement of national income.
CO_{03}	Describe classical and Keynes theory of employment. They will also able to analyze the impact of government expenditure on economic growth.
CO_{04}	Evaluate the role of money supply on price, value of money and economic growth.
CO_{05}	Describe theories of business cycles; evaluate the macroeconomic policy to curb inflation. They also able to prepare an optimum business plan for trade cycle

115. CM3CO08 Business Statistics

CO_{01}	Able to perform basic statistical calculations, draw relevant conclusions about the population and sample.
CO_{02}	Analyze statistical data graphically using frequency distribution; and determine the average and variation of data.
CO_{03}	To relate the knowledge of correlation Problem in solving Real Life Problems.
CO_{04}	To learn and develop scientific view to define the time series data and its analysis.
CO_{05}	Identify the characteristics of Index Number in real life situation.

116. CM3CO09 Corporate Accounting

CO_{01}	The students will understand the fundamental of corporate accounting
CO_{02}	The students will get the knowledge about the liquidation process.
CO_{03}	The students will be able to understand the process of declaration of dividend, preparation of profit and loss appropriation account and disposal of profit. Calculation of pre and post incorporation profit/loss.
CO_{04}	The students will able to prepare the consolidated balance sheet of holding company with one subsidiary company
CO_{05}	The students will get familiar with the process of Internal reconstruction of a company as per Indian Accounting Standard-14

117. CM3CO15 Income tax law and practice

CO_{01}	Students will be able to understand Income Tax terminologies and provisions
CO_{02}	Students will be gaining knowledge of various heads of Income Sources .
CO_{03}	Students will be able to understand basic information for computation of Total Income and deductions

CO_{04}	Students will be able to get acquainted with the computation of Gross Total Income & deductions
CO_{05}	Students will be able to get acquainted with the computation of Gross Total Income & deductions

118. CM3SEO4 Research Methodology

CO_{01}	Students will be able to familiarize with the research concepts and its application in business research.
CO_{02}	Students will become well conversant with the research process from identification of research problem, research design options, and finally to the hypothesis formulation.
CO_{03}	Will acquire the necessary skills in designing the research questionnaire; understand the scaling techniques and the sampling concept.
CO_{04}	Students will able to draw a suitable sample size.
CO_{05}	The students will be able to present the research findings in the form of the research report.

119. CM3EG07 International Trade

CO_{01}	Understand the term International Trade
CO_{02}	Explore the theories of International Trade
CO_{03}	Earn the terms of trade, devaluation and trade strategy
CO_{04}	Gain the knowledge to determine Balance of Payments and Dumping
CO_{05}	Get acquainted to Foreign Exchange system.

120. CM3CO11 Fundamentals of Financial Management

CO_{01}	Describe concept of finance and role of finance manager.
CO_{02}	Evaluate cost of capital, and Its impact by taxation, leverage and other factors.
CO_{03}	Explain capital structure and outline factors for optimum capital structure.
CO_{04}	Apply time-value calculations.
CO_{05}	Analyze various evaluation methods used in the process of capital budgeting.
CO_{06}	Estimate requirement of cash, receivables, Inventory and working capital.

121. CM33EF04 Indirect Tax

CO_{01}	To get acquainted the students with the Goods & Service Tax Policy.
CO_{02}	To get acquainted the students with the registration process & levy of taxation
CO_{03}	To get acquainted the students with classification of goods & applicable rates of GST.
CO_{04}	To get acquainted the students with levy of composition & it's provisions.
CO_{05}	To get acquainted the students with the students with the Input Tax Credit provisions.

122. CM3CO13 Cost Accounting

CO_{01}	Explain the basic cost concepts.
CO_{02}	Explain the methods of pricing of material issues.
CO_{03}	Explain the basic methods of costing.
CO_{04}	The students will able to do accounting of overheads.

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CO_{05}	The students will get familiar with the break-even analysis.

123. CM3CO14 Principles of Marketing

CO_{01}	Describe the concepts of marketing and marketing environment
CO_{02}	Classify the market on the basis of different segmentation category.
CO_{03}	Apply concepts of Product Life Cycle and New Product Development Process.
CO_{04}	Formulate different kinds of Pricing Strategy
CO_{05}	Evaluate different marketing channels for distribution
CO_{06}	Implement different promotional tools
CO_{07}	Analysis recent development in Marketing.

124. CM3EG05 Project Management

CO_{01}	To understand concept of Project Management

CO_{02}	Familiarized with the various technical feasibility component.
CO_{03}	Familiarized with the various market feasibility component.
CO_{04}	Have good knowledge about financial feasibility analysis element of project.
CO_{05}	Acquit about tools and techniques of project appraisal.

125. CM3EB04 Banking & Financial Services

CO_{01}	Students should have a strong sense of banking and allied financial services.
CO_{02}	Students should be aware of various type bank accounts including their operations.
CO_{03}	Students should develop any understanding about key concepts of lending.
CO_{04}	Students should understand the importance of online banking system.
CO_{05}	Students should have a working knowledge of about various financial services in banking.

126. MS5CO04 Fundamentals of Investment

CO_{01}	The students will understand the meaning and necessity of Investment
CO_{02}	The students will get familiar with the investor protection guidelines
CO_{03}	The students will get the knowledge about the Indian securities market
CO_{04}	The students will get familiar with the Sources of risk, Measurement of risk and return
CO_{05}	The students will understand the Meaning of Portfolio Management, Portfolio Analysis

127. CM3EA03 Management Accounting

CO_{01}	Student will demonstrate the ability to work for the various business environment
CO_{02}	Students can effectively utilises the business fund
CO_{03}	Students will understand various classification tools and methods for decision making in business
CO_{04}	Students will understand the relationship between the variables used in business through ratio analysis.

CO_{05}	Student will understand the need of Budgeting and how to adapt tools and techniques in budgeting

128. CM3EA03 Principles And practice of Auditing

CO_{01}	Describe and discuss the framework of auditing and related services
CO_{02}	Explain the internal control system of an audit and methods of gathering audit evidence
CO_{03}	Understanding and be able to interpret different types of vouchers
CO_{04}	Explain terms of technical points in accounting and auditing
CO_{05}	Understanding and explain the ethical standards of a company auditor.

129. CM3EB05 Insurance Practice and Principles

CO_{01}	Provide a basic understanding of the insurance mechanism.
CO_{02}	Explain the concept and process of insurance and how it is used to cover risk.

CO_{03}	Understand how insurance is transacted as a business and how the insurance market operates.
CO_{04}	Understand the relationship between insurers and their customers and the importance of insurance contracts.
CO_{05}	Get an overview of major life insurance and general insurance products and Laws pertaining to them.

130. MS3EG08 Supply Chain Management

CO_{01}	Students will attain the SCM concepts and the objective along with function of SCM
CO_{02}	The course helps the students to achieve the basic concept of distribution network in Supply Chain Management in an organization along with basic detail of hippment of product.
CO_{03}	They will be able to reach the concept of Push and Pull Based Supply Chain and Bullwhip effect in supply chain networks
CO_{04}	They will be able to attain the concept IT Framework, CRM & SRM in SCM.
CO_{05}	Students will be able to reach the concept of Logistics , its type and factors affecting the cost in the organization.

131. CM3EB07 Financial Derivatives

CO_{01}	Students will understand the working and role of Indian derivative market.
CO_{02}	Students will be able to understand the role of regulators in India.
CO_{03}	The course helps the students to understand of Forward and Future Contracts.
CO_{04}	The course helps the students to understand options and its strategies
CO_{05}	After having knowledge of different financial derivatives products, institution, students enable to do financial swaps.

132. CM3EB12 Investment Analysis & Portfolio Management

CO_{01}	Demonstrate basic understanding of investment and nuances of investing.
CO_{02}	Exhibit the acquaintance of various investment avenues.
CO_{03}	Perform fundamental analysis of a given instrument
CO_{04}	Work on various tools of charts to conclude technical analysis for an investment
CO_{05}	Construct optimal portfolios and evaluate them using models

133. CM3EA10 Financial Markets and institutions

CO_{01}	Students will get to know the working of Indian financial system.
CO_{02}	Students will be able to understand the role of financial regulators in India
CO_{03}	The course helps the students to understand the money market and its importance in Indian economy.
CO_{04}	The course helps the students to understand capital market in its functioning in India
CO_{05}	After having knowledge of different financial institutions students will be able to take appropriate financial decisions

134. CM33E11 Financial Statement Analysis and Reporting

CO_{01}	Understand the importance of preparing financial statement
CO_{02}	Identify the ways and means to check window dressing.
CO_{03}	Illustrate the various techniques of financial analysis.

CO_{04}	Describe the needs and importance of management reporting
CO_{05}	Examine the need for additional statements, additional reports.
CO_{06}	Examine the impact on corporate governance.
CO_{07}	Discuss the various purpose of financial reporting and the management use of financial analysis.
CO_{08}	Understand how to prepare capital budgeting and various ranking proposals .

135. PY3CO01 Human Anatomy and Physiology- I

CO_{01}	Elaborate anatomical definition, terminologies, classification, scope and physiology of cell and tissues of human body.
CO_{02}	Describe structure, classification, functions of integumentary, skeletal system and physiology of joints.
CO_{03}	Discussion on physiology, composition, classification and functions of body fluids and lymphatic system.
CO_{04}	Understand the structure, position and functions of peripheral nervous system.
CO_{05}	Explain the anatomy, physiology, conduction, regulation of cardiac vascular system and disorders of heart.

136. PY3CO02 Pharmaceutical analysis-I

CO_{01}	Elaborate definition, sources of impurities and standardization of various molar and normal solutions.
CO_{02}	Describe theories of acid-base, acidimetry and alkalimetry titration.
CO_{03}	Discussion on purity, estimation and methods of gravimetry, precipitation and complex metric titration.
CO_{04}	Understand the concept, principle and applications of redox titration.
CO_{05}	Explain the principles, methods and working of conductometry, potentiometry and polarography.

137. PY3CO03 Pharmaceutics I

CO_{01}	Elaborate history, origin of Pharmacy profession, prescription, posology and handling of different dosage forms.
CO_{02}	Describe powders, liquid oral dosage forms and pharmaceutical calculations.
CO_{03}	Discussion on definition, types, preparation of monophasic and biphasic liquid dosage form (suspension and emulsions).
CO_{04}	Understand the manufacturing, types, calculations and evaluation of suppositories.
CO_{05}	Explain the definitions, classification, mechanisms, factors and evaluations of semisolids.

138. PY3CO04 Pharmaceutical Inorganic Chemistry

CO_{01}	Elaborate sources of impurities, limit test of ions, assays and preparation of chemical substances.
CO_{02}	Describe the method for acid, bases intra and extra cellular electrolytes, buffer preparation with pharmaceutical importance.
CO_{03}	Discussion on preparations, methods, mode of action and applications of various gastrointestinal agents.
CO_{04}	Understand the expectorants, emetics, hematinic agents and role of antidote.
CO_{05}	Explain the measurement, storage conditions, precautions & pharmaceutical applications of radioactive substances.

139. PY3CO05 Human Anatomy and Physiology- II

CO_{01}	Elaborate the fundamentals features of neurons, mechanism of neurotransmitters along with processes of neuro conduction and neurotransmission.
CO_{02}	Describe various organs and processes indulged in digestion of food and disorders associated with GIT.
CO_{03}	Discussion on organs and mechanism involved in respiration and urine formation, along with disorders of respiratory and urinary system
CO_{04}	Explain the structure and functioning of endocrine system.

CO_{05}	Understand the basics of human reproductive systems and role of genetics.

140. PY3CO06 Pharmaceutical Organic Chemistry- I

CO_{01}	Discuss the classification & IUPAC nomenclature of organic compounds along with basic concepts of stereochemistry.
CO_{02}	Explain the mechanism of elimination reactions for alkane, alkene and conjugation dienes.
CO_{03}	Elucidate the concept of substitution reactions for alkyl halides and alcohols.
CO_{04}	Describe the nucleophilic additions and different condensation reaction like aldol condensation, Cannizzaro reaction etc. for aldehyde and ketones.
CO_{05}	Discussion on the structure, uses and effect of substitution on various carboxylic acid and aliphatic amines.

141. PY3CO07 Biochemistry

CO_{01}	Describe the nature, classification and biological role of various biomolecules along with the importance of bioenergetics.
CO_{02}	Explain the fundamentals of carbohydrate metabolism and biological oxidation with emphasis on disease associated with carbohydrate metabolism.

CO_{03}	Discuss in detail about lipid and amino acid metabolism.
CO_{04}	Understand the concept of nucleic acid metabolism and genetic information transfer.
CO_{05}	Elaborate the structure, functions & applications of enzyme, with mechanism for enzymatic activity.

142. PY3CO08 Pathophysiology

CO_{01}	Understand definitions and terminologies of pathophysiology, with basic principles of cell injury, inflammation and cell repair.
CO_{02}	Explain the etiology, pathogenesis, clinical features, diagnosis and management of different diseases involved in cardiovascular, respiratory and renal systems.
CO_{03}	Describe the pathogenesis associated with hematological, endocrine, nervous and gastrointestinal diseases.
CO_{04}	Elaborate the pathophysiology and clinical manifestations of disease related to bones, joints, cancer and infectious disease.
CO_{05}	Discuss the pathogenesis of various infectious diseases (meningitis, typhoid etc.) and sexually transmitted diseases.

143. PY3CO33 Computer Applications in Pharmacy

CO_{01}	Discuss the basic components of computer, number system, concept of information systems and software.
CO_{02}	Introduction about numerous web technologies like HTML, XML, programming language along with basics of data basics, SQL and pharmacy drug database.
CO_{03}	Elucidate the applications of computer in various fields of pharmacy such as pharmacokinetic mathematical model in drug design, hospital pharmacy.
CO_{04}	Describe basic concept of bioinformatics and its impact on drug discovery
CO_{05}	Elaborate the utility of computers as management systems (LIMS, TIMS.) in several pharmacy sectors and as data analysis in preclinical development

144. PY3HS02 Environmental Sciences

CO_{01}	Explain the multidisciplinary nature of environmental studies and role of an individual in conservation of natural resources.
CO_{02}	Discuss about various natural resources, associated problems and their conservation to save the environment.
CO_{03}	Comprehend the basics of ecosystems, food chain, food web and ecological pyramid.
CO_{04}	Introduction of types, characteristic features, structure and function of several ecosystems such as grassland, desert ecosystem and aquatic ecosystems.

CO_{05}	Describe various types of environmental Pollution (air pollution; water pollution; soil pollution), factors responsible for pollution and measures to minimize them.

145. PY3CO09 Pharmaceutical organic chemistry II

CO_{01}	Elaborate analytical synthetical evidences and applications of benzene and its derivatives.
CO_{02}	Describe acidity, basicity and effect of substituents of phenols, aromatic amines and acids.
CO_{03}	Discussion on hydrolysis, acid value, iodine value, saponification value, ester value of fats and oils, with significance involved in their determination.
CO_{04}	Understand the structure, reactions, synthesis and medicinal uses of Polynuclear hydrocarbon.
CO_{05}	Explain the limitation, theory and stability properties of cyclo-alkanes.

146. PY3CO10 Physical pharmaceutics-I

CO_{01}	Elaborate definition, mechanism, limitation and applications of binary and ideal solutions.
CO_{02}	Describe concept, properties of matter and physiochemical properties of compound.
CO_{03}	Discussion on surface and interfacial phenomenon of liquids and surface-active agents.
CO_{04}	Understand protein binding and its classification, structural analysis and thermodynamic stability

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CO_{05}	Explain pharmaceutical properties of physiological buffers and isotonic solutions.

147. PY3CO11 Pharmaceutical Microbiology

CO_{01}	Elaborate scope of microbiology and various types of microbes, cultivation techniques and culture medias.
CO_{02}	Describe staining techniques of microbes along with sterilization techniques and evaluations of efficacy.
CO_{03}	Discussion on replication of microbes, factors influencing on sepsis and sterility testing of products
CO_{04}	Understand the designing of equipment used in microbial laboratory and assessment of biologicals.
CO_{05}	Explain the factors influencing microbial spoilage of pharma products and preservation techniques.

148. PY3CO12 Pharmaceutical Engineering

CO_{01}	Elaborate various mechanisms, laws, factors and various techniques used in flow of fluids, size reduction and size separation.
CO_{02}	Describe heat transfer law's, their mechanism, types and utilities in pharmaceutical industry along with basics of evaporation and distillation.
CO_{03}	Discussion on drying and mixing of bed dryers and their importance in pharma industry.

CO_{04}	Understand the theories, construction and working of filtration and centrifugation accessories.
CO_{05}	Explain the handling of different types of construction materials of pharma industry and their preventive measures.

149. PY3CO13 Pharmaceutical Organic Chemistry-III

CO_{01}	Discuss the types, mechanism and applications of stereo isomerism, optical isomerism, chiral molecules and racemic mixtures.
CO_{02}	Summarize the geometric and conformational isomerism.
CO_{03}	Describe the nomenclature, classification, synthesis and medicinal uses of heterocyclic compounds.
CO_{04}	Explain and clarify synthesis, reactions and medicinal uses of pyrazole, imidazole, thaizole, purines and pyrimidine derivatives.
CO_{05}	Elaborate the reaction of synthetic importance like metal hydride reaction, Wolff Kishner reduction, Clemmensen reaction etc.

150. PY3CO14 Medicinal Chemistry-I

CO_{01}	Summarize basics of medicinal chemistry along with physicochemical properties in relation to drug action, with emphasis on drug metabolic pathways.

CO_{02}	Discuss the synthesis and SAR of drugs acting on Autonomic Nervous System.
CO_{03}	Detail study of cholinergic neurotransmitters, parasympathomimetic and cholinesterase blocking agents.
CO_{04}	Explain the classification, synthesis and SAR of various drugs acting on central nervous system like sedatives & hypnotics, antipsychotics and anticonvulsants
CO_{05}	Elucidate the synthesis, mechanism of action, side effects and SAR of general anesthetics, narcotics and non-narcotics analgesics and anti-inflammatory agents.

151. PY3CO15 Physical Pharmaceutics-II

CO_{01}	Explain the classification, general characteristics and properties of colloidal dispersions.
CO_{02}	Illustrate the rheological behavior exhibited by various dosage forms along with brief knowledge of deformation of solids.
CO_{03}	Discuss the types, formulation, stability issues and methods for evaluation of suspension and emulsions.
CO_{04}	Elucidate the basic concepts of micromeritics and its impact on physicochemical properties of drugs and excipients
CO_{05}	Describe the principles of reaction kinetics with its effect on drug stability and degradation.

152. PY3CO16 Pharmacology-I

CO_{01}	Details about historical background, scope, terminologies & general principles of pharmacology along with the concept of drug pharmacokinetics and enzyme kinetics.
CO_{02}	Elucidate the pharmacodynamic principles, receptor theories, drug interactions and phases of drug discovery.
CO_{03}	Discuss the pharmacology of drugs acting on peripheral nervous system with organization and function of ANS and neurohumoral transmission.
CO_{04}	Describe the drugs acting on CNS including general anesthetics, sedatives, hypnotics, centrally acting muscle relaxants, anti-epileptics, alcohols and disulfiram.
CO_{05}	Explain the pharmacology of psychopharmacological agents, CNS stimulants and nootropics, opioid analgesics with drug addiction, drug abuse, tolerance and dependence.

153. PY3CO17 Pharmacognosy and Phytochemistry-I

CO_{01}	Discuss the history and scope of pharmacognosy with brief about sources, classification, quality control tests for drugs and microscopic estimation of crude drugs.
CO_{02}	Explain the concept of cultivation and collection of drugs, also emphasize the plant hormones and their applications.
CO_{03}	Summarize various aspects of plant tissue culture, its types and applications in pharmacognosy.

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CO_{04}	Comprehend various systems of medicine with brief introduction about classification, properties and tests for secondary metabolites (Alkaloids, Glycosides etc.)
CO_{05}	Elaborate the biological source, chemical nature and uses of drugs of natural origin such as Cotton, Jute etc. with general introduction and detailed study of primary metabolites.

154. PY3CO18 Medicinal Chemistry-II

CO_{01}	Understand the classification, mechanism of action, uses and SAR of antihistaminic agents, proton pump inhibitors and anti-neoplastic agents.
CO_{02}	Discuss the classification, MOA, uses and SAR of anti-anginal, diuretics and anti-hypertensive agents.
CO_{03}	Summarize the structure activity relationship with classification, MOA and uses of anti-arrhythmic drugs, anti-hyperlipidaemic agents and drugs used in CHF.
CO_{04}	Describe the drugs acting on Endocrine system with nomenclature, stereochemistry and metabolism of steroids
CO_{05}	Elaborate the classification, MOA, uses and SAR of antidiabetic and local anesthetic agents.

155. PY3CO19 Industrial Pharmacy-I

CO_{01}	Understand the concept of preformulation studies with its application in the development of various dosage forms.
CO_{02}	Explain various types, formulation considerations and equipment used in preparation of tablets, tablet coating and liquid orals preparation along with quality control tests.
CO_{03}	Describe the types, production, filling, finishing, special techniques employed for formulation and evaluation of hard gelatin capsules, soft gelatin capsules and pellets.
CO_{04}	Discuss the types, vehicles, additives, production requirements, facilities, QC tests and packaging materials needed for formulation of parenteral and ophthalmic preparations.
CO_{05}	Elaborate the formulation considerations for cosmetic preparations and aerosols along with packaging materials science.

156. PY3CO20 Pharmacology-II

CO_{01}	Describe and understand the pharmacology of drugs acting on cardio vascular system.
CO_{02}	Explain the pharmacological fundamental of drugs used in the shock therapy, blood related diseases like hematinics, anticoagulants, anti-platelet drugs etc. and urinary system (Diuretics, Anti-diuretics).
CO_{03}	Discuss the introduction of autacoids and classify the related drugs such as Histamine, 5-HT antagonists and antigout etc.

CO_{04}	Clarify the basic concepts of endocrine pharmacology with the drugs acting on endocrine system.
CO_{05}	Elaborate the principles, applications and types of bioassays.

157. PY3CO21 Pharmacognosy and Phytochemistry-II

CO_{01}	Emphasize the basic metabolic pathways, techniques employed in the elucidation of biosynthetic pathway and formation of various secondary metabolites through these pathways.
CO_{02}	Discuss the source, composition, chemistry, therapeutic and commercial applications of different secondary metabolites (Alkaloids, volatile oils etc.).
CO_{03}	Explain the modern extraction techniques and their applications for isolation, purification and identification of the crude drugs.
CO_{04}	Describe the industrial production, estimation and utilization of the various phytoconstituents such as Forskolin, Sennoside etc.
CO_{05}	Elucidate the isolation, identification, and analysis of selected Phytoconstituents (terpenoids, glycosides, alkaloids, resins).

158. PY3CO22 Pharmaceutical Jurisprudence

CO_{01}	Discuss the objectives, legal definitions of schedules, provision for Import and Manufacture of drugs as per Drugs and Cosmetics Act, 1940 and its rules 1945, along with conditions for grant of license.
CO_{02}	Explanation about various Schedules of D & C act 1940 and rules 1945, with provisions for sale, labelling & packing of drugs and several administrative bodies to the Act.
CO_{03}	Details about Pharmacy Act-1948, Medicinal and Toilet Preparation Act-1955 and Narcotic Drugs and Psychotropic substances Act-1985.
CO_{04}	Elaborate the salient features of Drugs and Magic Remedies Act, Prevention of Cruelty to animals Act-1960 and National Pharmaceutical Pricing Authority.
CO_{05}	Understand the History of Pharmaceutical Legislations in India, Code of Pharmaceutical Ethics, Medical Termination of Pregnancy Act, Right to information and Intellectual Property Rights.

159. PY3CO23 Medicinal Chemistry-III

CO_{01}	Fundamental knowledge of classification, mechanism of action, uses and structure activity relationship of β-Lactam antibiotics, aminoglycosides and tetracyclines antibiotics.
CO_{02}	Study the historical background, nomenclature, stereochemistry, SAR, chemical degradation and classification of macrolide antibiotics, prodrugs and antimalarial agents.

CO_{03}	Explain the classification, MOA, adverse effects, therapeutic uses and SAR of anti-tubercular agents, urinary tract anti-infective agents and antiviral agents.
CO_{04}	Details on historical development, chemistry, classification and SAR of antifungal agents, anti-protozoal agents, anthelmintics and sulfonamides drug.
CO_{05}	Discuss the importance of drug design, various approaches used in drug designing and knowledge of modern techniques of rational drug design like QSAR, pharmacophore modeling, docking etc.

160. PY3CO24 Pharmacology- III

CO_{01}	Explain the pharmacology of drugs acting on respiratory system and GIT.
CO_{02}	Describe the general principles of chemotherapy with the brief on sulphonamides and antibiotics.
CO_{03}	Summarize the pharmacology of antimicrobial agents used in chemotherapy.
CO_{04}	Discuss the MOA and pharmacology of drugs used in urinary tract infections, sexually transmitted diseases with concept of immunopharmacology.
CO_{05}	Comprehend the principles of chrono pharmacology and toxicology with treatment of poisoning.

161. PY3CO25 Herbal Drug Technology

CO_{01}	Discussion on herbs as raw material, new agricultural practices and basic principles of Indian system of medicines.
CO_{02}	Comprehend the concept of nutraceutical and Herbal-Drug & Herb-Food Interactions.
CO_{03}	Describe various raw materials and herbal excipients used in herbal cosmetics along with herbal formulations and their standardization.
CO_{04}	Summarize WHO and ICH guidelines for the assessment of drugs with patenting and regulatory requirements for natural products (ASU DTAB, ASU DCC).
CO_{05}	General introduction of herbal industry and GMP requirements for Indian systems of medicine (Schedule T).

162. PY3CO26 Biopharmaceutics and Pharmacokinetics

CO_{01}	Explain the basic concepts of biopharmaceutics and pharmacokinetics, with their significance in pharmaceutical drug development.
CO_{02}	Summarize drug elimination reactions (metabolism and excretion) along with bioavailability and bioequivalence study for different dosage forms.
CO_{03}	Study various pharmacokinetic parameters and models like compartment models, physiological models in detail.
CO_{04}	Comprehend the concept of multicompartment models and their significance in clinical settings.

CO_{05}	Describe nonlinear pharmacokinetics with emphasis on factors causing non-linearity and Michaelis-mention kinetics.

163. PY3CO27 Pharmaceutical Biotechnology

CO_{01}	Summarize the basic concept of biotechnology, enzyme immobilization, biosensors, protein engineering, enzyme production and microbes used in pharmaceutical industries.
CO_{02}	Discuss Recombinant DNA technology and its applications.
CO_{03}	Illustrate the types of immunity, hypersensitivity reactions and hybridoma technology.
CO_{04}	Explain various immune blotting techniques and microbial biotransformation.
CO_{05}	Elaborate fermentation technology with production of antibiotics and vitamins.

164. PY3CO28 Pharmaceutical Quality Assurance

CO_{01}	Knowledge of various quality assurance and quality management concepts with current regulatory guidelines (ICH, ISO, NABL).

CO_{02}	Discuss various aspect of organization and persons involved in manufacturing unit along with process of selection for equipment's and raw materials.
CO_{03}	Elaborate Good Laboratory Practices and quality control parameters for primary and secondary packaging material.
CO_{04}	Details on document maintenance and handling of complaint in pharmaceutical industry.
CO_{05}	Elaborate the aspects of calibration, validation and warehousing.

165. PY3CO29 Instrumental Methods of Analysis

CO_{01}	Explain the principles, instrumentation and applications of UV Visible spectroscopy and fluorimetry.
CO_{02}	Understand the fundamentals, principles, instrumentation, and applications of IR spectroscopy, atomic absorption spectroscopy, flame photometry and nephelo-turbidimetry.
CO_{03}	Discuss the introduction, principles, methodology and techniques involved in TLC, paper chromatography and electrophoresis.
CO_{04}	Elaborate the introduction, theory, instrumentation, derivatization and applications of gas chromatography and HPLC.
CO_{05}	Describe the principles, theory, instrumentation and applications of ion exchange, gel and affinity chromatography.

166. PY3CO30 Industrial Pharmacy-II

CO_{01}	Discuss and manage the process of pilot plant and scale up in pharmaceutical industry for various pharmaceutical dosage forms.
CO_{02}	Understand various technology transfer process and protocols for transition from lab scale to commercial batch production as per norms of various regulatory authorities.
CO_{03}	Describe the overview of regulatory affairs along with different regulatory requirements for drug approval.
CO_{04}	Introduce the concept of quality with elaboration about various quality management systems and certifications such as TQM, Quality by Design etc.
CO_{05}	Explain Indian regulatory requirements, CDSCO, Certificate of Pharmaceutical Product with emphasis on approval procedures for New Drugs.

167. PY3CO31 Pharmacy Practice

CO_{01}	Knowledge about organizational structure of hospital, hospital pharmacy, clinical pharmacy, and community pharmacy with classifications of adverse drug reaction.

CO_{02}	Discuss various drug distribution systems in a hospital, contents of hospital formulary, therapeutic drug monitoring, medication adherence, patient medication history interview and community pharmacy management.
CO_{03}	Describe the organization and functions of pharmacy and therapeutic committee with brief on drug information services, patient counselling, education and training program in the hospital and prescribed medication order.
CO_{04}	Detail study of budget preparation & its implementation, clinical pharmacy and over the counter (OTC) sales.
CO_{05}	Understand the concept of drug store management, inventory control, investigational use of drugs and interpretation of clinical laboratory tests.

168. PY3CO32 Novel Drug Delivery Systems

CO_{01}	Explain the concept of controlled drug delivery systems with brief about classification, properties and application of polymers used in formulation of controlled release drug delivery systems.
CO_{02}	Discuss the concepts, principles and formulation considerations of microencapsulation, mucosal drug delivery system and implantable drug delivery systems.
CO_{03}	Describe various aspects of transdermal drug delivery systems, gastro retentive drug delivery systems and nasopulmonary drug delivery system.
CO_{04}	Understand the concept and approaches for the development of targeted drug delivery systems such as liposomes, niosomes etc.

CO_{05}	Elucidate the introduction, development and applications for ocular drug delivery systems and intra uterine devices (IUDs).

169. PY3CO34 Biostatistics and Research Methodology

CO_{01}	Knowledge of basic terminologies and concept involved in Biostatistics, Frequency distribution and Correlation.
CO_{02}	Details about basic aspect of regression and probability with emphasis on various parametric tests such as t-test, ANOVA etc.
CO_{03}	Summarize various non-Parametric tests, need for research, design of experiments along with designing the research methodology
CO_{04}	Discuss various regression model and statistical software's to resolve Industrial and Clinical Trials problems like Excel, SPSS, MINITAB® and DOE.
CO_{05}	Explain design and analysis of experiments (factorial design and Surface methodology).

170. PY3CO35 Social and Preventive Pharmacy

CO_{01}	Discuss the concept of health, disease, health education, hygiene and sociocultural factors related to health.
CO_{02}	Summarize general principles of prevention, control and cause of various diseases.

CO_{03}	Discuss several National health programs, its objectives, functioning and outcomes.
CO_{04}	Details about National and social health welfare programs designed to spread the awareness like family welfare, malaria prevention, national tobacco etc.
CO_{05}	Explain community services offered in urban and rural areas with their function in improvement of rural sanitation, urban health mission, health promotion etc.

171. PY3EL01 Pharmaceutical Marketing Management

CO_{01}	Discuss the concepts and scope of marketing along with emphasis on pharmaceutical marketing and role of market research.
CO_{02}	Summarize about product decision, branding, packaging and product management in pharmaceutical industry.
CO_{03}	Overview of product promotion, selling and other methods of promotions.
CO_{04}	Details on how to design appropriate pharmaceutical marketing channels with roles, responsibilities and future prospects of professional sales representative.
CO_{05}	Explain the importance and objective of pricing with overview of DPCO, NPPA and emerging concepts in marketing.

172. PY3EL02 Pharmaceutical Regulatory Science

CO_{01}	Summarize the process of new drug development with various stages of drug discovery and concept of Innovator and generics.
CO_{02}	Discussion on regulatory approval processes and timelines involved in INDA, NDA, ANDA with emphasis on regulatory authorities of different countries.
CO_{03}	Explain the procedure for registration of Indian drug product in overseas market.
CO_{04}	Comprehend various aspects of clinical trials with safety monitoring in clinical trials.
CO_{05}	Elaborate basic terminology and guidelines of regulatory along with brief of Orange book, Federal Register, Code of Federal Regulatory, Purple book.

173. PY3EL03 Pharmacovigilance

CO_{01}	Discuss the basic terminologies involved in pharmacovigilance with brief introduction of pharmacovigilance and adverse drug reactions.
CO_{02}	Elaborate drug & disease classification, drug dictionaries & coding, information resources in pharmacovigilance and the concept of establishing pharmacovigilance programs.
CO_{03}	Summarize various aspects of vaccine safety surveillance, different pharmacovigilance methods and importance of communication in pharmacovigilance.

CO_{04}	Explain safety data generation for various phases of clinical trial with ICH Guidelines for Pharmacovigilance.
CO_{05}	Details on pharmacogenomics of adverse drug reactions, drug safety evaluation and pharmacovigilance in India (D&C Act and Schedule Y).

174. PY3EL04 Quality Control and Standardization of Herbals

CO_{01}	Describe WHO guidelines for quality control of herbal drugs and evaluation of crude drugs intended for commercial use.
CO_{02}	Discuss various quality assurance systems like cGMP, GAP, GMP and GLP for herbal drug industry.
CO_{03}	Summarize EU and ICH guidelines for quality control of herbal drugs with research guidelines for evaluating the safety and efficacy of herbal medicines.
CO_{04}	Explain the concept of stability testing and standardization of herbal products using chromatographic techniques along with the documentation for NDA and export registration as per GMP requirements.
CO_{05}	Comprehend various regulatory requirements, safety requirements as per WHO guidelines along with role of chemical and biological markers in standardization of herbal products.

175. PY3EL05 Computer Aided Drug Design

CO_{01}	Explain several stages of drug discovery and development along with Lead discovery and Analog Based Drug Design.

CO_{02}	Discuss the concept of Quantitative Structure Activity Relationship (QSAR) and also cover the history, development, types of physicochemical parameters and approaches for their determination.
CO_{03}	Describe virtual screening techniques, concept of pharmacophore and molecular docking.
CO_{04}	Elaborate the Bioinformatics, chemoinformatics and ADME databases.
CO_{05}	Summarize various aspects of molecular modelling, molecular mechanics and quantum mechanics.

176. PY3EL07 Cosmetic Science

CO_{01}	Classify cosmetic and cosmeceutical products as per Indian and EU regulations along with various cosmetic excipients and role of cosmetics as quasi & OTC drugs
CO_{02}	Discuss the principles of formulation and building blocks of skin care, hair care and oral care products.
CO_{03}	Summarize the classification of sunscreen and role of SPF with discussion on herbs used for skin & oral care and BIS specification for shampoo, skin cream & toothpaste.
CO_{04}	Elaborate the principles of various instrument (sebumeter, corneometer etc.) used for evaluation of skin and hair conditions.
CO_{05}	Explain various types and problems associated with skin and hair along with actives present in Antiperspirants and Deodorants.

177. PY3EL08 Experimental Pharmacology

CO_{01}	Discuss the CPCSEA and OECD guidelines established for handling and maintenance of laboratory animals and techniques of blood collection and euthanasia.
CO_{02}	Explain the aspect of dose selection, dose calculation and animal species selection along with screening of animal models & preclinical screening models for study of different drug categories.
CO_{03}	Summarize the preclinical screening models for ANS activity, sympathomimetics, sympatholytics etc.
CO_{04}	Comprehend the preclinical screening models for CVS, anti-diabetic, anti-ulcer activity etc.
CO_{05}	Elaborate the concept of research methodology, bio-statistics, study design and analysis & interpretation of preclinical data.

178. PY3EL09 Advanced Instrumentation Techniques

CO_{01}	Discuss the principles, applications and instrumentation of NMR, MASS spectroscopy.
CO_{02}	Summarize the principles, applications and instrumentation for several thermal drug analytical methods like TGA, DTA and DSC etc.
CO_{03}	Explain the calibration and validation for various instruments like electronic balance, UV/IR spectrophotometer, HPLC etc. as per ICH and USFDA guidelines.

CO_{04}	Details about importance, components, principle, methods and applications of radio immune assay, solid phase and liquid-liquid extraction.
CO_{05}	Comprehend the basics and application of LC-MS/MS, GC-MS/MS and HPTLC-MS.

179. PY3EL10 Dietary Supplements and Nutraceuticals

CO_{01}	Summarize the classification and benefits of Functional foods, Nutraceuticals and Dietary supplements with its impact on public health.
CO_{02}	Explain the occurrence, characteristic features and nature of phytochemicals as nutraceuticals
CO_{03}	Discussion on free radicals and their damaging effects on biomolecules along with functional food ingredients.
CO_{04}	Elaborate the role of free radicals in several diseases like diabetes mellitus, Inflammation, cancer, kidney damage etc. with emphasizing the role of anti-oxidants to control the damages.
CO_{05}	Describe the pharmacopoeial specifications and factors affecting potential of nutraceuticals with various regulatory aspect laid for food safety like FSSAI. FDA etc.

180. PY3EL11 Good Manufacturing Practices

CO_{01}	Explain the introduction, preparation, validation and revision of GMP, GCP, GLP and SOP.

CO_{02}	Summarize the documentation of pharmaceutical industry along with document for IND, NDA, ANDA and export registration.
CO_{03}	Describe the 21-CFR and c-GMP guidelines according to USFDA.
CO_{04}	Discuss the entire process, classification and strategy for effective pharmaceutical product recall.
CO_{05}	Elaborate the sampling plans, techniques, records and WHO guidelines for sampling of finished product and packaging material.

181. PY3EL12 Clinical Pharmacy

CO_{01}	Details about introduction of Clinical Pharmacy, drug handling and usage in different medical condition.
CO_{02}	Explain the concept of patient data analysis, medical writing and pharmacovigilance program of India (PvPI) and Geneva (UPSALA).
CO_{03}	Elaborate the daily activities of clinical pharmacists such as medication chart view, clinical review, TDM etc. and quality assurance of clinical pharmacy services.
CO_{04}	Describe the research design, conduct of clinical trials, bioavailability (BA) and bioequivalence (BE) studies, SAP and its importance in clinical research.
CO_{05}	Comprehend several aspects of data collection, biostatistical analysis, sampling, types of errors and data analysis with the help of bio-statistical software.

182. EN3ES19 Engineering Graphics

CO_{01}	Familiarize with different drawing equipment's and technical standards and Know purpose, procedures, materials and conventional symbols used. Create and read an engineering drawing using standard views and have ability to Convert pictorial (3D) drawings to orthographic (2-D) drawings and vice versa.
CO_{02}	Understand the projection of points, straight lines and have the ability to convert the practical problems in to projections.
CO_{03}	To understand and apply concepts of the projection of simple planes & solids.
CO_{04}	Understand and apply the concepts of Projection & Sections of solids & development of surfaces.
CO_{05}	Convert simple 2D orthographic projections into 3D isometric projections with the help of auto cad commands.

183. EN3ES18 Basic Mechanical Engineering

CO_{01}	Students will be able to understand the engineering materials, their properties, Iron-Carbon Diagram and Stress-Strain Curve, Measuring Equipment's and Testing Carbon Diagram and Stress-Strain Curve, Measuring Equipment's and Testing Machines.

CO_{02}	Student will be thorough with the basic laws of thermodynamics and their applications in engineering also know about Refrigeration cycles and properties of refrigerants.
CO_{03}	Students will be able to comprehend the construction and working of I.C. Engines & Steam Generators.
CO_{04}	Students will be able to determine the Centroid & Moment of Inertia of areas/composite sections.
CO_{05}	Students will be able to develop the basic understanding of various types of drive.

184. EN3ES20 Engineering Workshop

CO_{01}	Understand the engineering materials, their properties, and their utilisation in manufacturing tool and other equipment’s.
CO_{02}	The basic law of physics and their utlisation in engineering.
CO_{03}	To understand different primary manufacturing processes
CO_{04}	To understand different metal joining processes.
CO_{05}	To identify different tools used in basic manufacturing processes.

185. ME3CO03 Theory of Machine

CO_{01}	Students will be able to perform kinematic aspects of mechanisms used in machines, and understand different mechanisms using the concept of Inversion and different lower paired mechanisms.
CO_{02}	Students will be able to perform velocity and acceleration analysis in mechanisms.
CO_{03}	Students will be able to generate cam profile for different types of follower motion.
CO_{04}	Students will be able to understand applications of gears and gear trains.
CO_{05}	Students will be able to determinate gyroscopic couple and gyroscopic effect.

186. ME3CO02 Strength of Material

CO_{01}	Recognise physical phenomenon in the context of strength of materials.
CO_{02}	Demonstrate an understanding of the structural mechanics theory for deformable bodies.
CO_{03}	Demonstrate an understanding of the relationships between loads, member forces and deformations and material stresses and strains.
CO_{04}	Utilize appropriate materials in design considering engineering properties, sustainability, cost and weight.
CO_{05}	Analyze and design structural members subjected to tension, compression, torsion, bending and combined stresses using the fundamental concepts of stress, strain and elastic behaviour of materials.

187. ME3CO04 Engineering Thermodynamics

CO_{01}	Understanding of the procedures for estimating the thermodynamic properties such as enthalpies entropies Gibbs energies and activity coefficients fluid mixtures
CO_{02}	Ability to explain the effects of entropy in engineering processes and the limitations that the second law of thermodynamics places on such processes.
CO_{03}	Ability to Explain and analyze the charts showing properties of pure substances.
CO_{04}	Ability to Explain and analyze the heat energy cycle for a variety of heat engine and refrigeration cycles.
CO_{05}	Communicate effectively using the terminology symbols and diagrams of thermodynamics

188. ME3CO01 Production Processes

CO_{01}	Students will be able to understand the Moulding and important terminology associated with it
CO_{02}	Student will become well conversant with the casting method, its application and defects
CO_{03}	Students will be able to understand the different metal forming processes
CO_{04}	Students will be able to understand the various welding processes
CO_{05}	Students will be able to develop the basic understanding of Powder metallurgy

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189. ME3C017 CAD LAB

CO_{01}	Students will be able to understand AutoCAD workspace and user interface
CO_{02}	Students will be able to work on different Drawing Command
CO_{03}	Students will be able to work on different Editing Command
CO_{04}	Students will be able to draw Isometric object in AutoCAD
CO_{05}	Students will be able to work with solid 3D commands.

190. ME3ES09 Engineering Materials

CO_{01}	Students will have understanding of atomic structure and bonding and thus understand crystallography.
CO_{02}	Students will have knowledge about various mechanical properties and testing of materials
CO_{03}	Students will develop understanding of alloy formation (solid solution) and knowledge of heat treatment processes and various Curves (Fe-C & TTT Curve)
CO_{04}	Students will understand metals, their structures, properties & Applications

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CO_{05}	Students will be able to understand Non-metals, their structures, properties & Applications and processing for development of new materials.

191. ME3CO10 Dynamics of Machines

CO_{01}	Students will be able to evaluate inertia forces and their effects on the driving torque.
CO_{02}	Students will be able to design suitable flywheel to control the torque fluctuations in engine within desired limits.
CO_{03}	Students will develop an understanding of ability and limitations of different governing mechanisms and to select suitable one for their application.
CO_{04}	Students will understand the methods learn to balancing of different types of engines.
CO_{05}	Students will be able to calculate friction power loss in pivot and collar bearings and torque transmitted by clutches.

192. EN3HS04 Fundamentals of Management, Economics & Accountancy

CO_{01}	To introduce with the Fundamental knowledge of Management.
CO_{02}	To give knowledge about the Marketing and Human Resource Management.
CO_{03}	To provide basic information of Applied Economics.

CO_{04}	To get acquainted with the knowledge of Financial Accounting.
CO_{05}	To give sufficient knowledge of Financial Management.

193. ME3CO07 Manufacturing Processes and Machines

CO_{01}	Students will have understood all types of traditional machines, its working principle, operation and uses.
CO_{02}	Students will have knowledge about types of chips, mechanics of machines, tool geometry, and tool material.
CO_{03}	Students will develop understanding of various accessories used in machines.
CO_{04}	Students will understand methods of different power transmission device belt, and gear.

194. ME3CO08 Machine Design -I

CO_{01}	Student will be able to analyze the stress and strain on mechanical components; and understand, identify and quantify failure modes of mechanical parts.
CO_{02}	Student will be able to demonstrate knowledge on basic machine elements used in machine design; design machine elements to withstand the loads and deformations.
CO_{03}	Student will be able to approach a design problem successfully, taking decisions when there is not a unique answer.

CO_{04}	Student will be able to score final exam equivalent or above 75%

195. ME3CO11 Energy Conversion –II

CO_{01}	Students will be used to governing laws to predict turbo machine performance and Recognize typical designs of turbo-machines and differentiate from positive displacement machines.
CO_{02}	Student will be able to specify the appropriate class of prime mover for a given application, based on type of fluid, head, flow and specific speed
CO_{03}	Students will be able to explain the role of inlets, scrolls and diffusers sections on the operation and performance of hydraulic turbines and pumps.
CO_{04}	Students will be able to identify and explain the general loss-producing mechanisms for flow through turbo machine rotors and stators.
CO_{05}	Students will be able to analyse and preliminary design of turbo-machines (rotary compressors and axial compressor)

196. ME3CO12 Machine Design II

CO_{01}	To determine the strength of the components

CO_{02}	To determine the failure conditions and apply them to real life problems
CO_{03}	To design different types of bearings and gears.
CO_{04}	To design different types of I. C. engine components
CO_{05}	To design different types of, brakes and clutches.

197. ME3CO13 Heat and Mass Transfer

CO_{01}	To understand the mode of conduction on plane, cylindrical and spherical body and also the concept of unsteady state heat conduction.
CO_{02}	To understand the concept of fin & its effectiveness.
CO_{03}	To understand the concept of natural convection and forced convection for different configuration.
CO_{04}	To understand concept of mass diffusion and mass transfer.
CO_{05}	To calculate the length & area for heat exchangers
CO_{06}	To calculate the shape factor for radiation from a body.

198. ME3EI02 Operation Research

CO_{01}	Students will be able to define and formulate mathematical problems and to find optimal solutions for a given problem using LP.
CO_{02}	Students will be able to formulate and solve transportation, travelling sales man and optimization problems related to job/ work assignments.
CO_{03}	Students will be able to choose / devise appropriate queuing model for practical application and also able solve different problems related to Network.
CO_{04}	Students will be able to demonstrate and solve simple models of Game theory.
CO_{05}	Student will able to handle the inventory related problem and concept of EOQ, EPQ etc and the impact of inventory cost and its minimization.

199. OE00006 Basics of Entrepreneurship

CO_{01}	Students will be able to understand the principles of effectuation and concepts of Design Thinking.
CO_{02}	Students will be able to understand the various types of Customer Segments and Early Adopters.

CO_{03}	Students will be able to understand the concepts of Lean Canvas Blue Ocean Strategy and Minimum Viable Product (MVP).
CO_{04}	Students will be able to understand the concepts of Primary and Secondary revenue streams and understands the term Brainstorming & Mind mapping.
CO_{05}	Students will be able to understand the concept of Unique Sales Proposition and Basics of Business Regulations.

200. ME3EL06 Measurement and Instrument

CO_{01}	Explain the basics of standards of measurement, limits, fits & tolerances industrial applications
CO_{02}	Interpret measurement of field variables like force, torque and strain
CO_{03}	Interpret measurement of field variables like temperature, pressure & flow
CO_{04}	Identify the uses of gauges, comparators, surface textures, linear & angular, screw threads, gears and CMM
CO_{05}	Understand applications of various transducers in industry and miscellaneous other sensors.

201. OE00007 Mechanical Estimation and Costing

CO_{01}	Student understands estimation and types of estimates in day do day life.
CO_{02}	Student will gain knowledge of different types cost and calculate the selling price of product or services.

CO_{03}	Student will get awareness in applications of estimation and costing in mechanical processes.
CO_{04}	Student will gain awareness in Depreciation and obsolescence.

202. ME3CO14 CAD/CAM/CIM

CO_{01}	To understand Manufacturing and CIM Concept
CO_{02}	To understand Product Life Cycle (PLC) Management
CO_{03}	To understand and apply Numeric control technique and Part programming
CO_{04}	To understand the concept of Group Technology
CO_{05}	To understand the Rapid Prototyping methods

203. ME3CO15 I. C. Engines

CO_{01}	Understand to classify the I.C. engine, familiar about terminologies and parts of engines.
CO_{02}	Understand to do analysis of engines based on performance parameters
CO_{03}	Understand combustion in SI and CI engine and types of combustion chambers.
CO_{04}	Understand how to measure performance parameter of an engine for its analysis

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CO_{05}	Understand concept of supercharging and turbocharging and its effect on engine performance parameter.

204. ME3CO16 RAC

CO_{01}	Ability to understand the basics of Refrigeration & Air Conditioning.
CO_{02}	Ability to calculate the heat load required for air conditioning.
CO_{03}	Ability to design and analyze cooling systems
CO_{04}	Ability to learn different types of refrigerants used in these cycles & their properties

205. ME3EL02 Mechanical Vibration

CO_{01}	Students will be able to understand the Moulding and important terminology associated with it
CO_{02}	Student will become well conversant with the casting method, its application and defects
CO_{03}	Students will be able to understand the different metal forming processes
CO_{04}	Students will be able to understand the various welding processes
CO_{05}	Students will be able to develop the basic understanding of Powder metallurgy

206. ME3EI01 Production Planning & Control

CO_{01}	An ability to apply knowledge of mathematics, science, and engineering
CO_{02}	An ability to design and conduct experiments, as well as to analyse and interpret data
CO_{03}	An ability to design a system, component, or process to meet desired needs within realistic Constraints such as economic, environmental, social, political, ethical, health and safety, Manufacturability and sustainability
CO_{04}	An ability to function on multi-disciplinary teams
CO_{05}	An ability to identify, formulate, and solve engineering problems
CO_{06}	An understanding of professional and ethical responsibility
CO_{07}	An ability to communicate effectively
CO_{08}	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
CO_{09}	A recognition of the need for, and an ability to engage in life-long learning
CO_{10}	A knowledge of contemporary issues

207. ME3EE03 Energy Auditing &Management

CO_{01}	Distinguish between various approaches of using solar Energy

CO_{02}	Have basic knowledge of construction and working of Solar cookers and solar dryers and develop ability to choose the right device as per requirement.
CO_{03}	Basic understanding of construction and working of different types of solar collectors and analysis their characteristics, merits and demerits
CO_{04}	Analyse and Understand construction and working of different types of solar water heating systems
CO_{05}	Elementary knowledge of design and working of photovoltaic technology and equipments related to it.

208. OE00006 Advanced Entrepreneurship

CO_{01}	Students will be able to understand the different stages in start-up and concept of Product-Market fit.
CO_{02}	Students will be able to understand the concepts of refining the business model and Identify additional Customer Segments.
CO_{03}	Students will be able to understand the technique of calculate the cost of new customer acquisition and estimate the customer lifetime value (LTV).
CO_{04}	Students will be able to understand the technique of building a professional sales team and types of Financial Models.
CO_{05}	Students will be able to understand the importance of Patents, Intellectual property and Trademarks.

209. OE00036 Renewable Sources of Energy

CO_{01}	Students will be able to understand the importance of non-conventional and renewable energy resources along with their applications and consumption worldwide.
CO_{02}	Students will be able to acquire the knowledge about construction, working principle and applications of solar devices
CO_{03}	Students will be able to understand the basic principles and classification of wind and geothermal energy. Students will also be able to understand the basics and importance of solid waste management and recycling.
CO_{04}	Students will be able to understand the importance of biomass energy along with conversion processes involved in converting biomass into valuable forms like biofuel, biochar and biogas.
CO_{05}	Students will be able to understand the importance, advantages, disadvantages and availability of ocean thermal and tidal energy.

210. ME3EI07 TQM &SQC

CO_{01}	Understand the fundamental principles of Total Quality Management.
CO_{02}	Choose appropriate statistical techniques for improving processes
CO_{03}	Develop research skills that will allow them to keep abreast of changes in the field of Total Quality Management
CO_{04}	Understanding of the process of managing quality and managing services.

CO_{05}	Understanding of fundamental disciplines of business are intrinsically linked with the concepts of service excellence and quality

211. ME3EL03 Robotics Engineering

CO_{01}	Understand robotics terminologist
CO_{02}	Understand the kinematics of robot manipulation
CO_{03}	Understand the dynamics behavior of robot manipulators
CO_{04}	Understand the different type of sensors and end effector uses
CO_{05}	Understand the basics of robot programming and different languages used for programming.

212. ME3EE07 Bio and Solid Waste Management

CO_{01}	Describe the components of solid waste management and the laws governing it.
CO_{02}	Discuss the solid waste collection systems, route optimization techniques and processing of solid wastes.
CO_{03}	Outline the design, operation, and maintenance of different methods of treatment.
CO_{04}	Explain the operation, and maintenance of sanitary landfill and incineration.
CO_{05}	Conclude the recent trends in reuse of solid waste

213. ME3EI01 Operations Management

CO_{01}	A recognition of the need for, and an ability to engage in life-long learning
CO_{02}	An ability to design and conduct experiments, as well as to analyse and interpret data
CO_{03}	The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context
CO_{04}	An ability to identify, formulate, and solve engineering problems
CO_{05}	An understanding of professional and ethical responsibility

214. ME3EL04 Manufacturing Automation

CO_{01}	Students will be able to understand the levels and types of automation suitable in a particular industry and develop automation strategies.
CO_{02}	Student will be able to understand the production system before planning automation.
CO_{03}	Students will be able to understand different types of control systems to implement on a production system.
CO_{04}	Students will be able to understand the components of FMS and its automation requirement.
CO_{05}	Students will be able to understand the inspection systems and its automation requirement.

215. ME3EE06 Utilization of solar Energy

CO_{01}	Distinguish between various approaches of using solar Energy
CO_{02}	Have basic knowledge of construction and working of Solar cookers and solar dryers and develop ability to choose the right device as per requirement.
CO_{03}	Basic understanding of construction and working of different types of solar collectors and analysis their characteristics, merits and demerits
CO_{04}	Analyse and Understand construction and working of different types of solar water heating systems
CO_{05}	Elementary knowledge of design and working of photovoltaic technology and equipments related to it.

216. OE00047 Advanced Machining Processes

CO_{01}	Students will be able to understand the need of modern machining processes and their classification and various types of mechanical type advance machining process.
CO_{02}	Students will be able to understand the various Chemical and Electrochemical type Advance Machining Processes
CO_{03}	Students will be able to understand the various Thermal Type Advance Machining Processes

CO_{04}	Students will be able to understand the various Hybrid Advance Machining Processes
CO_{05}	Students will be able to understand the various Hybrid Finishing Processes.

217. OE00048 Supply Chain Management

CO_{01}	Understand the fundamentals of elements and functions of supply chain, role of drivers and demand forecasting.
CO_{02}	To apply various techniques of inventory management and their practical situations.
CO_{03}	Analyze how supply chain decisions related to facility location can be applied to various industries and designing the supply chain.
CO_{04}	How various warehousing management system and transportation can be practiced in various industries?
CO_{05}	How logistics and supply chain strategies can create value generation and utilise IT applications

218. AU3CO06 Automotive Engines

CO_{01}	Students will be familiar with engine operation and fuel supply system for SI and CI engine.
CO_{02}	Student will be able to explain the need and requirement of cooling & lubrication system.
CO_{03}	Students will be able to explain the combustion phenomenon in IC engine and combustion chamber design.

CO_{04}	Student will know the various latest technologies and different parameters used for identifying engine performance and their measurements.
CO_{05}	Students will be able to interpret Dynamic analysis of reciprocating engine and balancing of inertia forces.

219. AU3CO09 Automotive Electrical & Electronics

CO_{01}	Understand the fundamentals of battery and associated systems with it.
CO_{02}	Understand the layout of wiring and connections of electrical systems in automobiles.
CO_{03}	Understand the working of different electrical components used in automobiles.
CO_{04}	Understand various sensors and actuators used in automobiles.
CO_{05}	Understand electronic fuel injection and ignition system used in automobiles.

220. AU3CO10 Automotive Transmission

CO_{01}	Students will be able to understand various types of clutch and their working
CO_{02}	Students will be able to understand the working of various types of gearbox and Power Transmission Layouts
CO_{03}	Students will have knowledge of Hydrostatic Drive And Electric Drive

CO_{04}	Students will understand the Drive Line and Hydrodynamic Drive
CO_{05}	Students will be able to understand the Automatic Transmission Applications

221. AU3CO13 Machine Design II

CO_{01}	To determine the strength of the components
CO_{02}	To determine the failure conditions and apply them to real life problems
CO_{03}	To design different types of bearings and gears.
CO_{04}	To design different types of I. C. engine components
CO_{05}	To design different types of, brakes and clutches.

222. AU3EL06 Measurement and Instrument

CO_{01}	Explain the basics of standards of measurement, limits, fits & tolerances industrial applications
CO_{02}	Interpret measurement of field variables like force, torque and strain
CO_{03}	Interpret measurement of field variables like temperature, pressure & flow

CO_{04}	Identify the uses of gauges, comparators, surface textures, linear & angular, screw threads, gears and CMM
CO_{05}	Understand applications of various transducers in industry and miscellaneous other sensors.

223. AU3CO11 Automotive Chassis System

CO_{01}	Students will have knowledge about automotive chassis, frames and testing of frames.
CO_{02}	Students will be able to understand the steering system and wheel geometry.
CO_{03}	Students will have knowledge of types of automotive axles, wheels and tires.
CO_{04}	Students will be able to explain the principle, working and types of different suspension systems.
CO_{05}	Students will understand the basics of automotive brakes and working of mechanical, Hydraulic and Pneumatic brakes.

224. AU3CO12 Automotive Component Drawing

CO_{01}	Familiarize with different drawing equipment's and technical standards and Know purpose, procedures, materials and conventional symbols used. Create and read an engineering drawing using standard views and have ability to Convert pictorial (3D)drawings to orthographic (2-D) drawings and vice versa
CO_{02}	After going through this course, the student shall be able to understand the drawings of mechanical components and their assemblies
CO_{03}	Utility for design drawing and development of mechanical system.
CO_{04}	Work effectively with engineering and science teams as well as with multidisciplinary designs and drawing.
CO_{05}	Skillfully use modern engineering tools and techniques such as CAD- CAM software's for mechanical engineering design, analysis and application

225. AU3EL02 Automotive Safety System

CO_{01}	Understand the design and methods of vehicle body configuration aspects and forces & moments behaviour on car body.
CO_{02}	Analyse the setting and performance of Vehicle steering and gear box for ease in driving and safety.
CO_{03}	Analyse the design and performance of Vehicle Suspension based on road condition for safe vehicle ride and passengers comfort.

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CO_{04}	Understand the Electrical Control system of vehicle and compliance of Emission norms for automotive engine efficiency and pollution control.
CO_{05}	Understand working of various comfort and convenience systems used in automobile and their application.

226. AU3CO14 Vehicle Body Engineering

CO_{01}	Students will have knowledge about car body construction and types.
CO_{02}	Students will have knowledge about the construction of bus body and commercial vehicle body.
CO_{03}	Students will have knowledge of different materials used in the construction of automobile body.
CO_{04}	Students will understand the fundamentals of aerodynamics and different body loads acting on the vehicle body.
CO_{05}	Students will be able to understand automobile body servicing and repairing

227. AU3CO15 Vehicle Dynamics

CO_{01}	The focus of this course to introduce the fundamentals of vehicle dynamics and the performance indices and evaluation criteria of vehicles, to analyze the influence of vehicle configuration and design parameters on vehicle performance.
CO_{02}	To discuss the approach for predicting vehicle performance and to simulate and analyze vehicle performance as well.
CO_{03}	Through teaching and specific experiments, it is intended to inform students of related terminology and regulations, to enable them to master the principles, properties and requirements of vehicle design, and apply this theoretical knowledge.
CO_{04}	The objective of this course is to train the students as specialists in the vehicle engineering domain, to develop their capacities of analysis, evaluation and design based on their acquisition of skills in modeling dynamic equation and performance analysis.
CO_{05}	In addition, the course will also to lay the foundations for the following doctoral program Advanced Vehicle Dynamics Control.

228. AU3CO16 Automotive Refrigeration and Air Conditioning

CO_{01}	Students will be able to model a vibrating structure and machine and find their vibration characteristics and natural frequency of vibrations.
CO_{02}	Student will be able to understand different types of damping, their characteristics and their applications in automobiles.

CO_{03}	Students will be able to analyze and apply suitable isolation techniques in automotive design to achieve a desired level of transmissibility.
CO_{04}	Students will be able to analyze automotive sub-system into two and multiple DOF systems and calculate the desired characteristics including natural frequencies.
CO_{05}	Students will be able to implement vibration based condition monitoring technique to model and simulate the failure pattern of automotive sub-systems.

229. AU3EL11 Two & Three Wheeler Technology

CO_{01}	Understand the history, types and technical specifications of two & three wheelers.
CO_{02}	Understand the transmission and drive arrangement of two and three wheelers.
CO_{03}	Understand the suspension and steering system of two and three wheelers.
CO_{04}	Understand different types of instruments and switches used in two and three wheelers.
CO_{05}	Understand different electrical systems and indicators used in two and three wheeler.

230. FT3CO09 Building Planning and Machine Drawing

CO_{01}	Develop an ability to apply knowledge of building parts, footing and planning for building.

CO_{02}	To understand different services in building like water supply, drainage, electrification, ventilation, thermal insulation and fire safety.
CO_{03}	To understand the concept of design of building by drawing of types of building.
CO_{04}	To understand theory and application limit, fit and tolerances.
CO_{05}	To understand the concept of welding, pipe, cotter and knuckle joint, screwed fastening.

231. FT3CO10 Paramedics

CO_{01}	Understand the anatomical terms related to human body.
CO_{02}	Understand the importance of various injuries related to head, chest, abdominal, electrical and blast.
CO_{03}	Understand the different techniques of cardio pulmonary resuscitation and tissue injuries.
CO_{04}	Understand the rule of nine and degree of burn and methods to control it.
CO_{05}	Develop basic awareness of paramedical care and emergencies related to heat and cold.

232. FT3CO07 Fire Fighting & Field Training -I

CO_{01}	To enable the students to know about fire fighting vehicles.
CO_{02}	To provide knowledge about various types of hoses and hose fittings.
CO_{03}	To provide knowledge about different types of ladders in fire services.
CO_{04}	To learn about different types of breathing apparatus used during emergency
CO_{05}	To understand the importance of pumps and their function.

233. FT3CO12 Fire Fighting & Field Training -II

CO_{01}	Understand the fire fighting vehicles and appliances used in fire services.
CO_{02}	Understand the importance of fire service equipment and how to use them.
CO_{03}	Understand the different types of ladders used in fire services.
CO_{04}	To know about breathing apparatus and gas masks for firefighting purpose.

234. FT3EL06 Measurement and Instrument

CO_{01}	Explain the basics of standards of measurement, limits, fits & tolerances industrial applications
CO_{02}	Interpret measurement of field variables like force, torque and strain
CO_{03}	Interpret measurement of field variables like temperature, pressure & flow
CO_{04}	Identify the uses of gauges, comparators, surface textures, linear & angular, screw threads, gears and CMM
CO_{05}	Understand applications of various transducers in industry and miscellaneous other sensors.

235. FT3CO13 Fire Prevention and Protection System

CO_{01}	The students will be able to design the safe layouts of Industrial buildings to avoid the fire hazards.
CO_{02}	The students will be able to identify the general safety requirements by applying HAZOP techniques and passive fire protection system.
CO_{03}	The students will be able to understand the components and requirements for water based fire fighting systems.
CO_{04}	Students will be able to select proper lighting system and ventilation, select different fire fighting systems and fire detection mechanisms.

CO_{05}	Students will be able to understand the importance of housekeeping and management of different fire fighting equipments and design of escape routes.

236. FT3CO14 FIRE ENGINEERING I

CO_{01}	Understand the fire & classification fire
CO_{02}	Understand the importance of Electrical appliances
CO_{03}	Understand to know the handling and storing flammable and combustible liquids
CO_{04}	To know about different types of detection systems
CO_{05}	To know about different types of fire suppression systems

237. FT3CO15 Occupational Health and Hygiene System

CO_{01}	Understand the anatomical terms related to human body.
CO_{02}	Understand the importance of various injuries in industries.
CO_{03}	Understand the different industrial toxicology.
CO_{04}	Understand the rule of nine and degree of burn and methods to control it.

CO_{05}	Develop basic awareness of paramedical care and emergencies related to heat and cold.

238. FT3EL11 Safety in Petroleum and Petrochemical Industries

CO_{01}	The students will be able to formalize the data for health aspects and safety related to various hydrocarbon materials.
CO_{02}	The students will be able to apply knowledge of various legal safety aspects in the refining processes.
CO_{03}	The students will be able to apply knowledge of fire fighting systems in the process industries.
CO_{04}	The students will be able to understand the specifications and requirements of risk assessment and their corrective measures on various onshore platforms.
CO_{05}	The students will be able to use fire software and laws, acts and rules related to safety, health and environment.

239. FT3CO17 FIRE ENGINEERING II

CO_{01}	Understand the fire fighting vehicles and appliances used in fire services.

CO_{02}	Understand the importance of fire service equipment and how to use them.
CO_{03}	Understand the different types of ladders used in fire services..
CO_{04}	To know about breathing apparatus and gas mask for fire fighting purpose.
CO_{05}	To know about safety audit and safety culture in industries.

240. FT3CO18 Nuclear Safety & Radioactive Materials

CO_{01}	Understand the waves and radiation related to nuclear.
CO_{02}	Understand the importance of using instruments to measure radiation.
CO_{03}	Understand the techniques of personnel radiation..
CO_{04}	Understand the genetic hazards of radiation.
CO_{05}	To know about fire zones in case of nuclear disaster.

241. FT3CO19 Hazard Identification & Risk Assessment

CO_{01}	Students will be able to understand the need of a safe working environment for the workers.

CO_{02}	Student will become well conversant with basic laws related to the safety of the workers and industries.
CO_{03}	Students will be able to understand the methods for finding the hazards in the work place.
CO_{04}	Students will be able to develop the basic understanding of various safety related rules and will be able to implement them.

242. FT3EL07 Rescue Equipment & Techniques

CO_{01}	Understand the small gears and tools used in fire services.
CO_{02}	Understand the importance of ladders and how to use them.
CO_{03}	Understand the different types of fire tender used in fire services..
CO_{04}	Understand the types of lifting and drags used if fire services..
CO_{05}	To know about breathing apparatus and gas maks for fire fighting purpose.

243. FT3EL02 Fire safety codes

CO_{01}	Students will be able to understand the functional requirements of various fire fighting appliances.

CO_{02}	Student will become well conversant with emergency rescue operations during the incidents.
CO_{03}	Students will be able to understand the minimum safety requirements for the construction of the buildings.
CO_{04}	Students will be able to determine the potential threats in construction of temporary structures.
CO_{05}	Students will be able to develop the basic understanding of laws for protection and prevention of fire.

244. CS6CW07 Machine Learning

CO_{01}	Analyze the problems where machine learning can be used effectively.
CO_{02}	Understand various classification techniques and where it can be used
CO_{03}	Understand the unsupervised learning including clustering algorithms
CO_{04}	Understanding the concept of Neural Networks and its application areas
CO_{05}	Understanding various ensemble methods and advance machine learning methods including deep learning.

245. CS3CO23 Object Oriented Programming

CO_{01}	Differentiate between OO Programming vs Procedural Programming
CO_{02}	Understand the OO Programming with its properties.
CO_{03}	Understand the object oriented programming paradigm specifically including abstraction, encapsulation, inheritance and polymorphism.
CO_{04}	Describe and explain the factors that contribute to a good object oriented solution, reflecting in your own experiences and drawing upon accepted good practices.
CO_{05}	Learn the preliminaries of Object Oriented modeling and how it helps in software development.

246. OE00015 Agile Development

CO_{01}	Students will have a thorough understanding of the agile frameworks like lean, XP and Scrum
CO_{02}	Students will be able to plan in agile way, will be able to define vision, roadmap for a project
CO_{03}	Students will be able to think about project scope and procurement requirement for an agile project

CO_{04}	Students will be able to understand the role & importance of team dynamics and communication and also of quality aspects.
CO_{05}	Students will be in position to ensure success in Agile Projects by choosing the right team

247. CS3ED03 Data Visualization (Program Elective-5)

CO_{01}	To understabd basic principles of Data visualization and mapping of data on to aesthetics
CO_{02}	To Understand the working of non linear magnification, principles of Abstraction
CO_{03}	To Apply data visualization best practices to their work, including choosing the right chart type for the situation and avoiding visualization techniques that can mislead an audience
CO_{04}	To analyze document and interactive 3D visualization with images and text, Learn interactive handling of images and text.
CO_{05}	To know about encoding of data with marks, visualization idioms

248. CS3PC03 Industrial Training

CO_{01}	Able to understand the actual working environment and enhance their employability skills along with real corporate exposure.
CO_{02}	Able to Enhance the knowledge in current technology.
CO_{03}	Able to develop leadership ability and responsibility to execute the given task.
CO_{04}	Able to Increase self-confidence and helps in finding their own proficiency.
CO_{05}	Able to apply hands on practice within a real job situation.

249. CS3CO26 Software Engineering

CO_{01}	Description of software Process Model such as-Waterfall Model, Spiral Model.
CO_{02}	Finalize the requirement through the elicitation techniques
CO_{03}	They will be able to draw the different types design models, and how to perform modularization.
CO_{04}	Learn about different testing techniques.
CO_{05}	To understand project estimation methods (COCOMO) using SQA.

250. OE00051 R Programming

CO_{01}	Implement basics of R Programming using built-in functions
CO_{02}	Understand fundamentals and Data Structures used in R Programming.
CO_{03}	Apply fundamentals and Data Structures , functions , debugging tools in writing R- script
CO_{04}	Work with the Data Sets of various formats, Training algorithms and plotting.
CO_{05}	R-Programming languages for different applications like Machine Learning, Data Science etc.

251. CS3CO12 Computer Networks

CO_{01}	Ability to understand how data is flowing on Internet and network and Recognize the different inter-networking devices and their functions.
CO_{02}	Analyze the services and features of the various layers of networks. Design, calculate, and apply subnet masks and addresses to fulfill networking requirements.
CO_{03}	Analyze the features and operations of various application layer protocols such as HTTP, DNS, and SMTP
CO_{04}	Understand and building the skills of subnetting and routing mechanism.

CO_{05}	Familiarity with the basic protocols of computer networks, and how they can be used to

252. CS3ED04 Data Mining and Warehousing

CO_{01}	To demonstrate professional advancement through significant technical achievements
CO_{02}	Student will demonstrate the ability to work for Data Mining and Warehousing environment
CO_{03}	Students can effectively apply Mining approach over the entire system
CO_{04}	Students will know different tools of Data Mining and work on this tool
CO_{05}	Student will understand the need of Business models to adapt to new engineering tools and technology

253. CS3EL10 Cloud Computing

CO_{01}	To demonstrate professional advancement through significant technical achievements
CO_{02}	Student will demonstrate the ability to work effectively as a professional environment
CO_{03}	Students can effectively apply computing practice over the entire system
CO_{04}	Students will know different tools of cloud and work on this tool

CO_{05}	Student will understand the need of cloud deployment models and servers to adapt to new engineering tools and technology

254. CS3ES12 Software Workshop-I Internet and Web Technology

CO_{01}	Student will understand the web technology and its application
CO_{02}	Students will be able to make the coding for html, css, xml etc
CO_{03}	Students will be able to apply the knowledge of processing of websites
CO_{04}	Students will able to implement a website
CO_{05}	Students will able to understand online communication using this technology with the help of tools

255. CS3EW01 Internet and Web Technology

CO_{01}	Student will understand the web technology and its use
CO_{02}	Students will be able work on html,css,xml etc
CO_{03}	Students will learn about how the web is processed
CO_{04}	Students will able to make a website

CO_{05}	Students will able to understand online communication using this technology

256. CS3EA06 Natural Language Processing

CO_{01}	Understand natural language processing and to learn how to apply basic algorithms in this field.
CO_{02}	To get acquainted with the algorithmic description of the main language levels: morphology, syntax, semantics, and pragmatics,
CO_{03}	Understand various resources of natural language data – corpora and word net.
CO_{04}	To conceive basics of knowledge representation, inference, and relations to the artificial intelligence.
CO_{05}	Ability to acquire knowledge of contemporary issue for Theoretical Computer Science.

257. CS3CO09 Operating System

CO_{01}	Master the basic concepts related to operating systems and in detail about process management

CO_{02}	Master concurrency and control of processes like critical-section problems and its solution and understand memory management functions of operating systems.
CO_{03}	Be familiar with principles of deadlock and its prevention and the concepts of file system interface.
CO_{04}	Be familiar with file system implementation and understand mass storage management functions of operating systems.
CO_{05}	Be familiar with Protection and security aspects of operating systems and be exposed to other operating systems like distributed OS, Multi-processor OS,

258. CS3EL06 Internet of Things

CO_{01}	Students will able to understand building blocks of Internet of Things and characteristics.
CO_{02}	Students will able to realize the revolution of Internet in Mobile Devices, Cloud services and Sensor networking.
CO_{03}	Students will able to understand concepts of microprocessor like Arduino, NodeMCU, Raspberry-pi board etc
CO_{04}	Student will able to understand computer networking, security and protocols concept for Internet of Things.

CO_{05}	Students will able to design & develop IOT solutions.

259. CS3ET05 Big Data Analytics

CO_{01}	The students will be able to explain the challenges, sources, characteristics and evolution of big data analytics.
CO_{02}	The students will be able to install and use Hadoop framework.
CO_{03}	The students will be able to write the Map Reduce program for distributed data processing.
CO_{04}	The student will be getting familiar with the machine learning techniques for predictive analysis and visualization.
CO_{05}	The student will be able to understand and implement application of big data analysis using framework.

260. OE00016 Block chain Architecture

CO_{01}	The students will be able to explain basis cryptographic primitives used in block chain and distributed system concepts.
CO_{02}	The students will be able to concept of Bit coin and their operations.

CO_{03}	The students will be able to implement Smart contract on Ethereum platform.
CO_{04}	The students will be getting familiar with the Hyper ledger fabric platform and plug and play mechanism.
CO_{05}	The students will be able to identify the research based problems which can be solve by block chain technology.

261. OE00071 Server Administration

CO_{01}	Understand and Installing the Configuring Windows Server 2012
CO_{02}	Securing Files and Disks
CO_{03}	Configuring File and Share Access Permissions
CO_{04}	Configuring DNS Zones and Records
CO_{05}	Implementing Patch Management and Monitoring Server Performance

262. CS3CO15 Object Oriented Analysis & Design

CO_{01}	To have a thorough understanding of the basic structure and operation of a object
CO_{02}	To discuss in detail the process models and making System.

CO_{03}	To study in detail the different types design models (UML Diagrams).
CO_{04}	To study the Testing methods.
CO_{05}	To study the different ways of maintenance in system and measuring project

263. EN3ES06 Computer Programming-I

CO_{01}	Student will understand the basic terminology used in computer programming and develop the logics for general problems.
CO_{02}	Students will able to write, compile and debug programs in programming language
CO_{03}	Students will able to effectively choose the data structures that efficiently model the information in a problem.
CO_{04}	Students will able to formulate problems and implement algorithms in C.
CO_{05}	Student will develop better understanding of file handling and related operations. Also they will able to make program for given problems

264. CS3CO13 Design and Analysis of Algorithms

CO_{01}	Analyse best case, worst-case and average running times of algorithms using asymptotic analysis.
CO_{02}	Compare and analyse various sorting techniques and to find the efficient sorting technique with respect to specific case
CO_{03}	Derive and solve recurrences for recursive algorithms. Apply various recurrence solving techniques depending upon specific cases
CO_{04}	Understand the divide-and-conquer paradigm and will have knowledge, when an algorithmic design situation calls for it. Synthesize divide-and-conquer algorithms and analyse them.
CO_{05}	Understand the greedy paradigm and will have knowledge, when an algorithmic design situation calls for it. Synthesize greedy algorithms and analyse them.
CO_{06}	Understand the dynamic-programming paradigm and will have knowledge, when an algorithmic design situation calls for it. Synthesize dynamic-programming algorithms and analyse them.
CO_{07}	Understand the backtracking and branch & bound strategy and will have knowledge, when an algorithmic design situation calls for it. Synthesize algorithms for both and analyse them.
CO_{08}	Understand concept of P, NP, NP Complete and NP hard problems. Prove some problems NP complete or not.

265. EN3ES06 Computer Programming

CO_{01}	Student will understand the basic terminology used in computer programming.
CO_{02}	Students will able to write, compile and debug programs in programming language.
CO_{03}	Students will able to effectively choose the data structures that efficiently model the information in a problem.
CO_{04}	Students will able to formulate problems and implement algorithms in C.
CO_{05}	Student will able to make program for given problems

266. CS3EA01 Artificial Intelligence

CO_{01}	understand strategies for solving various search problems in AI
CO_{02}	understand the fundamentals of knowledge representation in AI
CO_{03}	understand working knowledge of reasoning in the presence of incomplete and/or uncertain information
CO_{04}	apply knowledge representation, reasoning, and natural language techniques to robotics problems.

CO_{05}	understand the game theory and apply it in various applications.

267. CS3EA09 Graph Theory

CO_{01}	Understand the importance and applications of Graph Theory in Computer Science & Engineering
CO_{02}	Implement proof writing skills and recurrence relation in Graph Theory
CO_{03}	Apply graph theory based approaches in solving practical problems
CO_{04}	Use the concepts like isomorphism, coloring etc concepts in multidisciplinary areas
CO_{05}	The students will be able to solve combinatorics problem in Mathemaatics

268. CS3ES12 Software Workshop-I

CO_{01}	Understand the applications of AI
CO_{02}	Implement the basic searching techniques
CO_{03}	Be aware of AI tools
CO_{04}	Aware of Logic Programming and it's construct

CO_{05}	Implement the program in Prolog

269. CS3PC03 Industrial Training

CO_{01}	Ability to understand the actual working environment and enhance their employability skills along with real corporate exposure.
CO_{02}	Able to Enhance the knowledge in current technology.
CO_{03}	Able to develop leadership ability and responsibility to execute the given task.
CO_{04}	Ability to Increase self-confidence and helps in finding their own proficiency.
CO_{05}	Able to apply hands on practice within a real job situation.

270. EN3ES07 Documentation and Presentation

CO_{01}	Ability to understand the use of Microsoft Word to produce professional-looking documents.
CO_{02}	To apply the concept how to create, print and publish properly formatted document.
CO_{03}	Analysis of applicability and suitability of MS Power Point as presentation.
CO_{04}	Evaluate the Features of Libre office and Comparison and compatibility with MS office.

CO_{05}	Analysis of applicability and suitability of MS Excel in database management

271. CS3EA04 Digital Image Processing

CO_{01}	Review the fundamental concepts of a digital image processing system
CO_{02}	Analyze images in the frequency domain using various transforms.
CO_{03}	Evaluate the techniques for Spatial domain image enhancement
CO_{04}	Understanding of Color Models and interpret color image.
CO_{05}	Implement image process and analysis algorithms and Categorize various compression techniques and Interpret Image compression standards.

272. OE00075 Exploratory Data Analytics: OE-2

CO_{01}	Student will understand theoretical foundation of working with data.
CO_{02}	Student will gain understanding of the basic principles of exploratory analysis and lay the foundation for future learning in the area.
CO_{03}	Student will knows modern extensions to data exploration, including working with “problem data”.

CO_{04}	Students will demonstrate basic principles behind working with all types of data for building all types of models
CO_{05}	Student will apply skills with major data analysis programs, especially R, so that they can use them and interpret their output.

273. CS3CO28 Data communication

CO_{01}	Students will learn the functioning of physical layer, its components and techniques
CO_{02}	Students will gain the concept of efficient BW utilization.
CO_{03}	Students will acquire knowledge of basic telephone network
CO_{04}	Students will come to know about reference model and IP addressing
CO_{05}	Students will learn various error detection and correction methods

274. CS3ED01 DBA: Database Application and Tools (Elective-IV)

CO_{01}	Gain knowledge of fundamentals of DBMS, database design and normal forms
CO_{02}	Master the basics of SQL for retrieval and management of data

CO_{03}	Design different data models at conceptual and logical level and translate ER Diagrams to Relational Data Model. And will aby to normalize the database.
CO_{04}	Judge and Convert the relational algebra statements to the SQL statements.
CO_{05}	Design and construct queries using Relational Algebra for a problem domain

275. CS3ET02 Statistical Inferences

CO_{01}	Understand the different estimation methods in statistical inference.
CO_{02}	Explain and use the concepts of Testing of Hypotheses, (Large Sample Tests small sample test)
CO_{03}	Understand the importance of Neyman-Pearson lemma in deciding the critical region for the hypothesis testing procedure.
CO_{04}	Able to differentiate between parametric and non-parametric tests for large and small samples also where to use them.
CO_{05}	Have a basic knowledge of Bayesian statistical inference.

276. CS3EL03 Information Storage and Mang.

CO_{01}	Understand the interactive Introduction to Storage Technology
CO_{02}	Fundamentals of Storage Systems Architecture
CO_{03}	Knowledge of infrastructure components and Information Lifecycle Management
CO_{04}	Broad perspective of Networked Storage: JBOD, DAS, NAS, SAN & CAS
CO_{05}	Dealing with Virtualization,Understand the interactive Concept of Cloud and Cloud

277. CS3EY01 Introduction to cloud computing

CO_{01}	Analyze the Cloud computing setup with its vulnerabilities and applications using different architectures
CO_{02}	Able to interpret various Cloud computing models and services.
CO_{03}	Able to identify the significance of implementing virtualization techniques and describe various Cloud platforms and services.
CO_{04}	Assess cloud Storage systems and Cloud security, the risks involved, its impact and develop cloud application
CO_{05}	Understand the concept SOA and cloud based storage in Cloud computing.

278. OE00056 Cloud Security

CO_{01}	To impart the fundamentals of virtualization techniques and various Security techniques.
CO_{02}	Introduction of concepts and security issues of cloud paradigm.
CO_{03}	Depicts security manegment frameworks and the standards that are relevant for the cloud
CO_{04}	Apply appropriate cloud programming methods to solve big data problems.
CO_{05}	Understanding the need of security mechanisms in cloud and various standards and framework to consider.

279. CS3PC02 Project Work-II & Dissertation

CO_{01}	Create/Design the project
CO_{02}	Implement/Simulate/Test and deploy the project application.
CO_{03}	Present and defend the project relevance/creation/design/implementation/simulation
CO_{04}	Prepare project report in a standard format

280. CS3CO25 Database Management system

CO_{01}	Identify the basic concepts and various data model used in database design ER modelling concepts and architecture use and design queries using SQL
CO_{02}	Apply relational database theory and be able to describe relational algebra expression, tuple and domain relation expression from queries.
CO_{03}	Recognize/ Identify the purpose of query processing and optimization and also demonstrate the basic of query evaluation.
CO_{04}	Apply and relate the concept of transaction, concurrency control and recovery in database.
CO_{05}	Discuss recovery system and be familiar with introduction to web database, distribute databases, data warehousing and mining.

281. CS3CO08 Computer Programming-II

CO_{01}	Student will understand the fundamentals of Java Programming.
CO_{02}	Students will be understand and learn the object oriented programming concepts.
CO_{03}	Students will learn the concept of multiprogramming and run time problems
CO_{04}	Students will be understand the basic of graphical programming using AWT.

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CO_{05}	Students will be understand the graphical programming using Swing and desktop application development.

282. CS3CC11 Cloud Application Development

CO_{01}	Analyze the architechure ,services and models of the Cloud
CO_{02}	Analyze application in different cloud ecosystem.
CO_{03}	Understanding the Cloud Development Ecosystem.
CO_{04}	Deploy application for storing and accessiblity in different cloud ecosystem.
CO_{05}	IIIustrating the management and improvement of Cloud based Application.

283. CS3EA07 Machine Learning

CO_{01}	Analyze the problems where machine learning can be used effectively.
CO_{02}	Understand various classification techniques and where it can be used.
CO_{03}	Understand the unsupervised learning including clustering algorithms.
CO_{04}	Understanding the concept of Neural Networks and its application areas.

CO_{05}	Understanding various ensemble methods and advance machine learning methods including deep learning.

284. CS3ED06 Data Science Elective-I

CO_{01}	Understand the interactive Data Science Technology.
CO_{02}	Fundamentals of Conditional probability and independence.
CO_{03}	Knowledge of Philosophy of EDA - The Data Science Process.
CO_{04}	Broad perspective of Data Visualization.
CO_{05}	Dealing with Statistical Inference and python programming.

285. CS3CO24 Computer Graphics & Multimedia

CO_{01}	Understand the interactive computer graphics architecture
CO_{02}	Fundamentals of graphics objects and algorithms.
CO_{03}	Knowledge of display systems, image synthesis, shape modelling, viewing, transformations, and interactive control of 3D computer graphics applications

CO_{04}	Broad perspective of modern computer system with modelling, analysis and interpretation of 2D and 3D visual information.
CO_{05}	To know about multimedia and animation.

286. CS3EA03 Soft Computing

CO_{01}	Understand soft computing techniques and their role in problem solving.
CO_{02}	Effectively use modern software tools to solve real problems using a soft computing approach and evaluate various soft computing approaches for a given problem.
CO_{03}	Recognize the feasibility of applying a soft computing methodology for a particular problem.
CO_{04}	Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems, genetic algorithms to combinatorial optimization problems and neural networks to pattern classification and regression problems.
CO_{05}	Understand hybrid soft computing techniques and its applications.

287. OE00073 Cyber Security Fundamentals

CO_{01}	Analyse and evaluate the cyber security needs of an organization

CO_{02}	Determine and analyse software vulnerabilities and security solutions to reduce the risk of exploitation.
CO_{03}	Design and develop a security architecture for an organization
CO_{04}	Measure the performance and troubleshoot cyber security systems.
CO_{05}	Design operational cyber security strategies and policies
CO_{06}	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools

288. CS3ED04 Big Data Engineering

CO_{01}	To demonstrate professional advancement through significant technical achievements.
CO_{02}	Student will demonstrate the ability to work effectively as a professional environment.
CO_{03}	Students can effectively apply Big Data Engineering practice over the entire system lifecycle.
CO_{04}	Students will know different tools of Big data and work on this tool.
CO_{05}	Student will understand the need of Big data and adapt to new engineering tools and technology.

289. OE00018 Python Essentials (Open Elective-1)

CO_{01}	Use programming terminology correctly in discussion of course topics & identify the need for a variable and select the appropriate primitive data representation.
CO_{02}	Design programs involving decision structures, loops and functions.
CO_{03}	Use and implement programs based on the concepts of Object-Oriented Programming.
CO_{04}	Use and implement programs based on the concepts of File Operation & OOPS concepts.
CO_{05}	Understand the Mutable data types, Exception and Standard modules.

290. CS3CO10 Theory of Computation

CO_{01}	Model, compare and analyse different computational models using combinatorial methods.
CO_{02}	Apply rigorously formal mathematical methods to prove properties of languages, grammars and automata.
CO_{03}	Construct algorithms for different problems and argue formally about correctness on different restricted machine models of computation.
CO_{04}	Identify limitations of some computational models and possible methods of proving them.

CO_{05}	Have an overview of how the theoretical study in this course is applicable to and engineering application like designing the compilers.

291. EN3ES05 Basic Computer Engineering

CO_{01}	Student will learn the basic terminology used in computer.
CO_{02}	Students will able to understand concept of various programming languages and uses
CO_{03}	Students will learn about various operating systems and their working.
CO_{04}	Students will able to understand basics of database management system.
CO_{05}	Students will learn relationship between hardware and software.

292. CS3EY05 Ethical Hacking: Elective-3

CO_{01}	To learn basic terminology of Ethical Hacking
CO_{02}	Identify legal and ethical issues related to vulnerability and penetration testing.
CO_{03}	To perform Network Scanning using tools.
CO_{04}	To understand the difference between system hacking, wireless hacking and network hacking etc

CO_{05}	Identify the techniques and tools used in system hacking.

293. CS3EL05 Ad-Hoc: Ad-Hoc Networks (PE-VI)

CO_{01}	Students should be able to understand the Introduction to Ad hoc networks.
CO_{02}	Students will be able to learn Medium access protocol MAC
CO_{03}	Students will be able to make command on Routing protocols for Ad hoc Network.
CO_{04}	Students will be able to know the Transport layer and security protocols for Ad hoc network
CO_{05}	Students will be able to understand how to Secure routing in Ad hoc network.

294. CS3CO21 Data Structures

CO_{01}	Understand the concepts of Linear and Non-Linear data structures and their applications.
CO_{02}	Implement the concept of array and link list and understand their applications.
CO_{03}	Understand the concept of Stack and Queue data structure and how they are implemented and how we can apply their concepts in computer science field as well as in real life.
CO_{04}	Understand the searching and sorting techniques and he can describe the hash function and concepts of collision and its resolution methods

CO_{05}	Solve problem involving graphs, trees.

295. CS3CO22 Computer System Architecture

CO_{01}	Student will understand the Evolution of Computers and Computer Generations, Measuring Computer, Technology Trends, Measuring Computer Performance, MIPS.
CO_{02}	Students will learn about Fundamental concepts of– Execution of a complete instruction Design of Basic computer, addressing modes, Instruction formats, stack organization
CO_{03}	Students will be able solve questions on Number systems, Arithmetic operations on binary numbers, Floating Point Representation.
CO_{04}	Students will able to understand basics of Storing data and Program in Memory, Memory Hierarchy in a Computer, Semiconductor RAMs–ROMs,Cache memories,and virtual memory
CO_{05}	Students will able to understand pipelining, vector processing, Multiprocessor Architecture organization ,Performance, characteristics of Multiprocessors

296. EN3MC01 Open Learning Course

CO_{01}	Student will understand the fundamentals of Java Programming.

CO_{02}	Students will be understand and learn the object oriented programming concepts.
CO_{03}	Students will learn the concept of multiprogramming and run time problems
CO_{04}	Students will be understand the basic of graphical programming using AWT.
CO_{05}	Students will be understand the graphical programming using Swing and desktop application development.

297. CS3EY04 Principal of Virtualization

CO_{01}	To understand the virtualization and Cloud Technology
CO_{02}	Implementing Virtualization using Hypervisors
CO_{03}	Understanding and implementing the Storage Virtualization
CO_{04}	Implementing Network virtualization using VMware NSX
CO_{05}	How to Secure the ESXi and vCenter Servers and Monitoring the performance of r

298. OE00075 Exploratory Data Analytics

CO_{01}	Understand the data and its types for the appropriate exploratory data Analysis

CO_{02}	Understand the importance of Exploratory Data Analysis over summary statistics
CO_{03}	Understand the importance Univariate statistics in EDA
CO_{04}	Plot Univariate statistical graphs for the better representation and interpretation
CO_{05}	Plot bivariate statistical graphs for the better representation and interpretation

299. CS3EA07 Machine Learning

CO_{01}	Analyze the problems where machine learning can be used effectively
CO_{02}	Understand various classification techniques and where it can be used
CO_{03}	Understand the unsupervised learning including clustering algorithms
CO_{04}	Understanding various ensemble methods
CO_{05}	Understanding advance machine learning methods including deep learning

300. CB3CO04 Object Oriented Programming

CO_{01}	Differentiate between OO Programming vs Procedural Programming.
CO_{02}	Understand the OO Programming with its properties.

CO_{03}	Understand the object oriented programming paradigm specifically including abstraction, encapsulation, inheritance and polymorphism.
CO_{04}	Describe and explain the factors that contribute to a good object oriented solution, reflecting in your own experiences and drawing upon accepted good practices.
CO_{05}	Learn the preliminaries of Object Oriented modeling (UML) and how it helps in software development

301. CB3CO01 Data structures & Algorithms

CO_{01}	Understand the programming style in computers science.
CO_{02}	Understand linear data structure and its application in computer science.
CO_{03}	Understand the non linear data structure and its application in computer science
CO_{04}	Understand the file organization techniques and its implementation.
CO_{05}	Understand the searching and sorting and how the data structure helps in performance.

302. EN3ES14 Software Workshop-III (IOT)

CO_{01}	Students will able to understand Arduino board and their IDE.

CO_{02}	Students will able do physical connectivity of different things. Sensor networking.
CO_{03}	Students will able to understand concepts of microprocessor and Raspberry-pi board.
CO_{04}	Student will able to understand the different type of sensors and their connectivity.
CO_{05}	Students will able to design & develop IOT solutions.

303. EN3MC14 Essence of Indian Traditional Knowledge

CO_{01}	Students respect all cultural and traditional practices of the real world.
CO_{02}	Decision making will be cultivated in several critical problem domains of the real world.
CO_{03}	Learnings of different languages, Holy books and their implementation will be revealed.
CO_{04}	Student learn to support Indigenous Knowledge (IK), Indian tradition Vs western tradition
CO_{05}	Budding engineers support tribe culture and civilization value of TK in global economy

304. EN3HS07 Business Communication & Value Science – III

CO_{01}	Will be able to apply & analyze SWOT & the power of motivation in various life positions
CO_{02}	Will develop respect for pluralism in cultural spaces and analyze cross cultural communication and apply the concepts of Global, glocal and translocational

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CO_{03}	Recognize the roles and relations of different genders.
CO_{04}	Apply the science of Nation building
CO_{05}	Understand, apply & analyze the tools of technical writing
CO_{06}	Understand Artificial intelligence &recognize its impact in daily life

305. EN3ES14 Computer Organization and Architecture

CO_{01}	Student will understand the data representation, Measuring Computer, addressing modes, Instruction formats, Measuring Computer Performance.
CO_{02}	Students will be able solve questions on Number systems, Arithmetic operations on binary numbers, Floating Point Representation.
CO_{03}	Students will understand Input Output Organization, interrupt, DMA.
CO_{04}	Students will able to understand pipelining, vector processing, Multiprocessor Architecture organization, Performance, characteristics of Multiprocessors.
CO_{05}	Students will able to understand basics of Storing data and Program in Memory, Memory Hierarchy in a Computer, Semiconductor RAMs–ROMs, Cache memories, and virtual memory.

306. EN3ES14 Software Workshop-III (BDE)

CO_{01}	Understand natural language processing and to learn how to apply basic algorithms in this field.

CO_{02}	To get acquainted with the algorithmic description of the main language levels.
CO_{03}	Understand the need of Big data and adapt to new engineering tools and technology and can make some project
CO_{04}	Effectively apply Big Data Engineering practice over the entire system lifecycle.
CO_{05}	To learn data analysis by using Spark MLLib

307. EN3ES14 Software Workshop-III (PV+EH)

CO_{01}	To understand the basic concept of hacking and difference between different terms
CO_{02}	Identify footprinting techniques and tools.
CO_{03}	To use tools to perform network Scanning.
CO_{04}	To capture and analyze data packets using hacking tools.
CO_{05}	To understand about different passowrd cracking techniques.

308. CB3CO03 FORMAL LANGUAGE AND AUTOMATA THEORY

CO_{01}	Model, compare and analyse different computational models using combinatorial methods.

CO_{02}	Apply rigorously formal mathematical methods to prove properties of languages, grammars and automata.
CO_{03}	Construct algorithms for different problems and argue formally about correctness on different restricted machine models of computation.
CO_{04}	Identify limitations of some computational models and possible methods of proving them.
CO_{05}	Have an overview of how the theoretical study in this course is applicable to and engineering application like designing the compilers.

309. OE00077 Marketing Research and Marketing Management

CO_{01}	Understand the basic concepts of marketing
CO_{02}	Apply new product development and product life cycle concept
CO_{03}	Apply different pricing strategy and different tools for promotion
CO_{04}	Analyse data through different statistical tools
CO_{05}	Explain the concept of internet marketing and business market

310. EN3BS06 Discrete Mathematics 1 CSBS

CO_{01}	To understand the concepts of sets and functions
CO_{02}	To understand Mathematical Logic and to describe Lattices and Posets and their uses
CO_{03}	To develop the ability to solve the recurrence relations by using various methods.
CO_{04}	To study the concepts of various graphs and trees and formulate computational problems
CO_{05}	Implement the concept of Propositional calculus.

311. OE00076 Introduction to Innovation, IP Management & Entrepreneurship

CO_{01}	Students will have a thorough understanding of the entrepreneurship, Managerial vs. entrepreneurial. approach & Entrepreneur vs. Intrapreneur.
CO_{02}	Students will be able to uderstand Meaning, Significance, contents, formulation of Business Plan and implementing business plans.
CO_{03}	Students will be able to uderstand the Concept, Importance of Innovation, Sources of innovation
CO_{04}	Students will be able to understand the Concept of IP management, Categories of IPR, Rationale behind IPR.
CO_{05}	Students will be able to undestand types of Intellectual Property; Patent- procedure, licensing and assignment, infringement and penalty.

312. EL5CO01 Poetry I

CO_{01}	Identify various forms and types of poetry and specify the figurative language used in poems
CO_{02}	Identify the epic and narrative poets
CO_{03}	Analyze and appreciate various forms of sonnets.
CO_{04}	Observe how satiric poetry influences life.
CO_{05}	Understand romantic poetry in literature.

313. EL5CO02 Drama I

CO_{01}	Sketch the history of theatre, with particular attention to the evolution of stylistic and aesthetic trends and differentiate various schools and forms of drama
CO_{02}	Examine the use of theatrical devices through one act plays
CO_{03}	Analyse and appreciate Shakesperean dramas
CO_{04}	Assess the verbal and visual language of **Renaissance** drama.
CO_{05}	Appreciate comic and its sub genres in drama.

314. EL5CO03 Fiction I

CO_{01}	Delineate different types of fiction.
CO_{02}	Analyze the theme and setting of fantasy
CO_{03}	Recognize the different types of narrative techniques in science fiction
CO_{04}	Assess mastery in various aspects of picaresque novels
CO_{05}	Identify and appreciate realistic novels in the literary world.

315. EL5CO04 Prose I

CO_{01}	Differentiate and relate different varieties of prose
CO_{02}	Understand short stories in prose writing.
CO_{03}	Appreciate journals and diaries as a part of non-fiction.
CO_{04}	Examine Political and Social Writings socio-historic and cultural context.
CO_{05}	Understand philosophical writings through various philosophers.

316. EL5CO10 Critical Theory I

CO_{01}	The broad development of literary theory from the early twentieth century to the present.
CO_{02}	Differences and similarities between several theories and critical schools.
CO_{03}	Some key concepts of individual theories and how theory has been applied to literary analysis and its use when reading and analysing literature.
CO_{04}	By the end of the course students will have developed: the ability to read, contextualize, and compare primary material by different literary theorists.
CO_{05}	Students will be able to write formal and informal responses to literary and critical theory that demonstrate engagement, reflective thought, effective inquiry, perception of patterns in language features, and responsible generalization.

317. EL5CO05 Poetry II

CO_{01}	Understand metaphysical poetry and its characteristics.
CO_{02}	Further understand romantic poetry in literature.
CO_{03}	Identify techniques used in Victorian poetry.
CO_{04}	Relevance and deep understanding of symbolism in poetry.
CO_{05}	Appreciate modernistic approach towards poetry.

318. EL5CO06 Drama II

CO_{01}	Examine restoration drama and its various themes dealt in.
CO_{02}	Analyse and appreciate Victorian drama and its nuances.
CO_{03}	Assess the stylistic features of modern drama.
CO_{04}	Evolving literature through drama since the early era.
CO_{05}	Differentiating dramas in the intercultural context with special reference to Indian dramatics

319. EL5CO07 Fiction II

CO_{01}	Understand the characters, setting and themes of a novel.
CO_{02}	Analyze the various elements of a tragedy along with the plot and themes.
CO_{03}	Penetrating the psyche of an author through the novel.
CO_{04}	Assess issues such as alienation and dystopia of various authors.
CO_{05}	Recognize various aspects of novel in the verse.

320. EL5CO08 Prose II

CO_{01}	Differentiate and relate different varieties of prose
CO_{02}	Understand short stories in prose writing.
CO_{03}	Appreciate journals and diaries as a part of non-fiction.
CO_{04}	Examine Political and Social Writings socio-historic and cultural context.
CO_{05}	Understand philosophical writings through various philosophers.

321. EL5AE01 Communication Skills and Paper Writing

CO_{01}	The broad development of literary theory from the early twentieth century to the present.
CO_{02}	Differences and similarities between several theories and critical schools.
CO_{03}	Some key concepts of individual theories and how theory has been applied to literary analysis and its use when reading and analysing literature.
CO_{04}	By the end of the course students will have developed: the ability to read, contextualize, and compare primary material by different literary theorists.
CO_{05}	Students will be able to write formal and informal responses to literary and critical theory that demonstrate engagement, reflective thought, effective inquiry, perception of patterns in language features, and responsible generalization.

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322. EL5AE01 Communication Skills and Paper Writing

CO_{01}	The broad development of students
CO_{02}	Will develop LSRW
CO_{03}	Will be able to speak fluently.
CO_{04}	Will be able to deliver effective presentation.
CO_{05}	Students will be able to write formal and informal communication.

323. EL5CO11 Indian Writings in English

CO_{01}	Acquaintance of the history of Indian English literature in the pre and post- independence era.
CO_{02}	Better understanding of significant cultural and societal issues presented in Indian English literature.
CO_{03}	Refined moral and spiritual values in practical life.
CO_{04}	Enhanced understanding social evils and means to eradicate them.
CO_{05}	Realizing the beauty of Indian culture and way it is reflected in Literature.

324. EL5CO09 Linguistics & Stylistics

CO_{01}	Students will be accustomed with the nature of stylistics, its scope and the style of language usage in various contexts, both linguistic and situational.
CO_{02}	Intellectual skills with ability to enhance thinking and feeling about language through a more qualitative and emotive approach.
CO_{03}	Students will be able to develop an understanding of the relationship between stylistics and different branches of linguistics by demarcating the boundaries between them.
CO_{04}	It enables the students to apply some of the concepts learnt to the texts covered in the course in the field of Stylistics.
CO_{05}	Students should have a fair knowledge of English language involving the knowledge of adequate English vocabulary, structures and spellings. They should have their mental development of the level that they arrange ideas in a sequence.

325. EL5EL03 Post Colonial Literature I

CO_{01}	Possess a coherent knowledge and a critical understanding of postcolonial literature and its key historical, cultural and theoretical developments.
CO_{02}	Be able to compare, discuss and explain interconnections and functions of postcolonial literature and its contexts, including comparative and interdisciplinary issues.

CO_{03}	Critical evaluation of arguments and assumptions about postcolonial literature, texts, and modes of interpretation.
CO_{04}	Think critically about these texts in relation to postcolonial theories.
CO_{05}	Contextualization ofthese works in their larger cultural contexts.

326. EL5EL04 Post Colonial Literature II

CO_{01}	Possess a coherent knowledge and a critical understanding of postcolonial literature and its key historical, cultural and theoretical developments.
CO_{02}	Be able to compare, discuss and explain interconnections and functions of postcolonial literature and its contexts, including comparative and interdisciplinary issues.
CO_{03}	Critical evaluation of arguments and assumptions about postcolonial literature, texts, and modes of interpretation.
CO_{04}	Think critically about these texts in relation to postcolonial theories.
CO_{05}	Contextualization ofthese works in their larger cultural contexts.

327. EL5EL02 ENGLISH GRAMMAR

CO_{01}	Students will be accustomed with the nature of grammar, its scope and the style of language usage in various context.

CO_{02}	Intellectual skills with ability to enhance thinking and feeling about language through a more qualitative and emotive approach.
CO_{03}	Students will be able to develop relevance of functional grammar in reading and writing.
CO_{04}	To provide the broad base understanding of structure of sentences and order of words.
CO_{05}	Students will be able to demonstrate knowledge and understanding of essential vocabulary.

328. CH5CO01 Inorganic Chemistry-I

CO_{01}	Explain the stereochemistry and bonding of Inorganic complexes.
CO_{02}	Gain knowledge of stability of complexes.
CO_{03}	Differentiate between Sn1, Sn2 reaction mechanism of complexes as well as acid and base hydrolysis.
CO_{04}	Gain fundamental knowledge of types of reactions such as Redox, Electron transfer etc.
CO_{05}	Understand HSAB principle and will be able to compare hard and soft acid base interaction.

329. CH5CO02 Organic Chemistry- I

CO_{01}	Understand and design the Aliphatic Nucleophilic Substitution reactions.
CO_{02}	Understand and analyse the Conformational analysis of cycloalkanes, reactivity, chirality, interconversion, resolution.

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CO_{03}	Understand the concept of aromaticity, nonaromaticity and antiaromaticity in carbocyclic and heterocyclic compounds. Analyse and deign the new Aromatic systems.
CO_{04}	Understand and analyse the role of stereochemistry in Organic Compounds.
CO_{05}	Understand and design the various types of aliphatic nucleophilic substitution.

330. CH5CO03 Physical Chemistry- I

CO_{01}	Understand the concept of quantum mechanics viz. Schrodinger equation, particle in a box, the harmonic oscillator, the rigid rotor, the hydrogen atom and helium atom.
CO_{02}	Apply hypothetical approximation method for calculation of energy by variation principle, perturbation theory and molecular orbital theory.
CO_{03}	Derive mathematically the relationships for angular momentum, spin, anti-symmetry and Pauli exclusion principle.
CO_{04}	Understand and recognize the concept of classical thermodynamics.
CO_{05}	Analyze the advanced concept of thermodynamics at the molecular level in terms of probability and distribution using the statistical thermodynamics concept.

331. CH5CO04T Group Theory & Spectroscopy

CO_{01}	Explain and represent Symmetry and Group theory with related symmetry operations, matrices/ point group representations of molecules in Chemistry.
CO_{02}	To understand Microwave Spectroscopy with the help of theoretical model.
CO_{03}	To attain knowledge of different aspects related to principle of IR spectroscopy
CO_{04}	To define and understand Classical and quantum theories of Raman effect.
CO_{05}	To Learn principles & applications of Molecular spectroscopy viz. Electronic spectroscopy and Photoelectron spectroscopy.

332. CH5DE01T Mathematics for Chemist

CO_{01}	Able to understand matrices which has diverse application in the areas of Chemistry.
CO_{02}	Able to understand basic mathematical methods for solving chemical theory.
CO_{03}	Able to implement basic concept of partial differentiation and integration.
CO_{04}	Able to apply basic types of modeling problems.
CO_{05}	Apply the concepts of permutation and combination.

333. CH5BS02T Biology for Chemist

CO_{01}	Have knowledge of cell structure and functions.
CO_{02}	Have basic idea of carbohydrate and their functions.
CO_{03}	Have knowledge of lipids , lipids metabolism.
CO_{04}	Acquire knowledge of amino acids, proteins.
CO_{05}	Have idea of role of nucleic acids.

334. CH5EL03 Analytical Chemistry

CO_{01}	The students should be able to understand proper analytical techniques for handling general laboratory glassware, apparatus and instruments.
CO_{02}	The students should be skilled to identify different errors as well as to solve statistical evaluations over chemical analysis data.
CO_{03}	The students should understand about the different modern analytical techniques for food analysis.
CO_{04}	The students should acquire knowledge of different chemical analytical- skills, techniques, parameters for water and able to explore it in new areas of research.
CO_{05}	The students should gain advance knowledge of analytical techniques for Soil, Fuel, Body Fluids and Drugs.

335. CH5EL04 Chemistry of Materials

CO_{01}	The students should be able to recognize and understand the chemical structure of different materials viz. glass, ceramics, composite and nanomaterials.
CO_{02}	The students should gain knowledge of structures and properties of thin film, LB film and liquid crystals.
CO_{03}	The students should differentiate among conducting, ferro- electric, superionic conductors type behaviours of polymeric materials and ionic conductors.
CO_{04}	The students should acquire knowledge of synthesis and characteristic properties of high Tc materials
CO_{05}	The students should acquire advance knowledge related to solid-state devices, organic solids, fullerenes, molecular devices and able to explore it in new areas of research.

336. CH5CO08 Group Theory and Spectroscopy-II

CO_{01}	To understand and analyze about NMR, Chemical shift, and advantages of FT NMR.
CO_{02}	Gain knowelegde about Nuclear Quadrupole Resonance Spectroscopy.
CO_{03}	Better understanding of Electron Spin Resonance Spectroscopy.
CO_{04}	Acquire knowledge about X-ray structural analysis of crystals.

CO_{05}	To understand and analyze about Electron diffraction.

337. CH5CO06 Organic Chemistry- II

CO_{01}	The student will acquire knowledge of mechanism of aromatic electrophilic Substitution.
CO_{02}	The student will acquire knowledge of free radical mechanism.
CO_{03}	The student will acquire knowledge of addition reactions.
CO_{04}	The student will acquire knowledge of elimination reactions.
CO_{05}	The student will acquire knowledge of pericyclic reactions.

338. CH5CO05T Inorganic Chemistry-II

CO_{01}	To understand and compare Orgel and Tanabe-Sugano diagrams for transition metal complexes (d^1 to d^9 states).
CO_{02}	To compare Magnetic Properties of Transition Metal Complexes.
CO_{03}	To execute and prepare the bonding structure and important reaction of transition metal and metal carbonyl.
CO_{04}	To explain and sketch the metal clusters.
CO_{05}	To compare and demonstrate Optical Rotatory Dispersion and Circular Dichroism.

339. CH5CO07T Physical Chemistry-II

CO_{01}	Understand chemical kinetics and the theories for the mechanism of reactions.
CO_{02}	Understand surface chemistry and micelles.
CO_{03}	Understand and recognize the macromolecules
CO_{04}	Derive mathematical equations for the different phenomena of non-equilibrium thermodynamics.
CO_{05}	Learn and compare different theories and their applications for the electrochemistry of solutions

340. CH5SE01 Computer for Chemists

CO_{01}	Students will be able to apply knowledge of computing and mathematics appropriate to discipline.
CO_{02}	Students will have ability to design, implement, and evaluate a computer based system, process, component, or program to meet desired needs..
CO_{03}	The computer basic will let the student to know the component.
CO_{04}	Students will be able to help in the cyber investigation.
CO_{05}	Students will be more skilled and apply knowledge for research in cyber security.

341. CH5CO09 Applications of Spectroscopy

CO_{01}	Know the principle and applications of Mossbauer spectroscopic techniques.
CO_{02}	Gain the knowledge of Electronic spectroscopy.
CO_{03}	Understand Vibrational spectroscopy.
CO_{04}	Study about Nuclear magnetic resonance spectroscopy.
CO_{05}	Gain knowledge of the advancement of Nuclear magnetic resonance spectroscopy.

342. CH5EL02T Industrial Chemistry

CO_{01}	The students will be able to know about Water and it's purification.
CO_{02}	The students will gain the knowledge of Gases and heavy chemicals.
CO_{03}	The students will understand about Coal & Petroleum.
CO_{04}	The students will study about refining of Petroleum and its different products.
CO_{05}	The students will gain knowledge of Fats & Oils.

343. MA5CO01 Advance Abstract Algebra-I

CO_{01}	Understand the fundamental concepts of advanced algebra and their role in modern mathematics.
CO_{02}	Recognizes various series and implement them in different applications.
CO_{03}	Able to generate groups with given specific conditions.
CO_{04}	Understand how to apply various transformations.
CO_{05}	Apply important structures called rings in real life application.

344. MA5CO02 Real Analysis-I

CO_{01}	Understands the behaviour of real numbers, sequence and series of real numbers and real functions.
CO_{02}	Apply the concepts of real analysis as the basics of measure theory
CO_{03}	Apply the concepts of real analysis in axiomatic probability follows to stochastic process
CO_{04}	Analyze and apply real analysis in Numerical sequence and series
CO_{05}	Apply the concepts of real analysis in linear transformation.

345. MA5CO03 Topology-I

CO_{01}	Demonstrate accurate and efficient use of Set Theory in Topological Space.
CO_{02}	Demonstrate capacity for mathematical reasoning through analyzing, proving and explaining concepts from Metric Space.
CO_{03}	Apply problem-solving using topology techniques applied to diverse situations in other mathematical contexts.
CO_{04}	Execute the Definition of Continuity and Homeomorphism in Topological Space
CO_{05}	Analyze the definition and basic properties of connected spaces, path connected spaces,

346. MA5CO04 Complex Analysis-I

CO_{01}	Apply the knowledge to of analytic function as a mapping on the plane, Mobius transformation and its application in various fields.
CO_{02}	Student will be able to apply the knowledge of Cauchy's theorems and integral formulas and Liouville's theorem, use it to solve integral on different domain.
CO_{03}	Analyze how to count number of zeros of analytic function which gives rise to open mapping theorem and Goursat theorem.

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CO_{04}	Students will be able to handle integration of meromorphic function with zeros and poles leading to the argument principle also will acquire the skill of contour integration to evaluate complicated real integrals via theory of residue.
CO_{05}	Students will apply different versions of the maximum principle and Rouche's theorem as well as the Schwarz's lemmare presenting analytic function on a disk as fractional mappings applicable to various research field.

347. MA5CO05 Advanced Discrete Mathematics-I

CO_{01}	Understands the concept of logic and apply in real life.
CO_{02}	Understand different algebraic system, verify group properties in particular examples, use relations of homomorphism and isomorphism, congruence relation etc.
CO_{03}	Deal with lattices as an algebraic structures, can form sub-lattices, homomorphism and able to determine whether a given lattice is complete or distributive.
CO_{04}	Understand how lattices and Boolean algebra are used as tools and mathematical models in the study of networks.
CO_{05}	Simplify the Boolean functions to the minimum number of literals using Karnaugh Map.

348. MA5SE01 MS-Excel

CO_{01}	Prepare any worksheet regarding to any task.
CO_{02}	Use formulas, to insert table, images & charts in worksheet
CO_{03}	Preview and print the worksheet.
CO_{04}	Filter and Sort the data and to use different data validation option
CO_{05}	Use some of the advance options of excel.

349. MA5CO06 Advance Abstract Algebra-II

CO_{01}	Understand ideals and apply them in the related field.
CO_{02}	Students will have the knowledge of modules.
CO_{03}	Understand modules to solve theorems and Principal Ideal Domain (PID's).
CO_{04}	Knows the basic facts in the theory of fields
CO_{05}	Effectively write abstract mathematical proofs and learn the efficient use of advanced algebraic techniques.

350. MA5CO07 Real Analysis-II

CO_{01}	Able to apply the concepts of real numbers in measure theory.
CO_{02}	Able to analyze application of real analysis as the basics of measure function.
CO_{03}	Able to understand application of real analysis in Lebesgue differentiation and integration.
CO_{04}	Able to understand application of real analysis in unction of bounded variation.
CO_{05}	Able to understand and apply real analysis in convergence and completeness.

351. MA5CO08 Topology-II

CO_{01}	Analyzing and experimenting the connection between compactness and sequential convergence.
CO_{02}	Implementing the concepts of Countability and Separable Spaces
CO_{03}	Executing conjectures about Product and Quotient Spaces.
CO_{04}	Demonstrating the application of Nets, Filters and ultra-filters in topological spaces
CO_{05}	Interpreting the Knowledge of metrizable Spaces in context with topological spaces.

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352. MA5CO09 Complex Analysis-II

CO_{01}	Students will be able to solve the problems using complex analysis techniques applied to different situations in engineering and other mathematical contexts.
CO_{02}	Students will be able to establish the capacity for mathematical reasoning through analyzing ,by proving and explaining concepts from complex analysis.
CO_{03}	Students will be able to justify existence of special functions as Riemann zeta function and their use in a range of contexts.
CO_{04}	Students will develop the appreciation of deeper aspects of complex analysis such as entire function and range of analytic functions.
CO_{05}	Students will be able to use this knowledge in the context of further applications and extend it to pursue research in this field.

353. MA5CO10 Advanced Discrete Mathematics II

CO_{01}	Distinguish different types of graphs and their properties and apply their knowledge to model mathematical problems using graph theory.
CO_{02}	Understand how to apply the concepts of digraph and trees in real life.

CO_{03}	Understand Moore and Mealy machine.
CO_{04}	Understand language generated by grammar and able to implement where it is applicable.
CO_{05}	Analyze and implement polish notation and conversion of infix expression to it.

354. MA5SE02 Professional Communication

CO_{01}	Identify the difference between professional and personal communication.
CO_{02}	Develop sharp acumen with effective communication skills.
CO_{03}	Apply communication strategies in day to day life.
CO_{04}	Examine different personalities and understand human behavior.

AG3RC02

355. AG3RC02 Elementary Mathematics

CO_{01}	Students will be able to apply the knowledge of straight lines in real life.
CO_{02}	Students will be able to understand circle and tangent, normal to a given circle.
CO_{03}	Students will be able to understand the concept of derivative and to find the maxima and minima
CO_{04}	Students will be able to solve Logarithmic.

CO_{05}	Students will be able to understand the operation of matrices and to find the determinant of matrix.

356. AG3RC03 Agricultural Heritage

CO_{01}	The students will be able to know about agricultural heritage
CO_{02}	The students will gain the knowledge of status of agriculture
CO_{03}	The students will understand about plant production through indigenous traditional knowledge
CO_{04}	The students will study about importance of agriculture
CO_{05}	The students will gain importance of current scenario of Indian agriculture

357. AG3CO05 Fundamentals of Agronomy

CO_{01}	The students will be able to prepare the field for cultivation.
CO_{02}	The students will understand the water use efficiency for cultivation
CO_{03}	The students will understand the establishment of crop-weed association and critical period of crop-weed competition
CO_{04}	Student will come to know about the Growth and development of crops.

CO_{05}	Student will know theCrop management technologies

358. AG3HS01 Comprehension & Communication Skills in English

CO_{01}	The students will be able to know about extension and education
CO_{02}	The students will gain the knowledge of various extension programmes in India
CO_{03}	The students will understand about various rural and community development
CO_{04}	The students will study about Monitoring evaluation and extension teaching methods
CO_{05}	The students will gain importance of communication and journalism

359. AG3CO01 Fundamentals of Horticulture

CO_{01}	The students will be able to know about Horticulture
CO_{02}	The students will gain the knowledge of propagation strategy in Horticulture
CO_{03}	The students will understand about principles and methods oforchard establishment
CO_{04}	The students will understand about principles and methods oforchard establishment

CO_{05}	The students will gain importance of irrigation

360. AG3CO02 Fundamentals of Plant Biochemistry and Biotechnology

CO_{01}	Student will understand the importance of plant cells
CO_{02}	Students will know about carbohydrates, proteins, enzymes and lipids.
CO_{03}	Students will know the process of biosynthesis.
CO_{04}	Student will know about the structure and functions and metabolism of biomolecule
CO_{05}	Students will know theknowledge of biotechnology.

361. AG3CO03 Fundamentals of Soil Science

CO_{01}	Students will be familiarized with the importance of soils in agriculture
CO_{02}	Students will come to know the physical, chemical, biological aspects of soil and soil-water-plant interaction
CO_{03}	Student will come to know about the Chemical properties of Soil
CO_{04}	Students will know the Soil colloids, compositionand their influence on soil properties.

CO_{05}	Student will know theHumic substances and pollution

362. AG3MC01 Human Values & Ethics

CO_{01}	Development of positive human behaviour and actions.
CO_{02}	A better and learned next young generation with high values.
CO_{03}	Better citizens with mind set for peace and harmony in the society.
CO_{04}	Sensitized young generation to preserve our culture and heritage.
CO_{05}	A young generation with high spirituality quotient.

363. AG3CO04 Introduction to Forestry

CO_{01}	Student will be familiarized with the Introduction of forestry
CO_{02}	Student will come to know about Artificial regeneration
CO_{03}	Student will come to know about the Forest mensuration
CO_{04}	Student will know the Instrumental methods of height measurement
CO_{05}	Student will come to know about Agroforestry

364. AG3RC01 Introductory Biology

CO_{01}	The student will be able to demonstrate knowledge of the biology.
CO_{02}	The student will be able to understandBinomial nomenclature
CO_{03}	The student will be able to understand different morphology of the flowers.
CO_{04}	The student will be able to know about the Plant systematic
CO_{05}	Student will come to know about Role of animals in agriculture

365. AG3CO06 Rural Sociology & Educational Psychology

CO_{01}	Student will be familiarized with the importance of Sociology and Rural sociology
CO_{02}	Student will come to know aboutSocial Ecology
CO_{03}	Student will come to know about the Social Institution
CO_{04}	Student will know theEducational psychology
CO_{05}	Student will come to know aboutTheories of Motivation

366. AG3CO09 Soil and Water Conservation Engineering

CO_{01}	Student will be familiarized with the importance of soil water conservation in Agriculture
CO_{02}	Student will come to know about water erosion.
CO_{03}	Student will come to know about the mechanical measures of checking erosion.
CO_{04}	Student will know the water harvesting techniques.
CO_{05}	Student will come to know about wind erosion.

367. AG3CO08 Agricultural Microbiology

CO_{01}	The students will be able to know about introduction to cells
CO_{02}	The students will gain the knowledge of bacterial genetics
CO_{03}	The students will understand about microbes
CO_{04}	The students will study about biological nitrogen fixation
CO_{05}	The students will gain importance of microbes in human welfare

368. AG3CO15 Communication Skills and Personality Development

CO_{01}	Student will be familiarized with the communication skill
CO_{02}	Student will be familiarized with verbal and nonverbal communication
CO_{03}	Students will easily understand the bibliographic procedures
CO_{04}	Students are able to understand Reading and comprehension
CO_{05}	Improvement of personality

369. AG3CO11 Fundamentals of Agricultural Economics

CO_{01}	Students will have the in-depth knowledge of theories and concepts of agricultural economics.
CO_{02}	Students will understand the consumer behavior and able to prepare proper policy for consumers.
CO_{03}	Students will understand the cost concepts and production function to decrease the cost.
CO_{04}	Students will understand the various market structures and price determination to make a appropriate pricing policy.
CO_{05}	After having the acquaintance of agricultural economics students will able to take significant agricultural decisions.

370. AG3CO14 Fundamentals of Agricultural Extension Education

CO_{01}	The students will be able to know about extension and education
CO_{02}	The students will gain the knowledge of various extension programmes in India
CO_{03}	The students will understand about various rural and community development
CO_{04}	The students will study about Monitoring evaluation and extension teaching methods
CO_{05}	The students will gain importance of communication and journalism

371. AG3CO10 Fundamentals of Crop Physiology

CO_{01}	The students will be able to know about crop physiology
CO_{02}	The students will gain the knowledge of Nutrition of Plants
CO_{03}	The students will understand about Photosynthesis
CO_{04}	The students will study about Plant growth regulators
CO_{05}	The students will gain importance of Growth and development

372. AG3CO13 Fundamentals of Entomology

CO_{01}	The students will be able to know about Insect morphology
CO_{02}	The students will gain the knowledge of Insect Ecology
CO_{03}	The students will understand about IPM
CO_{04}	The students will study about Insect repellents and antifeedants chemicals
CO_{05}	The students will gain the knowledge about Insect taxonomy

373. AG3CO07 Fundamentals of Genetics

CO_{01}	The student will be able to demonstrate knowledge of the basic principles of Mendelian genetics.
CO_{02}	The student will be able to evaluate mitosis and meiosis.
CO_{03}	Student will come to know about the Sex determination
CO_{04}	The student will be able to knowledge of the Mutation
CO_{05}	Student will come to know Genetic disorders and Gene concept

374. AG3CO12 Fundamentals of Plant Pathology

CO_{01}	Students will know about concept of disease, pathogen of plant diseases, identification methods and crop diseases management.
CO_{02}	Students will know about disease symptoms and disease characteristics.
CO_{03}	Students will know about plant fungi, bacteria, virus, viriod and nematodes.
CO_{04}	Students will know the survival of plant pathogens and defense mechanism of plants.

375. AG3CO19 Agri- Informatics

CO_{01}	Student will be familiarized with the importance ofComputers.
CO_{02}	Student will come to know about computer programming languages.
CO_{03}	Student will come to know about the technical knowledge ofComputer Models
CO_{04}	Student will know therole of Apps in Agriculture
CO_{05}	Student will come to know aboutContingent crop-planning

376. AG3CO18 Agricultural Finance and Cooperation

CO_{01}	Student will be familiarized with the importance ofAgricultural Finance.
CO_{02}	Student will come to know about Sources of agricultural finance.
CO_{03}	Student will come to know about the financing institutions.
CO_{04}	Student will know theAgricultural Cooperation.
CO_{05}	Student will come to know about cooperatives societies.

377. AG3CO16 Crop Production Technology-I (Kharif crops)

CO_{01}	Student will be familiarized with the importance of Kharif Cereals crops
CO_{02}	Student will come to know about cultivation of Kharif Pulses crops
CO_{03}	Student will come to know about the cultivation of Kharif oilseeds crops
CO_{04}	Student will know the cultivation of Kharif fibre crops
CO_{05}	Student will come to know about cultivation of Kharif forage crops

378. AG3CO20 Farm Machinery and Power

CO_{01}	Student will be familiarized I.C. engines
CO_{02}	Student will come to know about different systems of I.C. engines
CO_{03}	Student will come to know about the technical knowledge of Tillage implement
CO_{04}	Student will know the sowing and planting equipment
CO_{05}	Student will come to know about Plant Protection equipment

379. AG3CO24 Livestock and Poultry Management

CO_{01}	Student will be familiarized with the live stock
CO_{02}	Student will come to know about Indian and exotic breeds
CO_{03}	Student will come to know about the Nutrients and their functions
CO_{04}	Student will know the Feeding of livestock
CO_{05}	Student will come to know about livestock and poultry diseases

380. AG3CO21 Production Technology for Vegetables and Spices

CO_{01}	Student will be familiarized with the importance of vegetables & spices
CO_{02}	Student will come to know about cultivation practises
CO_{03}	Student will come to know about the Cultivation practises of Cole crops
CO_{04}	Student will know Cultivation practises of Bulb and Root crops
CO_{05}	Student will come to know about Cultivation practises of Tuber crops

381. AG3CO23 Statistical Methods

CO_{01}	Student will be familiarized with the importance Agriculture Statistics
CO_{02}	Student will come to know about Probability
CO_{03}	Student will come to know about the statistical knowledge of Correlation
CO_{04}	Student will know the Analysis of Variance
CO_{05}	Student will come to know about Sampling Methods,

382. AG3MC01 Human Values & Ethics

CO_{01}	Development of positive human behavior and actions.
CO_{02}	A better and learned next young generation with high values.
CO_{03}	Better citizens with mind set for peace and harmony in the society.
CO_{04}	Sensitized young generation to preserve our culture and heritage.
CO_{05}	A young generation with high spirituality quotient.

383. AG3CO04 Introduction to Forestry

CO_{01}	Student will be familiarized with the Introduction of forestry
CO_{02}	Student will come to know about Artificial regeneration
CO_{03}	Student will come to know about the Forest mensuration
CO_{04}	Student will know the Instrumental methods of height measurement
CO_{05}	Student will come to know about Agro forestry

384. AG3CO06 Rural Sociology & Educational Psychology

CO_{01}	Student will be familiarized with the importance of Sociology and Rural sociology
CO_{02}	Student will come to know about Social Ecology
CO_{03}	Student will come to know about the Social Institution
CO_{04}	Student will know the Educational psychology
CO_{05}	Student will come to know about Theories of Motivation

385. AG3CO15 Communication Skills and Personality Development

CO_{01}	Student will be familiarized with the communication skill
CO_{02}	Student will be familiarized with verbal and nonverbal communication
CO_{03}	Students will easily understand the bibliographic procedures
CO_{04}	Students are able to understand Reading and comprehension
CO_{05}	Improvement of personality

386. AG3CO27 Renewable Energy and Green Technology

CO_{01}	Student will be familiarized with the importance of Energy sources
CO_{02}	Student will come to know about biogas plants
CO_{03}	Student will come to know about the Biogas plants and gasifiers, biogas, bio alcohol, Biodiesel
CO_{04}	Student will know the Application of solar energy
CO_{05}	Student will come to know about wind energy and their application.

387. AG3CO32 Agricultural Marketing Trade & Prices

CO_{01}	Student will be familiarized with the importance of Agricultural marketing
CO_{02}	Student will come to know about Marketable and marketed surplus,
CO_{03}	Student will come to know about the market promotion
CO_{04}	Student will know the marketing channels
CO_{05}	Student will come to know about Role of Govt. in agricultural marketing:

388. AG3CO25 Crop Production Technology –II (Rabi Crops)

CO_{01}	Student will be familiarized with the cultivation of wheat and barley.
CO_{02}	Student will come to know about cultivation of chickpea, lentil, and peas.
CO_{03}	Student will come to know about the cultivation of oil seeds and sugar crops.
CO_{04}	Student will know the cultivation of medicinal and aromatic crops
CO_{05}	Student will come to know about cultivation of berseem, Lucerne and oat.

389. AG3CO31 Farming System & Sustainable Agriculture

CO_{01}	Student will be familiarized with the importance of Farming System
CO_{02}	Student will come to know about Cropping system and pattern
CO_{03}	Student will come to know about the Sustainable agriculture
CO_{04}	Student will know the Integrated farming system
CO_{05}	Student will come to know Resource use efficiency

390. AG3CO33 Introductory Agro meteorology & Climate Change

CO_{01}	Student will be familiarized with the importance of agro meteorology
CO_{02}	Student will come to know about Nature and properties of solar radiation
CO_{03}	Student will come to know about the Atmospheric elements
CO_{04}	Student will know the Monsoon
CO_{05}	Student will come to know about Weather forecasting techniques

391. AG3CO30 Principles of Seed Technology

CO_{01}	Student will be familiarized with the importance ofSeed.
CO_{02}	Student will come to know about Foundation andcertified seed production
CO_{03}	Student will come to know about the Varietal Identifcation
CO_{04}	Student will know theSeed drying, processing,seed treatment,seed testing.
CO_{05}	Student will come to know about Seed marketing: structure

392. AG3CO28 Problematic Soils and their Management

CO_{01}	Student will be familiarized with the importance of soil in crop production
CO_{02}	Student will come to know about Reclamation of Saline, sodic and Acid soils,
CO_{03}	Student will come to know about the Irrigation water quality
CO_{04}	Student will know the Remote sensing technology in agriculture
CO_{05}	Student will come to know about land suitability classification.

393. AG3CO29 Production Technology for Fruit and Plantation Crops

CO_{01}	Student will be familiarized with the importance fruit and plantation crop.
CO_{02}	Student will come to know about cultivation of major fruits-mango, banana, citrus, grape, guava.
CO_{03}	Student will come to know about the cultivation of major fruits-litchi, papaya, sapota
CO_{04}	Student will know the cultivation of date, ber, pine apple, pomegranate, jackfruit, strawberry.
CO_{05}	Student will come to know about cultivation of plantation crops.

394. AG3CO26 Production Technology for Ornamental Crops, MAP and Landscaping

CO_{01}	Student will come to know Importance and scope of ornamental crops.
CO_{02}	Student will come to know about the Production technology cut flowers.
CO_{03}	Student will know thePackage of practices loose flowers.
CO_{04}	Student will know the Production technology medicinal plants.
CO_{05}	Student will come to know about Processing and value addition.

395. FS3CO01 Introduction to Forensic Science

CO_{01}	The basic concepts and fundamental principles of forensic science
CO_{02}	Some of the major rules of evidence in India & abroad
CO_{03}	Class and individual evidence and its significance and about the institutions in forensic
CO_{04}	The investigation agency setup in India & abroad
CO_{05}	About the development of forensic in India and its history

396. FS3CO02 Element of criminology & police organization

CO_{01}	Analyze inequalities within the criminal justice system; including those based on discrimination and disparities by race, gender, class, ability, and sexuality
CO_{02}	Summarize the process of judicial review and identify criteria used by courts to evaluate the constitutional policy ldentify and synthesize social theory about crime, justice, and social deviance
CO_{03}	Apply critical thinking skills in the reading and interpretation of legal materials (statues, court decisions)
CO_{04}	Have a basic knowledge of procedural rules and evidentiary rules and understand the relationship between procedural rules and substantive law
CO_{05}	Understand the organization & setup of par- military forces

397. FS3CO03 Human Anatomy

CO_{01}	Explain structure, functions and types of neurons.
CO_{02}	Discuss mechanism of synaptic transmission Understand histology and anatomy of various organs of digestive system.
CO_{03}	Discuss digestion and absorption of carbohydrates, proteins and lipids.
CO_{04}	Explain structure and functions of various parts of respiratory system.
CO_{05}	Understand mechanism of respiratory process.

398. FS3ELOI Forensic Physics

CO_{01}	Apply critical thinking skills in the reading and interpretation of legal materials (statues, court decisions)
CO_{02}	Understand the legal concepts and terminology in substantive area of criminal law.
CO_{03}	Have a basic knowledge of procedural nules and evidentiary rules and understand the relationship between procedural rules and substantive law.
CO_{04}	The investigation process in any crime scene.
CO_{05}	Develop and the knowledge of scientific investigation of evidences and its collection & preservation.

399. FS3EGO1 Computer Science

CO_{01}	Able to apply knowledge of computing and An mathematics appropriate to the discipline.
CO_{02}	An mathematics appropriate to the discipline ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs.
CO_{03}	The computer basic will let the student to know the component.
CO_{04}	The cyber investigation helps.
CO_{05}	Research field in cyber security.

400. FS3CO03 Forensic Psychology

CO_{01}	Students get the knowledge of psychology.
CO_{02}	They will understand the Scientific Inquiry and Critical Thinking.
CO_{03}	Get knowledge of Ethical and Social Responsibility in a Diverse World.
CO_{04}	Ability in Practice of Communication.
CO_{05}	Understand the Physiological aspect of society.

401. FS3COO4 Criminal Law

CO_{01}	Make out the plus and minus points in laws and policies on crime and punishment.
CO_{02}	Streamline the objective relation between criminal law and public policy.
CO_{03}	ldentify the critical issues plaguing the administration of criminal justice in India.
CO_{04}	Know when, why and how public policies are converted to criminal laws.
CO_{05}	Gain sound knowledge of the procedural and substantive laws, including special laws, governing crimes and punishment.

402. FS3ELO2 Human Physiology

CO_{01}	Have an enhanced knowledge and appreciation of mammalian physiology;
CO_{02}	Understand the functions of important physiological systems including the cardio cardio respiratory, renal, reproductive and metabolic systems
CO_{03}	Understand how these separate systems interact to yield integrated physiological responses to
CO_{04}	Challenges such as exercise, fasting and ascent to high altitude, and how they can sometimes fail; Able to perform, analyze and report on experiments and observations in physiology.
CO_{05}	Able to recognize and identify principal tissue structures

403. FS3EG02 Zoology

CO_{01}	Their feature and characteristics can we explained by just watching the sample.
CO_{02}	How different can be detected in any crime scene either terrestrial or water in different cases.
CO_{03}	How many different species can be found on the crime or responsible for any changes in corpus or scene
CO_{04}	The role of knowledge of different species cam help in criminal investigation.
CO_{05}	How many types, genus, species order are found on crime scene and can crime to that place.

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404. FS3AE0 Environmental Studies

CO_{01}	Reflect critically about their roles and identities as citizens, consumers and environmental actors in a complex, interconnected world.
CO_{02}	Apply systems concepts and methodologies to analyze and understand interactions between social and environmental processes.
CO_{03}	Understand the transnational character of environmental problems and ways of addressing them, including interactions across local to global scales
CO_{04}	Appreciate the ethical, cross-cultural, and historical context of environmental issues and the links between human and natural systems
CO_{05}	Core concepts and methods from ecological and physical sciences and their application in environmental problem solving.

405. FS3CO06 Technological methods in forensic science

CO_{01}	Concept of Spectroscopy, electromagnetic spectrum, sources of radiation, their utility and limitations.
CO_{02}	The different Physical instrumentation techniques.
CO_{03}	Understand basic principles and theory of radiochemical techniques.
CO_{04}	Highlight general principles of biological and biochemical techniques

CO_{05}	Culminate in a capstone course experience that requires synthesis of diverse skills and abilities in the solution of a real problem.

406. FS3CO07 Forensic Dermatoglyphics

CO_{01}	The basic classification of finger prints.
CO_{02}	Importance of finger prints as forensic aspects.
CO_{03}	Different method of finger prints developing methods.
CO_{04}	Get the knowledge of finger print and its importance in investigation.
CO_{05}	We can connect the dermatoglyphic in crime scene and criminal

407. FSCOO8 Advancement in Forensic Science

CO_{01}	Use of method and techniques in forensic science
CO_{02}	What are latest teclhniques used in field of forensic science
CO_{03}	Understand the working of latest methods and its use in forensic science
CO_{04}	Criminals also became advance, so it is necessary for the investigator to become modern and use latest tech.

CO_{05}	The use of technology is more accurate and convincing in front of court as they are more acceptable

408. FS3EL03 Criminalistics

CO_{01}	Apply critical thinking skills in the reading and interpretation of legal materials (statues, court decisions);
CO_{02}	Understand the legal concepts and terminology in substantive area of criminal law
CO_{03}	Basic knowledge of procedural rules and evidentiary rules end understand the relationship between procedural rules and s1:bstantive law
CO_{04}	Know the investigation process in any crime scene
CO_{05}	Develop and the knowledge of scientific ir.vestigation of evidences are its collection & preservation.

409. FS3EGO33 Entomology

CO_{01}	Able to apply and judge the scientific method in conducting inquiry-based research in the laboratory and in the field
CO_{02}	A good understanding of the primary literature in entomology and to be able to critically evaluate information in primary research articles
CO_{03}	Apply concepts and analytical approaches in evolutionary biology. genetics arc vo other arcs of biology cf the student's choice

CO_{04}	Able to examine insects deeply within a biological level of analysis and strategies used by different groups
CO_{05}	Able to identify the potential impact of different insect species on agriculture, human health, and society in general; to be knowledgeable about potential control.

410. FS3SEOO1 Introduction to Biometry

CO_{01}	Application of the biometrics for the verification.
CO_{02}	Development technology for the better investigative process.
CO_{03}	Biometry is used in today secured world and if cracked than what is investigation process
CO_{04}	The forensic aspect of biometry how it is used in different sectors.
CO_{05}	Different biological parameters used in biometry

411. FS3CO09 Forensic Chemistry

CO_{01}	Basics principles and forensic application of analytical methods.
CO_{02}	Various chemical methods 3. for adulteration.
CO_{03}	Crime scene developing method, analysis.

CO_{04}	Role of polymers & fibers in crime scene for reconstruction
CO_{05}	Use different technique of analysis in criminal cases

412. FS3CO10 Questioned Document

CO_{01}	Know about the documents
CO_{02}	Learn the features which prove the authenticity of the document
CO_{03}	Identify the types of question document.
CO_{04}	Come to know about how to collect, preserve& investigate the document on crime scene
CO_{05}	Differentiate between normal & questioned document.

413. FS3CO11 Forensic Biology

CO_{01}	Express an opinion in the field of forensic biology, in the form of a written case report, with confidence and clarity. Forensic biologists are often called to give evidence in court.
CO_{02}	Collate, analyze, manipulate, evaluate, interpret and present information and numerical data from forensic biology case studies.

CO_{03}	As a forensic biologist, you will be called upon to write reports that could be used as court records or form the basis for prosecution or defense
CO_{04}	Student can work as biology expert as they learn to handle the biological samples
CO_{05}	Students can work in laboratory's as they will the method of analysis of samples

414. FS3ELO8 Digital & cyber Forensic science

CO_{01}	Relate Evidence in digital format
CO_{02}	To understand the types of virus used for hacking.
CO_{03}	To investigate or to track the criminal activity by use of IP address.
CO_{04}	Legal process for examination and their importance for justices.
CO_{05}	By using and studying the different computer language und methods they can investigate the cyber-crime cases

415. FS3EG04 Chemistry

CO_{01}	Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories
CO_{02}	Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments.

CO_{03}	Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems.
CO_{04}	Students will be able to explore new areas of research in both chemistry and allied fields of science and technology.
CO_{05}	Students will appreciate the central role of chemistry in our society and use this as a basic for ethical behavior in issues facing chemists as safe handling of chemicals, environmental issues

416. Cyber security and Law

CO_{01}	Able to understand the broad set of technical, social & political aspects of Computer Security.
CO_{02}	Able to identify various social engineering attacks and network attacks.
CO_{03}	Able to implementation of cryptographic algorithms.
CO_{04}	Able to understand usage and applications of cryptography in computational systems for security.
CO_{05}	Able to understand the regulations and standards related to cyber security.
CO_{01}	Relate Evidence in digital format

417. FS3SE02 Crime Scene Photography

CO_{01}	Concept of using and utilizing the different types of lights;

CO_{02}	Practice of different types of outdoor shooting conditions in B&W and colour.
CO_{03}	Practice of different types of indoor shooting conditions in B&W and colour;
CO_{04}	Have good theoretical knowledge in photography but without practice it will be useless, so that it is very important
CO_{05}	Students get adequate opportunity to handle different types of cameras.

418. FS3CO12 Forensic Ballistics

CO_{01}	Students will able to understand the basic of firearms and their classification.
CO_{02}	Students will able to answer important of firearms in forensic aspects.
CO_{03}	Students will able to explain types of bullets, terminal ballistics, external ballistics, internal ballistics.
CO_{04}	Students will able to perform method for the analysis of gun short residues, different types of marks present on bullets.
CO_{05}	Students will able to identify the firearms, bullet, are found at the crime scene by using emerging trends.

419. FS3EL06 Forensic Genetics

CO_{01}	Students will able to use basics of genetics in forensic science
CO_{02}	Students will able to apply DNA as physical evidence in criminal cases

CO_{03}	Students will able to carry out different experiments that are used in forensic genetics and apply statistical calculations for evaluation of results
CO_{04}	Students will able to understand apply, critically evaluate and understand problems concerning various types of markers and methods for DNA analyses
CO_{05}	Students will able to identify and understand problems concerning various types of evidence materials for DNA analyses

420. FS3EL05 Forensic Serology

CO_{01}	Students will be able to apply knowledge of forensic serology in investigation.
CO_{02}	Students will be able to explain concept of antigen and antibody.
CO_{03}	Students will be able to understand serological marker used in Blood grouping.
CO_{04}	Students will be able to perform electrophoresis.
CO_{05}	Students will able to determined variation in proteins is the basis of blood groups, tissue types, and serum protein types.

421. FS3CO13 Forensic Toxicology

CO_{01}	Students will able to understand the poison and their classification, action of poison, post-mortem.
CO_{02}	Students will able to perform extraction of poison from viscera.
CO_{03}	Students will able to examine or Students will able to understand test of doping and alcohol beverage
CO_{04}	Students will able to understand the different types of the poison detection method.
CO_{05}	Students will able to discuss various type of plant, animal poison and metallic poison.

422. FS3EL08 Advance Instrumentation

CO_{01}	Students will be able to apply concept of analytical chemistry in investigation.
CO_{02}	Students will be able to explain Chromatography.
CO_{03}	Students will be able to use Gas Chromatography for analysis of volatile poison.
CO_{04}	Students will be able to apply HPLC role in forensic science
CO_{05}	Students will be able use planar chromatography for physical evidences.

423. FS3CO14 Forensic Anthropology

CO_{01}	Reconstruct a basic biological profile from a set of human skeletal remains;
CO_{02}	Recover forensic evidence using archaeological methods as part of a mock excavation in the field.
CO_{03}	Analyses and report forensic evidence in a written format- Describe, explain, and critically evaluate methods used in Forensic Anthropology.
CO_{04}	Measuring the bone for individualization of person.
CO_{05}	Using the different instrument for identification

424. FS3CO15 Forensic Medicine

CO_{01}	Identify, examine and prepare report or certificate in medico-legal cases/situations in accordance with the law of land.
CO_{02}	Examination of the death body on hanging, and suicide case.
CO_{03}	Emerging trend for the investigation of death body for justice.
CO_{04}	To identify the manner of death.
CO_{05}	Perform medico-legal post-mortem examination and interpret autopsy findings and results of other relevant investigations

425. FS3EL09 Forensic Statistics

CO_{01}	Students will be able to understand role of forensic statics in criminal investigation.
CO_{02}	Students will be able explain use of frequency, probability in forensic science.
CO_{03}	Students will be able to describe mathematical functions in forensic science.
CO_{04}	Students will be able to learn statistical evaluation of data and evidence significance tests of hypothesis.
CO_{05}	Students will be able to use Different research based statistics in their research.

426. FS3EL10 Quality Management and Advancement in Forensic Science

CO_{01}	Students will be able to understand quality management & accreditation in forensic science
CO_{02}	Students will be able to explain role of NABL.
CO_{03}	Students will be able to describe need of quality management in forensic laboratories.
CO_{04}	Students will be able to answer standard operating procedures for testing and their need in the laboratories.
CO_{05}	Perform Process of Calibration

427. CA3CO01 Problem Solving and Programming

CO_{01}	Students will be able to understand and analyze the significance of Programming Language learning to create Algorithms, Flowchart and Pseudo-code to solve the real-world problem. They will also understand and learn different types of Programming Languages with different complex programs like compiler, interpreter, linker and loader.
CO_{02}	Students will be able to examine and execute Basic concepts like Identifier, Constant, Keywords and different Data types of Programming language and regarding urgency about the programming skills. They will prepare themselves for solving mathematics equations by judging different operators, selection statements for choosing the right decision by computer and perform single task multiple times by repetition.
CO_{03}	Students will be able to write programmes with the help of Array and String for input complete information. With the help of Function, they can create Modular Programming to solve problem related with real world.
CO_{04}	Students will be able to experiment with project based and record-based programmes with the help of Structures and its features. They are also able to do and evaluate hardware level programming with the help of Union and its features.
CO_{05}	Students will be able to link with memory through Pointer, Pointer and variable, Pointer and Array, Pointer and Function, Pointer and Structure and different operations on Pointer. They will be able to correlate input from Command Line Argument with the main program and also deal with dynamic time input.

428. CA3CO02 Digital Electronics

CO_{01}	Students will be able to understand and analyze the significance of concepts and techniques used in digital electronics. Logic Gates, Boolean Algebra, Multiplexers, Flip Flops, Registers, Counters, Number System and Codes.
CO_{02}	Students will be able to examine and evaluateinterconversions between various number systems and its application in digital design. They will prepare themselves for solving mathematics equations by judging different Logic Gates, Boolean Algebra Axioms and can perform single task multiple times by use of Counters etc.
CO_{03}	Students will be able to analyze and design various Combinational and Sequential Circuits.
CO_{04}	Students will be able to evaluate and can identify basic requirements for Designing a Digital Design Application and will be able to propose a Cost-effective solution with their designed application.
CO_{05}	Student will be able to Understand and Link System Internal Architecture of Computer including Memory Blocks with Digital Electronic Circuits.

429. CA3CO03 Computer Fundamental

CO_{01}	The student will be able to understand the meaning and need of Information Technology, elements of Computer System, different Peripherals associated different concepts of Operating System, malware and its types, Database Management System concepts and Cloud Computing Techniques.
CO_{02}	Students will be able to determine the database requirements and apply the data model concept and design an entity relationship model and relational Model. Students will also be able to analyze the type of attack on the system with its preventive measure. They can determine which Cloud Computing Technique is well suited according to the user needs.
CO_{03}	Students will be able to analyze, distinguish and explain which Antivirus and Antispyware Software is best suited according to the various types of attack, which scanner and printer is well suited according to its quality, cost and utility, and which Cloud Delivery Model and Cloud Deployment model can be implemented.

430. CA3CO04 Mathematics I

CO1	Students will be equipped with the fundamental knowledge of proposition logical operators, logically equivalent.
CO2	Students will be able to understand various definitions and types of sets, operations on sets.

CO3	Students will be able to apply their knowledge in solving problems of various types of relations, some important functions like algebraic function and transcendental function.
CO4	Students will be able to calculate limits of various types of functions, continuity, types of discontinuities, derivatives of functions.
CO5	Students will have a strong background of matrices which has diverse applications in the areas of computer science.

431. CA3AE01 English Communication

CO1	The student will be able to enhance confidence in their ability to read, comprehend, organize and retain written and oral information.
CO2	The student will be able to distinguish between general and technical communication and understand its importance.
CO3	The student will be able to improve upon their language skills, communication skills, group discussion, personality development and confidence level.
CO4	The student will be able to bridge the language gap vital to their success and will be able to communicate effectively.

432. CA3EG01 Office Automation

CO1	Students will be able to understand the GUI and features of Operating System and Office automation, various versions of Operating System.
CO2	Students will gain awareness regarding urgency about the programming skills and become well conversant with text, word, Word processing.
CO3	Students will attain knowledge regarding making effective documents using advanced concepts of word processing and be able to apply.
CO4	Students will be able to understand the Excel (Spreadsheet) uses and working with excel.
CO5	Students will be able to know how to prepare the creative presentation and utility Databases.

433. CA3CO05 Object oriented Programming

CO1	Students will be able to understand the significance of Object-Oriented Programming concepts, (objects, class, data encapsulation, inheritance and polymorphism), Control Structures, Functions and File handling Concepts.
CO2	Students will be able to apply basic concepts of Object-Oriented Programming, function overloading, Operator overloading, Call by Value and Call by reference, Constructor and Destructor. File stream Classes.
CO3	Students will be able to analyze reusability of code through inheritance, various types of inheritance, Static and Dynamic binding, Virtual functions and exception handling.

CO4	Students will be able to evaluate inline function, friend function, Constructor and Destructor, Overloading and Overriding, classes for file stream operations, Command line arguments.
CO5	Students will be able to create programs or basic software using Object Oriented Programming concepts and file handling and also will be able to perform different complex problems using Object Oriented Programming.

434. CA3CO06 Computer Architecture

CO1	Student will understand the evolution of computers and computer generations, measuring computer, technology trends, measuring computer performance, MIPS.
CO2	Students will learn about fundamental concepts of– execution of a complete instruction, design of basic computer, addressing modes, instruction formats, stack organization.
CO3	Students will be able solve questions on number systems, arithmetic operations on binary numbers, floating point representation.
CO4	Students will able to understand basics of storing data and program in memory, memory hierarchy in a computer, semiconductor RAMs–ROMs, cache memories, and virtual memory.
CO5	Students will able to understand pipelining, vector processing, multiprocessor architecture organization, performance, characteristics of multiprocessors.

435. CA3CO07 Data Structure

CO1	Students will be able to understand the basics of data structure and algorithms.
CO2	Students will be able to implement arrays through C and will learn about its use.
CO3	Students will be able to implement stack and queues through C and perform operations on them. They will also understand their applications..
CO4	Students will be able to implement linked lists and trees through C and perform operations on them. They will also understand various types of trees.
CO5	Students will be able to implement various searching and sorting techniques through C. They will also be well versed with graphs.

436. CA3CO08 Mathematics II

CO1	Students will be able to understand theorems of differential calculus and to find series expansions of functions.
CO2	Students will be able to able to understand the tools of integral calculus and to find the area and volume using double & triple integrals

CO3	Students will be able to define beta and gamma functions and to use their properties to solve integrals.
CO4	Students will be able to compute limits and derivatives of functions of several variables.
CO5	Students will be able to understand the maxima and minima of function of two variables

437. CA3AE02 Environmental Science

CO1	Students will have knowledge of Sustainable development and environmental ethics and bylaws.
CO2	Students will be able to develop basic understanding of Global Environmental challenges and movement
CO3	Students will be able to develop in-depth knowledge of natural resources and pollution controls methodologies
CO4	Students will be able to gain knowledge of ecosystem and biodiversity
CO5	Students will be able to gain and apply the knowledge of sustainable habitat and green technology

438. CA3EG02 Desktop Publishing

CO1	Students will be able to understand Use of DTP in advertisements, books and magazines, newspapers, Applications of DTP, image editing tool, screen and work area in image editing tools.
CO2	Students will be able to apply measurement techniques to develop documents, such as demonstrating the proper use of graphic design layout to produce quality media, Introduction to screen and work area in image, Introductions to page editing tool, Introduction to Creating Frames etc.
CO3	Students will be able to Create various DTP documents like Brochures, Business Cards, Greeting cards, Newspapers with the help of various DTP tools like Photoshop, PageMaker.
CO4	Students will be able to Analyze Applications of DTP, Different tools of DTP, screen and work area in image editing tools, Creating Frames etc.

439. CA3CO09 Database Management System

CO1	Students will be able to understand the concept of Database management system, its need and advantages, Data Models, Normalization, transaction, concurrency and recovery.
CO2	Students will be able to determine the database requirements and apply the data model concept and design an entity relationship model and relational Model

CO3	Students will be able to analyze and organize keys in relations and perform queries on the database. Formulate Relational algebra
CO4	Students will be able to evaluate the database with an understanding of normalization theory
CO5	Students will be able to create and access the database.

440. CA3CO10 Computer Network

CO1	Students will be able to understand the fundamental concept of networking.
CO2	Students will be able to understand different Transmission Media.
CO3	Students will be able to understand the Flow Control Algorithm and Error Detection protocols.
CO4	Students will be able to understand the concept of Switching and Routing Method.
CO5	Students will be able to understand Transport and Application Layer protocols.

441. CA3CO11 Mathematics III

CO1	Students will be equipped with the fundamental knowledge of errors and approximations.

CO2	Students will be able to use various types of interpolation formulae
CO3	Students will be able to apply their knowledge in solving problems of numerical integration using different methods.
CO4	Students will be exposed to probability, statistical distribution.
CO5	Students will be able to apply for parametric and non-parametric tests.

442. CA3SE01 Web Designing

CO1	Students will be able to understand the significance of internet and web technology, html tags, CSS concepts, JavaScript concepts.
CO2	Students will be able to implement HTML, CSSand JavaScript in web pages and make pages more interactive.
CO3	The students will gain fundamental knowledge of the working of Internet and Ecommerce website development and be able to apply it.
CO4	Student will be able to analyze ecommerce strategy
CO5	Students will be able to create a website.

443. CA3EG07 Financial Accounting and Management

CO1	The students will understand the fundamentals of financial accounting.
CO2	The students will be able to understand the concept of debit and credit, journalize the transaction, post them into a ledger, and prepare a petty cash book.
CO3	The students will get the knowledge about the final account with adjustment and be able to understand the different types of error.
CO4	The student will be able to understand budgets and budgetary control.
CO5	The student will understand the meaning of Management control and its applications.

444. CA3CO12 Operating System

CO1	The student will be able to understand the meaning of Operating System and its evolution. They will be able to comprehend different concepts of Operating System like types of operating system, process, pros and cons of various types of CPU Scheduling, deadlock, starvation, memory management and different access methods and allocation methods of file system.
CO2	Students will be able to apply basic concepts of CPU Scheduling. These concepts can be applied to choose and implement Best CPU Scheduling Algorithm for optimum utilization of CPU. They will be able to identify which Memory Management Technique is to be applied for optimum utilization of memory. Students will also be able to apply the various Disk Scheduling Algorithms for different access methods and allocation methods.

CO3	Students will be able to analyze and calculate various parameters of CPU Scheduling Algorithms like, average waiting time, turnaround time etc., various parameters of memory management and disk scheduling.
CO4	Students will be able to evaluate and rate which CPU Scheduling Algorithm is effective in which situation, which Memory Management technique is best, which Disk Scheduling Algorithm is best for optimized performance etc.

445. CA3C013 Software Engineering

CO1	Students will be able to understand the need of software engineering, software life cycle models, understand the activities in requirements analysis and specification, understand the basics of software design and need of software testing.
CO2	Students will be able to apply different SDLC models in different situations, able to apply structured and object-oriented analysis and design during software design, and able to apply different testing techniques at different levels.
CO3	Students will be able to analyze traditional and agile software process models and compare SAD with OOAD, differentiate different testing.
CO4	Students will be able to evaluate design and testing techniques.

446. CA3CO14 Object Oriented Technology

CO1	Students will be able to understand the basic concepts of JDK, JVM, JRE, Keyword, Branching, loops.

CO2	Student will be able to understand the basic concept in Array, Class, Object, method, Constructor, Inheritance, Abstract , interface, Package
CO3	Student will be able to apply the basic concept in Threading, Multi-threading ,Exceptional Handling, Inter Process Communication, Synchronization, Final, Stop and Wait Thread
CO4	Students will be able to Analyze the concept of Containers and components, AWT classes, window fundamentals: Component. Container. Panel. Window, Frame, AWT Controls, Layout Managers and Menus: adding and removing control. Labels, Button, Check Box, Radio Button, Choice, menu, Text area. Scrollist. Scrollbar, Frame; Layout managers- flow layout, Grid layout. Border layout. Card layout
CO5	Students will be able to Analyze Event Handling-Different mechanisms, the Delegation Event Model. Event Classes, Event Listener interfaces and Adapter. Java Swing -icons and Labels, Text fields, Buttons, Combo Boxes, Tabbed and Scroll Panes, Trees, Tables.

447. CA3SE06 PHP Programming

CO1	Students will be able to understand the significance of PHP. They will be able to understand the concept of variables, constant, storing data in arrays, function with arguments, get and post method and usage of MYSQL.
CO2	Students will be able to apply data types, conditional statements, switch cases, and loops in PHP. Students will be able to implement arrays with forms, function arguments with call by value and reference, OOPs concept PHP.

CO3	Students will be able to analyze and organize string formatting functions. They will be able to implement multi value fields in a single form, MySQL with PHP-database connectivity.
CO4	The students will be able to validate date and time function and validate user input through database layer and application layer.
CO5	The students will be able to create PHP scripts and be able to create sample database applications using PHP and MySQL.

448. CA3EG11 Wireless Mobile Computing

CO1	Students will be able to understand the fundamentals of Technical analysis and different theories.
CO2	Students will be able to understand the GSM and GPRS technologies.
CO3	Students will be able to recognize 802.11.
CO4	Students will get knowledge of various threats available on cyber.
CO5	Students will be able to perform case studies and implement their knowledge on cyber

449. CA3CO15 Algebra

CO1	Students will be able to apply Boolean Algebra in switching circuits.
CO2	Students will be able to understand Group, Subgroup, Cyclic Group and Co-Set Decomposition.
CO3	Students will be able to understand Quotient Group, Homomorphism, Isomorphism, Ring and Field.
CO4	Students will be able to understand the concepts of Vector space and its application.
CO5	Students will be able to understand the concept of Linear Transformations and its application.

450. CA3EL03 Advanced PHP

CO1	Students will be able to handle exceptions and understand filters in PHP.
CO2	Students will be able to perform file handling and also aware about uses of regular expressions in PHP.
CO3	Students will be able to manage cookies and sessions in PHP and also able to sending email with PHP.
CO4	Students will be able to perform Ajax and Jquery with PHP.
CO5	Students will be able to create application using Ajax and Jquery with PHP.

451. CA3EL07 OOAD

CO1	Students will be able to apply a unified process model and create use case documents.
CO2	Students will be able to create a static model of software system that captures requirements for a problem domain.
CO3	Students will be able to analyze and build model for runtime environment of a software application
CO4	Students will be able to use design methodology and effective modular design.
CO5	Students will be able to measure the level of user satisfaction and software quality assurance

452. CA3EL07 Python Programming

CO_{01}	Students will have understanding on how build python development environment
CO_{02}	Students will be able to apply python programming concepts in the development environment
CO_{03}	Student will have ability to examine python programs using popular tools like Anaconda navigator
CO_{04}	Student will have ability to construct python programs using popular tools and integrated development environments

453. CA3SE07 Software Testing

CO_{01}	Students will be able to understand the need of software testing, understand the Black Box, White Box, Static & Dynamic Testing, understand the need of automation and tools in testing.
CO_{02}	Students will be able to apply testing skills in Configuration, Compatibility and user interface Testing.
CO_{03}	Students will be able to analyze different testing techniques.
CO_{04}	Students will be able to evaluate white box and blackbox testing techniques.

454. CA3EL05 Information Security

CO1	Students will be able to understand the Basic Cryptography algorithm, message and web authentication and security issues
CO2	Students will be aware with current legal issues towards information security
CO3	Students will be able to identify information system requirements for both client and server.
CO4	Students will be able to analyze a network security system.

455. CA3EL01 Advanced Java

CO1	Students will be able to understand the significance of web programming, object oriented technology and awareness regarding urgency about the programming skills.
CO2	Students will be able to apply technical skills and learn to use Tomcat, Servlet, JSP.
CO3	Students will be able to analyze and use JSTL , Session Handling and JavaBeans
CO4	Students will be able to design web pages and evaluate them.
CO5	Students will be able to create a website.

456. CA3EL09 Minor Project

CO1	Students will be able to discover potential research areas in the field of IT
CO2	Students will be able to explain needs for software specifications and they can also classify different types of software requirements and their gathering techniques.
CO3	Students will be able to convert the requirements model into the design model and demonstrate use of software and user interface design principles.

CO4	Students will be able to apply SDLC concepts and generate project schedules and can construct, evaluate, design and develop network diagrams.
CO5	Students will be able to design test cases according to user requirements and specifications. They will be able to develop software.

457. CA3CO16 Network Security

CO1	The student will be able to understand the concept of Network Security.
CO2	The student will be able to understand about cryptography and its technique
CO3	The student will be able to understand Symmetric Key Algorithm and AES
CO4	The student will be able to understand Asymmetric Algorithm, Digital Signature and RSA
CO5	The student will be able to understand Network Security and different Internet Security Protocol.

458. CA3EL13 Linux & Shell Programming

CO1	The student will be able to understand the meaning of the Operating System, its evolution. They will be able to comprehend different concepts of Operating Systems like types of operating system like UNIX and Linux, features and Architecture of Linux , Linux Installation process and Features of Kernel and Shell.

CO2	Students will be capable of executing different Linux basic and simple filter commands on offline and online terminals. They will be able to learn the start-up and shut-down process of Linux, Linux File System which will help to know working of Linux, Process and process related commands which help to communicate with Shell and Kernel.
CO3	Students will be able to analyze and categorize different general system administration tasks with normal users and execute advanced filter commands which will link them with Database. They will able to structure them working and duties of super user or administrator
CO4	Students will be able to build different complex script using Linux shell programming and solve real world problems with different scripts.
CO5	Students can perform and act on different networking activities and take experience of network service which is done by system communication tasks in Linux.

459. CA3EL16 Cloud Computing

CO1	Students will be able to explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing. Students will be able to illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS.
CO2	Students will be able to apply fundamental concepts to differentiate types of cloud services, type of virtualization and different cloud implementation plateforms. Students will also be able to understand the tradeoffs in power, efficiency and cost during cloud implementation..
CO3	Students will be able to discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model. Students will be able to analyze various cloud programming models and apply them to solve problems on the cloud.

460. CA3EL17 Project work

CO1	Students will be able to discover potential research areas in the field of IT
CO2	Students will be able to explain needs for software specifications and they can also classify different types of software requirements and their gathering techniques.
CO3	Students will be able to convert the requirements model into the design model and demonstrate use of software and user interface design principles.
CO4	Students will be able to apply SDLC concepts and generate project schedules and can construct, evaluate, design and develop network diagrams.
CO5	Students will be able to design test cases according to user requirements and specifications. They will be able to develop software.

461. CA3SE10 Mobile Application Development

CO1	Students will be able to understand the concept of Mobile Application Development, Android OS, android architecture and its features.
CO2	Able to design Android UI, use Activity and work with GUI objects.
CO3	Students will be able to develop event driven programs and to use other advance features

CO4	Students will be able to develop applications using menu,toast,adapter and dialog boxes.
CO5	Students will be able to develop applications using SQLite.

462. CA3EL14 Big Data Analytics

CO1	Students will be able to understand the concept of Big Data and Big Data Analytics, Life cycle and Business Challenges
CO2	Students will be able to understand and install single cluster Hadoop.
CO3	Students will be able to build Hadoop Map Reduce Application for Big Data Analytics
CO4	Students will be able to Build a complete business Data Analytics solution

463. CA5BS01 Mathematical Foundation of Computer Science

CO_{01}	Students will be well equipped with the fundamental knowledge of set theory.
CO_{02}	Students will be well equipped with the fundamental knowledge of relation and functions.
CO_{03}	Students will be able to use various types of matrices and to calculate rank, nullity, Eigen values and Eigen vectors.

CO_{04}	Students will be able to apply their knowledge in measures of central tendency.
CO_{05}	To use regression analysis to estimate the relationship between two variables.

464. CA5CO01 Problem Solving and Programming

CO_{01}	Recognize programming concepts
CO_{02}	Understand how to build simple programs
CO_{03}	Analyze the daily life problem according to problem solving steps.
CO_{04}	Evaluate the alternative solutions and make decisions.
CO_{05}	Create small project

465. CA5CO02 Information Technology

CO_{01}	Students will be able to understand fundamentals of Information Technology.
CO_{02}	Students will be able to understand the basics assemblers and assembly language programming.

CO_{03}	Students will be able to know about compilers and interpreters in computer science, and how they are used.
CO_{04}	Students will get knowledge of linkers and loaders
CO_{05}	Students will be able to understand various types of file organization in a system.

466. CA5CO03 Computer Organization & Architecture

CO_{01}	Ability to understand basic structure of computer. Representation of information.
CO_{02}	Ability to perform and understand RTL and Micro operations.
CO_{03}	Ability to understand architecture of processor and control unit operations and understand the concept of I/O organization.
CO_{04}	Ability to understand assembly language programming with reference to 8086 microprocessor
CO_{05}	Ability to understand the concept of memory and hierarchy and related design issues.
CO_{06}	Ability to understand the concept of I/O organization.
CO_{07}	Ability to conceptualize instruction level parallelism.

467. CA5BS02 Computer Oriented Numerical and Statistical Methods

CO_{01}	On successful completion of the course the students will be able to analyze the types of errors in any numerical approximation and the approximate roots of the given transcendental equations using numerical methods.
CO_{02}	To interpolate data from given set of tabulated values.
CO_{03}	To understand the concepts of numerical differentiation and integration and use suitable quadrature formula.
CO_{04}	To use probability and statistical concepts in learning distributions.
CO_{05}	To test the hypothesis using suitable statistical tests of significance.

468. CA5HS02 Accounting and Financial Management

CO_{01}	The students will understand the fundamentals of financial accounting.
CO_{02}	The students will be able to understand the concept of debit and credit, journalize the transaction, post them into a ledger, and prepare a petty cash book.
CO_{03}	The students will get the knowledge about the final account with adjustment and be able to understand the different types of error.
CO_{04}	The student will be able to understand budgets and budgetary control.
CO_{05}	The student will understand the meaning of Management control and its applications.

469. CA5CO06 Operating System

CO_{01}	Students will be able to understand the basic Operating System and Process Concepts and able to solve numeric based on scheduling algorithms.
CO_{02}	Students will be able to understand the memory management concepts and able to solve numeric on paging and segmenataion.
CO_{03}	Students will understand the concepts of Inter Process Communication and deadlocks.
CO_{04}	Students will get knowledge of various File Systems and able to solve numeric based on Disk management algorithms
CO_{05}	Students will gain knowledge of advance operating system concepts.

470. CA5CO07 Database Management System

CO_{01}	Students will be able to understand fundamentals of databases.
CO_{02}	Students will be able to understand the SQL query execution and management of database
CO_{03}	Students will be able to identify different keys and constraints used in databases.
CO_{04}	Students will get knowledge of relational algebra use in SQL query execution.

CO_{05}	Students will be able to apply normalization at tables, and will be capable to convert unnormalized tables in to normalized.

471. CA5CO08 Data Structures

CO_{01}	Recognize programming concepts.
CO_{02}	Ability to summarize searching and sorting techniques.
CO_{03}	Ability to describe stack, queue and linked list operation.
CO_{04}	Analyze the daily life problem of data structure.

472. CA5BS04 Mathematics of Computer Application

CO_{01}	Students will be well equipped with the fundamental knowledge of theorem proving techniques.
CO_{02}	Students will be able to use various types of graphs.
CO_{03}	Students will be able to apply their knowledge in solving problems of graph theory.
CO_{04}	Students will get exposed to the group theory.
CO_{05}	Student will have a strong background of recurrence relation and generating function which has diverse applications in the areas of computer science.

473. CA5CO11 Software Engineering

CO_{01}	Students will be able to understand software development approach using software engineering principles.
CO_{02}	Student will become well conversant with Software engineering methodology.
CO_{03}	They will be more skilled in software development and using development tools.
CO_{04}	Students will be able to develop complete software by using SDLC phases.

474. CA5CO12 Computer Networks

CO_{01}	Independently understand basic computer network technology.
CO_{02}	Understand and explain data communications system and its components.
CO_{03}	Identify the different types of network topologies and protocols.
CO_{04}	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
CO_{05}	Identify the different types of network devices and their functions within a network
CO_{06}	Understand and building the skills of sub netting and routing mechanisms.

CO_{07}	Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

475. CA5CO13 Theory of Computation

CO_{01}	Apply the grammars and languages to design abstract computer machines.
CO_{02}	Model the logic and solutions to decidable and undecidable problems through compatibility theory.
CO_{03}	Accomplish the Lemma's, Hypothesis for various languages.
CO_{04}	Design deterministic and non-deterministic machines.

476. OE00012 Object Oriented Programming

CO_{01}	Student will become familiar to Algorithm And flowchart design
CO_{02}	Student will become expert of writing program in Object Oriented Programming.
CO_{03}	Student will become familiar of Object Oriented concept.
CO_{04}	Students will be able to design applications using Object Oriented Programming Paradigm.

477. CA5CO18 Advanced Programming

CO_{01}	Recognize programming concepts in java
CO_{02}	Understand object-oriented concepts in java
CO_{03}	Connection to the database
CO_{04}	Create desktop application in java
CO_{05}	Create websites in J2EE.

478. CA5EL05 Design and Analysis of Algorithms

CO_{01}	Students should be able to demonstrate how the worst-case time complexity of an algorithm is defined; compare the efficiency of algorithms using asymptotic complexity
CO_{02}	Students will improve their logic building ability.
CO_{03}	Students will be able to solve problems which are algorithm based by using various Design techniques.
CO_{04}	Students will be able to know various complexity classes and research areas related to algorithms.
CO_{05}	Design efficient algorithms using standard algorithm design techniques

479. CA5EL07 Artificial Intelligence

CO_{01}	Gain a historical perspective of AI and its foundations. Become familiar with LISP programming. To write simple to intermediate programs and an ability to understand code written.
CO_{02}	Understand the strengths and limitations of various state-space search algorithms and choose the appropriate algorithms for a problem. Become familiar with basic principles of AI toward problem solving, inference, perception, knowledge representation, and learning.
CO_{03}	Apply knowledge representation techniques and problem solving strategies to common AI applications.
CO_{04}	To have a basic proficiency in a traditional AI language including an other topics such as minimax, resolution, planning etc.
CO_{05}	To have an understanding of the basic issues of knowledge representation, learning and heuristic search, as well as an understanding of Expert systems

480. CA5EL06 Mobile Communication

CO_{01}	At the end of course Students will be able to understand the concept and terminology of mobile communication.
CO_{02}	After the completion of course student will understand the concept of frequency reuse, channel allocation. Concept of Fading.

CO_{03}	After the completion of course student will understand the system architecture and protocol model of GSM and GPRS. .
CO_{04}	After the completion of course student will understand the Working of IEEE802.11.also understand the concept of some MAC protocol
CO_{05}	After the completion of course student will understand, learn the concept and working of Bluetooth technology

481. CA5EL12 Cyber Security

CO_{01}	At the end of course Students will be able to understand the concept and terminology of Cyber Security
CO_{02}	After the completion of course student will understand the concept of Malware, Phising, Technical Attacks, Vulnerability exploitation.
CO_{03}	After the completion of course student will understand the Cyber Fraud technology.
CO_{04}	After the completion of course student will understand the concept of Computer forensic.
CO_{05}	After the completion of course student will understand Cyber laws & Regulatory Compliances

482. OE00045 Advanced Database Management System

CO_{01}	Exposure for students to write complex queries including full outer joins, self-join, sub queries, and set theoretic queries.
CO_{02}	Knowhow of the file organization, Query Optimization, Transaction management, and database administration techniques

483. OE00046 Software Testing

CO_{01}	Know the basic concepts of software testing and its essentials.
CO_{02}	Able to identify the various bugs and correcting them after knowing the consequences of the bug
CO_{03}	Use of program's control flow as a structural model is the corner stone of testing
CO_{04}	Performing functional testing using control flow and transaction flow graphs.
CO_{05}	Know the basic techniques for deriving test cases.
CO_{06}	Follow an effective, step-by-step process for identifying needed areas of testing, designing test conditions and building and executing test cases
CO_{07}	Able to test a domain or an application and identifying the nice and ugly domains.

CO_{08}	Able to make a path expression and reduce them very well when needed
CO_{09}	Apply appropriate software testing tools, techniques and methods for even more effective systems during both the test planning and test execution phases of a software development project.

484. CA5MC04 Personality Development & Quantitative Aptitude

CO_{01}	It improves problem solving ability.
CO_{02}	It Improves soft skills necessary for a competent IT professional.
CO_{03}	Help students in analytical jobs in knowledge based industry
CO_{04}	It improves ability of a person to learn computer Programming & Software.

485. CA5CO15 Data Warehousing & Mining

CO_{01}	Understand why there is a need for data warehouse in addition to traditional operational database systems.
CO_{02}	Examine the concepts of data warehousing and OLAP.
CO_{03}	Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data.

CO_{04}	Apply DM concepts for formulating business strategies and programs to enhance business intelligence.
CO_{05}	Discover and measure interesting patterns from different kinds of databases.

486. CA5CO16 Linux Programming & Scripting

CO_{01}	Students will be able to understand basics of Linux
CO_{02}	Students will be able to understand the basic and advance commands of Linux.
CO_{03}	Students will be able to use editors in Linux to create different scripts and programs.
CO_{04}	Students will get knowledge of scripting languages like Shell, and Perl.
CO_{05}	Students will get knowledge of Linux networking.

487. CA5CO20 Enterprise Cloud Computing

CO_{01}	Develop and deploy cloud application using popular cloud platforms.
CO_{02}	Design and develop highly scalable cloud-based applications by creating and configuring virtual machines on the cloud and building private cloud.

CO_{03}	Explain and identify the techniques of big data analysis in cloud.
CO_{04}	Compare, contrast, and evaluate the key trade-offs between multiple approaches to cloud system design, and identify appropriate design choices when solving real-world cloud computing problems
CO_{05}	Write comprehensive case studies analysing and contrasting different cloud computing solutions
CO_{06}	Make recommendations on cloud computing solutions for an enterprise.

488. CA5EL27 Mobile Application Development

CO_{01}	Recognize programming concepts
CO_{02}	Understand how to build simple programs in android
CO_{03}	Analyze the daily life problem according to problem solving steps.
CO_{04}	It Improves programming skills necessary for a competent IT professional.
CO_{05}	Create small project

489. CA5EL30 Internet & Web Technologies

CO_{01}	Students would have capability to make own web site and host their own web site on internet.
CO_{02}	Students would have enough knowledge about what are the technologies used in internet.
CO_{03}	After successful completion of the course, student will be able to understand, analyze and apply the role of languages like HTML, DHTML, CSS, XML, Java script
CO_{04}	Analyze a web page and identify its elements and attributes. Create XML documents and XML Schema

490. CA5EL21 Information Storage & Management

CO_{01}	Ability to plan, install and manage a successful storage network.
CO_{02}	Ability to analyze network file systems, volume managers, and database storage challenges used in storage networks
CO_{03}	Ability to integrate storage networking solutions with structured and unstructured data using data center models
CO_{04}	Ability to learn I/O workload planning and estimate storage networking capacities and requirements.

491. CA5CO10 Data Structures Lab

CO_{01}	Students will be able to identify the appropriate data structure for a given problem.
CO_{02}	Students will be able to apply different linear data structures like stack, queue and linked list to various computing problems.
CO_{03}	Students will be able to analyze the efficiency of data structures.
CO_{04}	Students will be able to compare various searching and sorting techniques.
CO_{05}	Discuss various tree and graph traversal techniques.

492. CA5CO23 Programming Lab I

CO_{01}	Understand how to build programs.
CO_{02}	Recognize advanced programming concepts.
CO_{03}	Evaluate the alternative solutions and make decisions.
CO_{04}	Analyze the career opportunities.
CO_{05}	Create a small project using advanced C concepts.

493. CA5CO24 Database Lab

CO_{01}	Transform an information model into a relational database schema and to use a data definition language and/or utilities to implement the schema using a DBMS.
CO_{02}	Use an SQL interface of a multi-user relational DBMS package to create, secure, populate, maintain, and query a database.
CO_{03}	Formulate query, using SQL, solutions to a broad range of query and data update problems.
CO_{04}	Use a desktop database package to create, populate, maintain, and query a database.
CO_{05}	Demonstrate a rudimentary understanding of programmatic interfaces to a database and be able to use the basic functions of one such interface.

494. CA5CO33 Advanced C Programming

CO_{01}	Understand how to build programs.
CO_{02}	Recognize advanced programming concepts.
CO_{03}	Evaluate the alternative solutions and make decisions.
CO_{04}	Analyze the career opportunities.
CO_{05}	Create a small project using advanced C concepts.

495. CA5CO34 Data Structures and Algorithms

CO_{01}	Recognize programming concepts.
CO_{02}	Ability to summarize searching and sorting techniques.
CO_{03}	Ability to describe stack, queue and linked list operation.
CO_{04}	Analyze the daily life problem of data structure.

496. CA5CO35 Modern Operating System

CO_{01}	Student will able to understand the different services provided by Operating System at different level
CO_{02}	They will get knowledge of distributed architecture, and file systems.
CO_{03}	Students will be familiar with process synchronization.
CO_{04}	Get knowledge of distributed resource management.

497. CA5MC02 Technical Communication and Soft Skills

CO_{01}	Better understanding of various channels of communication.

CO_{02}	Developed listening skills by understanding types and avoiding barriers
CO_{03}	Improved presentation skills.
CO_{04}	To be able to write letters and emails in proper formats.
CO_{05}	Presenting ideas in the written format systematically in the form of reports.

498. CA5CO25 Software Engineering Principles

CO_{01}	Students will be able to understand software development approach using software engineering principles.
CO_{02}	Student will become well conversant with Software engineering methodology.
CO_{03}	They will be more skilled in software development and using development tools.
CO_{04}	Students will be able to develop complete software by using SDLC phases.
CO_{05}	Students will be able to know latest trends in software engineering.

499. CA5CO26 Computer Networks Fundamental

CO_{01}	After completing this course the student must demonstrate the knowledge and ability.
CO_{02}	Independently understand basic computer network technology.

CO_{03}	Understand and explain data communications system and its components.
CO_{04}	Identify the different types of network topologies and protocols.
CO_{05}	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each Layer.
CO06	Identify the different types of network devices and their functions within a network
CO07	Understand and building the skills of sub netting and routing mechanisms.
CO08	Familiarity with the basic protocols of computer networks, and how they can be used to assist in network design and implementation.

500. CA5CO27 Programming Lab II

CO_{01}	Remembering how to build simple programs in java.
CO_{02}	Understand object-oriented concepts in java
CO_{03}	Analyze the daily life problem according to problem solving steps.
CO_{04}	Design user defined functions and packages.
CO_{05}	Create Web Application using JSP.

501. CA5CO28 Advance Programming Lab I

CO_{01}	Recognize basic python programming concepts skills necessary for a competent IT professional.
CO_{02}	Read, write, and execute simple Python programs for solving problems.
CO_{03}	Decompose a Python program into functions, lists etc.
CO_{04}	Develop programs to read and write data from/to files in Python
CO_{05}	Analyze and understand the concepts of object-oriented programming as used in Python

502. CA5CO29 Computer Networks Lab

CO_{01}	Recognize application layer protocols, open systems interconnection (OSI) reference model, TCP/IP architecture model.
CO_{02}	Identify current network technologies such as Ethernet, wireless LANs, and Bluetooth.
CO_{03}	Create Internet Protocol (IP) sub-networks, and static and dynamic routing
CO_{04}	Identify transport layer protocols; namely, user datagram protocol (UDP) and transport control protocol (TCP).
CO_{05}	Differentiate between connecting devices such as hubs, bridges, switches, and routers.

503. CA5EL54 Programming in Python

CO_{01}	Experience with an interpreted Language.
CO_{02}	Apply a solution clearly and accurately in a program using Python.
CO_{03}	Design real life situational problems and think creatively about solutions of them.
CO_{04}	Design user defined functions, modules, and packages.
CO_{05}	To build software for real needs.

504. CA5EL49 Theory of Computation

CO_{01}	Apply the grammars and languages to design abstract computer machines.
CO_{02}	Model the logic and solutions to decidable and undecidable problems through compatibility theory.
CO_{03}	Accomplish the Lemma's, Hypothesis for various languages.
CO_{04}	Design deterministic and non-deterministic machines.

505. OE00082 Advanced OOP

CO_{01}	Recognize programming concepts in java

CO_{02}	Understand object-oriented concepts in java
CO_{03}	Connection to the database
CO_{04}	Create desktop application in java
CO_{05}	Create websites in J2EE.

506. CA5CO30 Internet & Web Technologies

CO_{01}	Students would have capability to make own web site and host their own web site on internet.
CO_{02}	Students would have enough knowledge about what are the technologies used in internet.
CO_{03}	After successful completion of the course, student will be able to understand, analyze and apply the role of languages like HTML, DHTML, CSS, PHP
CO_{04}	Analyze a web page and identify its elements and attributes.

507. CA5EL52 Machine Learning

CO_{01}	Student will be able to understand the concept of Machine learning and range of problems that can be solved by machine learning.

CO_{02}	They will be able to compare different types of learning algorithms and their applications.
CO_{03}	Interpret machine learning problems.
CO_{04}	Apply Machine learning techniques for problem solving.
CO_{05}	Identify methods to improve machine learning results for better predictive performance.

508. CA5EL53 Internet of Things

CO_{01}	Understand IoT and its applications
CO_{02}	Data and Knowledge Management and use of Devices in IoT Technology
CO_{03}	Apply interfacing techniques for hardware & Sensors connectivity
CO_{04}	Development of IoT platform for real world applications
CO_{05}	Real World IoT Design Constraints, Industrial Automation and Commercial Building automation in IoT

509. CA5CO32 Advance Programming Lab II

CO_{01}	Discover potential research areas in the field of IT

CO_{02}	Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
CO_{03}	Students will be able to convert the requirements model into the design model and demonstrate use of software and user interface design principles.
CO_{04}	Students will be able to design test cases according to user requirement and specification
CO_{05}	Students will be able to apply SDLC concepts and generate project schedules and can construct, design and develop network diagrams.

510. CA5PC02 Major Project

CO_{01}	Discover potential research areas in the field of IT
CO_{02}	Explain needs for software specifications also they can classify different types of software requirements and their gathering techniques.
CO_{03}	Students will be able to convert the requirements model into the design model and demonstrate use of software and user interface design principles.
CO_{04}	Students will be able to design test cases according to user requirement and specification
CO_{05}	Students will be able to apply SDLC concepts and generate project schedules and can construct, design and develop network diagrams.

511. EN6CA01 Cloud Computing

CO_{01}	Analyze and solve industry-related problems with cloud computing and data science
CO_{02}	Identify appropriate cloud architecture design choices when solving real-world cloud computing problems
CO_{03}	Explain the core issues of cloud computing such as security, privacy, and interoperability
CO_{04}	Analyze data, test claims, and draw valid conclusions using appropriate statistical methodology
CO_{05}	Understand different Cloud Simulators

512. BC3EC01 Programming in JAVA

CO1	Students will understand the basic concepts of JDK, JVM, JRE, Keyword, Branching, Loops.
CO2	Student will understand the basic concept in Array, Class, Object, method, Constructor, Inheritance, Abstract, Interface, Package
CO3	Student will Apply the Basic concept in Threading, Multi-threading, Exceptional Handling, Inter Process Communication, Synchronization, Final, Stop and Wait Thread
CO4	Students will Analyze the concept of Containers and components, AWT classes, window fundamentals: Component. Container. Panel, Window, Frame, AWT Controls, Layout Managers and Menus: adding and removing control. Labels, Button, Check Box, Radio Button, Choice, menu, Text area. Scroll List. Scroll Bar, Frame; Layout managers- flow layout, Grid layout. Border layout. Card layout

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CO5	Students will Analyze Event Handling-Different mechanisms, the Delegation Event Model. Event Classes, Event Listener interfaces and Adapter. Java Swing-icons and Labels, Text fields, Buttons, Combo Boxes, Tabbed and Scroll Panes, Trees, Tables.

513. BC3CO01 Computer Fundamentals

CO1	The student will be able to understand the meaning and need of Information Technology, elements of Computer System, different Peripherals associated different concepts of Operating System, malware and its types, Database Management System concepts and Cloud Computing Techniques.
CO2	Students will be able to determine the database requirements and apply the data model concept and design an entity relationship model and relational Model. Students will also be able to analyze the type of attack on the system with its preventive measure. They can determine which Cloud Computing Technique is well suited according to the user needs.
CO3	Students will be able to analyze, distinguish and explain which Antivirus and Antispyware Software is best suited according to the various types of attack, which scanner and printer is well suited according to its quality, cost and utility, and which Cloud Delivery Model and Cloud Deployment model can be implemented.

514. BC3CO02 Problem Solving and Programming-I

CO1	Students will be able to understand various problem solving techniques
CO2	Students will become well conversant with structured programming

CO3	Students will be able to apply problem solving techniques and programming skills.
CO4	Students will be able to analyze and solve various mathematical and statistical problems

515. BC3CO03 Mathematics -I

CO1	Students will be able to understand and find the relation between roots and coefficients of polynomial equations.
CO2	Students will be able to apply the tools of matrices in solving the system of simultaneous equations.
CO3	Students will be able to use the concepts of continuity in learning advanced calculus.
CO4	Students will be able to use the concepts of differentiability in learning advanced calculus.
CO5	Students will be able to apply tools of integration to find length, surface area and volume.

516. BC3CO04 Physics-I

CO1	Students will be able to understand the basic law of Physics.
CO2	Students will be able to understand the mechanics behind general properties.
CO3	Students will be able to analyze and apply the mathematical formula for problem solving techniques.
CO4	Students will have an understanding of the core concept of physics which they can apply for further study.

517. BC3AE01 English Communication

CO1	The student will be able to enhance confidence in their ability to read, comprehend, organize and retain written and oral information.
CO2	The student will be able to distinguish between general and technical communication and understand its importance.
CO3	The student will be able to improve upon their language skills, communication skills, group discussion, personality development and confidence level.
CO4	The student will be able to bridge the language gap vital to their success and will be able to communicate effectively.
CO5	The student will be able to enhance confidence in their ability to read, comprehend, organize and retain written and oral information.

518. BC3CO05 Problem Solving and Programming-II

CO1	Student will be aware to notion of modular programming to solve complex problem solving
CO2	Student will be able to understand the concept of pointers, file handling, Visual display unit and graphic programming
CO3	Students will be able to apply their programming skills to solve complex problems
CO4	Students will be able to drawing different shapes and perform animation through programming

CO5	Students will be able to analyze complex problems and solve them using programming skills.

519. BC3CO06 Digital Electronics and Computer Architecture

CO1	Students will be able to understand the basic concept of number systems, logic gates, various kinds of circuits and Boolean algebra.
CO2	Students will be able to solve questions on number systems, arithmetic operations on binary numbers, floating point representation and logic gates.
CO3	Students will be able to define flip flops, register and counters
CO4	Students will learn about fundamental concepts of– execution of a complete instruction, design of basic computer, addressing modes, instruction formats and stack organization.
CO5	Students will have a deep knowledge of Input Output organization.

520. BC3CO07 Mathematics -II

CO1	Students will be equipped with the knowledge of functions of several variables
CO2	Students will be equipped equipped with the knowledge about the tracing a curve and find area, volume by multiple integral
CO3	Students will be able to solve ordinary differential equations using different methods

CO4	Students will be able to solve Ordinary differential equations with variable coefficients using different methods and apply the tools of calculus in various fields.
CO5	Students will be equipped with the knowledge of Laplace transform and to apply the transform in solution of ordinary differential equation.

521. BC3CO08 Physics-II

CO1	The students will be having a thorough understanding of the basic concepts of Thermo dynamical physics, including applying and appropriately modeling the case and correctly observing sign conventions for work and heat transfer.
CO2	Students will be able to understand the fundamental laws of thermodynamics and it's the applications, analyzing the system undergoing thermodynamic cycle and evaluating the efficiency of heat engines.
CO3	To deal with various thermo dynamical parameters and to study their expressions and effects in various thermo dynamical phenomenon's and solving the questions based on different- different conditions.
CO4	To provide an introduction to statistical physics and to understand various statistical systems and their applications in various systems.
CO5	To apply the principles and techniques of statistical physics to selected problems and situations.

522. BC3AE02 Environmental Science

CO1	Students will have knowledge of Sustainable development and environmental ethics and bylaws.
CO2	Students will be able to develop basic understanding of Global Environmental challenges and movement
CO3	Students will be able to develop in-depth knowledge of natural resources and pollution controls methodologies
CO4	Students will be able to gain knowledge of ecosystem and biodiversity
CO5	Students will be able to gain and apply the knowledge of sustainable habitat and green technology

523. BC3CO09 Data Structure

CO1	Students will be able to understand the basics of data structure and algorithms.
CO2	Students will be able to implement arrays through C and will learn about its use.
CO3	Students will be able to implement stack and queues through C and perform operations on them. They will also understand their applications.
CO4	Students will be able to implement linked lists and trees through C and perform operations on them. They will also understand various types of trees.
CO5	Students will be able to implement various searching and sorting techniques through C. They will also be well versed with graphs.

524. BC3CO10 Computer Organization

CO1	Students will be able to understand various components of computer System
CO2	Students will be more convergent with input/output interface and various input/output techniques Data transfer
CO3	Students will be able to understand the memory hierarchy of computer system
CO4	Students will be able to understand the CPU register organization instruction cycle and instruction pipelining
CO5	Student will be able to understand organization of various functional units of computer system and evaluate its performance

525. BC3CO11 Mathematics -III

CO1	Students will be able to find series solution of ODE of second order including special function Bessel and Legendre's
CO2	Students will be able to distinguish between the concepts of sequence and series, and determine limits of sequences and convergence of series.
CO3	Students will be able to calculate gradient, divergence and curl of the function along with their physical interpretations.
CO4	Students will be able to evaluate line, surface and volume integral using Green's, Stoke's and Gauss Divergence theorem.

CO5	Students will be able to define and analyze limits and continuity for complex functions and Apply the concept of analyticity and the Cauchy-Riemann equations to the complex functions.

526. BC3CO12 Physics-III

CO1	Students will be able to describe the different mechanisms and working of different types of laser.
CO2	Students will be able to examine the various types of fringe patterns in diffraction.
CO3	Students will be able to distinguish the types of polarized light.
CO4	Students will be able to solve fundamental equations of interference.
CO5	Students will be able to explain various optical instruments and analyze the mathematical formula for problem solving techniques.

527. BC3SE01 OOP using C++

CO1	Students will be able to understand the significance of Object Oriented Programming concepts,(objects, class, data encapsulation, inheritance and polymorphism),Control Structures, Functions and File handling Concepts.
CO2	Students will be able to apply basic concepts of Object Oriented Programming, function overloading, Operator overloading, Call by Value and Call by reference, Constructor and Destructor. File stream Classes.

CO3	Students will be able to analyze reusability of code through inheritance, various types of inheritance, Static and Dynamic binding, Virtual functions and exception handling..
CO4	Students will be able to evaluate inline function, friend function, Constructor and Destructor, Overloading and Overriding, classes for file stream operations, Command line arguments.
CO5	Students will be able to create programs or basic software using Object Oriented Programming concepts and file handling and also will be able to perform different complex problems using Object Oriented Programming.

528. BC3CO15 Mathematics -IV

CO1	Students will be able to understand the concepts of various groups
CO2	Students will be able to apply the fundamental theorem of homomorphism and permutation of group.
CO3	Students will be able to apply basic results of Ring theory, and the significance of unique factorization in Rings and Integral domains.
CO4	Students will be able to understand the concepts of vector space and subspace. Demonstrate understanding of linear independence, span, and basis.
CO5	Students will be able to apply principles of matrix algebra to linear transformations

529. BC3CO14 Computer Networks

CO1	Students will be able to understand the fundamental concept of networking.
CO2	Students will be able to understand different Transmission Media.
CO3	Students will be able to understand the Flow Control Algorithm and Error Detection protocols.
CO4	Students will be able to understand the concept of Switching and Routing Method.
CO5	Students will be able to understand Transport and Application Layer protocols.

530. BC3CO13 Database Management System

CO1	Students will be able to understand the concept of Database management system, its need and advantages, Data Models, Normalization, transaction, concurrency and recovery.
CO2	Students will be able to determine the database requirements and apply the data model concept and design an entity relationship model and relational Model
CO3	Students will be able to analyze and organize keys in relations and perform queries on the database. Formulate Relational algebra
CO4	Students will be able to evaluate the database with an understanding of normalization theory
CO5	Students will be able to create and access the database.

531. BC3SE04 PHP Programming

CO1	Students will be able to understand the significance of PHP. They will be able to understand the concept of variables, constant, storing data in arrays, function with arguments, get and post method and usage of MYSQL.
CO2	Students will be able to apply data types, conditional statements, switch cases, and loops in PHP. Students will be able to implement arrays with forms, function arguments with call by value and reference, OOPs concept PHP.
CO3	Students will be able to analyze and organize string formatting functions. They will be able to implement multi value fields in a single form, MySQL with PHP-database connectivity.
CO4	The students will be able to validate date and time function and validate user input through database layer and application layer.
CO5	The students will be able to create PHP scripts and be able to create sample database applications using PHP and MySQL.

532. BC3CO16 Physics-IV

CO1	Students will be able to understand basic laws of electrostatics and magneto statics.
CO2	They will be able to understand the basic concept of electric current.
CO3	Students will be able to analyze and apply the mathematical formula for problem solving techniques.
CO4	Understanding of core concept of electricity and magnetism physics which they can apply for further study.

CO5	Students will be able to acquire detailed knowledge on AC and DC circuits

533. BC3SE06 Advanced PHP

CO1	Students will be able to handle exceptions and understand filters in PHP.
CO2	Students will be able to perform file handling and also be aware about uses of regular expressions in PHP.
CO3	Students will be able to manage cookies and sessions in PHP and also able to sending email with PHP.
CO4	Students will be able to perform Ajax and Jquery with PHP.
CO5	Students will be able to create application using Ajax and Jquery with PHP.

534. BC3EC01 Programming in JAVA

CO1	Students will understand the basic concept of JDK, JVM, JRE, Keyword, Branching, loops.
CO2	Student will understand the basic concept in Array, Class, Object , method, Constructor, Inheritance, Abstract ,interface, Package
CO3	Student will Apply the Basic concept in Threading, Multi-threading ,Exceptional Handling, Inter Process Communication, Synchronization, Final, Stop and Wait Thread

CO4	Students will Analyze the concept of Containers and components, AWT classes, window fundamentals: Component. Container. Panel. Window, Frame, AWT Controls, Layout Managers and Menus: adding and removing control. Labels, Button, Check Box, Radio Button, Choice, menu, Text area. Scroll ist. Scrollbar, Frame; Layout managers- flow layout, Grid layout. Border layout. Card layout
CO5	Students will Analyze Event Handling-Different mechanisms, the Delegation Event Model. Event Classes, Event Listener interfaces and Adapter. Java Swing -icons and Labels, Text fields, Buttons, Combo Boxes, Tabbed and Scroll Panes, Trees, Tables.

535. BC3EM01 Graph Theory

CO1	Students will be equipped with the fundamental knowledge of Graph theory.
CO2	Students will be able to use various definitions and theorems from memory to construct solutions to problems and/or proofs
CO3	Students will be able to apply their knowledge in solving problems of graph theory
CO4	Students will be exposed to mathematical theories and principles to compare relative efficiency of various algorithms in real world.
CO5	Students will be having a strong background of graph theory which has diverse applications in the areas of computer science.

536. BC3EP04 Quantum Mechanics and Spectroscopy

CO1	Students will be able to understand importance of quantum mechanics compared to classical mechanics at microscopic level.

CO2	Students will be able to get exposure about the various tools employed to analyze the quantum mechanical problems
CO3	Students will be able to learn the significance of atomic models and different quantum numbers.
CO4	Students will be able to know the importance of Nuclear energy and accelerators.

537. BC3EC06 Internet Technologies

CO1	Students will be able to learn the basics of Java script, HTML and CSS.
CO2	The students will gain and understand fundamental knowledge of Web Designing.
CO3	Students will be able to apply basic concepts of Java script, HTML and CSS.
CO4	Students will be able to do website analysis.
CO5	Students will be able to develop their own web-sites using Html, CSS and Java script.

538. BC3SE09 Python Programming

CO_{01}	Students will have understanding on how build python development environment
CO_{02}	Students will be able to apply python programming concepts in the development environment
CO_{03}	Student will have ability to examine python programs using popular tools like Anaconda navigator

CO_{04}	Student will have ability to construct python programs using popular tools and integrated development environments

539. BC3EC07 Software Engineering

CO1	Students will be able to understand the need of software engineering, software life cycle models, understand the activities in requirements analysis and specification, understand the basics of software design and need of software testing.
CO2	Students will be able to apply different SDLC models in different situations, able to apply structured and object oriented analysis and design during software design, and able to apply different testing techniques at different levels.
CO3	Students will be able to analyze traditional and agile software process models and compare SAD with OOAD, differentiate different testing.
CO4	Students will be able to evaluate design and testing techniques.

540. BC3EC13 Project Work

CO1	Students will be able to discover potential research areas in the field of IT
CO2	Students will be able to explain needs for software specifications and they can also classify different types of software requirements and their gathering techniques.
CO3	Students will be able to convert the requirements model into the design model and demonstrate use of software and user interface design principles.

CO4	Students will be able to apply SDLC concepts and generate project schedules and can construct, evaluate, design and develop network diagrams.
CO5	Students will be able to design test cases according to user requirements and specifications. They will be able to develop software.

541. BC3EM03 Computer Oriented Numerical Method

CO1	On successful completion of the course the students will be able to analyze the types of errors in any numerical approximation and the approximate roots of the given transcendental equations using numerical methods.
CO2	To interpolate data from a given set of tabulated values.
CO3	To understand the concepts of numerical differentiation and integration and use suitable quadrature formulas.
CO4	To use probability and statistical concepts in learning distributions.
CO5	To test the hypothesis using suitable statistical tests of significance.

542. BC3EP08 Solid State Physics and Devices

CO1	Students will be able to understand the structure and lattice parameters of the materials.
CO2	Students will be able to understand the electrical and magnetic behavior of the solids.

CO3	Students gain the basic knowledge of electronic devices and circuits.
CO4	They will come across nanotechnology and fabrication methods.

543. CS5BS01 Cloud Architecture

CO_{01}	Understand basic principle of Cloud Computing
CO_{02}	Understand the application of Cloud Computing
CO_{03}	Design and develop management of Cloud Services
CO_{04}	Create environment to develop Cloud based applications
CO_{05}	Apply their skills in the field of Cloud based service, applications anddevelopment platform deployment.

544. CS5CC10 Big Data Analysis

CO_{01}	Understand the challenges, sources, characteristics and evolution of Big Data Analytics
CO_{02}	Define knowledge of different computing, reporting and analytical tools for Big Data Analysis
CO_{03}	Analyze concept of stream computing and real time analytical platform for Big Data Analysis
CO_{04}	Contrast machine learning techniques for predictive analysis & visualization

CO_{05}	Implement application of Big Data Analysis using the framework.

545. CS5CC12 Data Center virtualization

CO_{01}	Define Data Center Challenges for Network Virtualization
CO_{02}	To get understand Enterprise Level Virtualization
CO_{03}	Evaluate Migration & Monitoring Technologies in Virtual Machine & Access Control
CO_{04}	Implement CPU Management & Abstraction techniques using Hypervisor
CO_{05}	Design Virtual Machine Data Protection

546. CS5EL12 Elective-II Cloud Security

CO_{01}	To impart the fundamentals of virtualization techniques and various Security techniques.
CO_{02}	Introduction of concepts and security issues of cloud paradigm.
CO_{03}	Depicts security management frameworks and the standards that are relevant for the cloud.
CO_{04}	Apply appropriate cloud programming methods to solve big data problems.
CO_{05}	Understanding the need of security mechanisms in cloud and various standards and framework to consider.

547. CS5EL16 Elective-III Cloud Strategy Planning & Management

CO_{01}	Identify the basic concepts and various strategies to achieve business values by moving to cloud architecture.
CO_{02}	Apply business strategy and investigate business strategy models to gain competitive advantage for organizations
CO_{03}	Recognize and identify strategic IT leadership in the organization to plan and manage IT strategic development in the organization
CO_{04}	Recognize/ Identify and plan for cloud computing-based IT strategy and deliver strategic business objectives in the business strategy
CO_{05}	Apply and relate shared services delivered by a Service Oriented Architecture in private and public cloud
CO_{06}	Understanding of benefit realization and IT Governance, managing resources to realize benefit from Private/Public cloud IT services

548. IT3EA06 Natural Language Processing

CO_{01}	Students will Understand the interactive computer graphics architecture and Fundamentals of NLP Objects with algorithms..
CO_{02}	Students will get Knowledge of the formal language and their representation using grammars.
CO_{03}	Students will be able Broad perspective of modern POS tagging and context free grammar for English language
CO_{04}	To get acquainted with the algorithmic description of the main language levels: morphology, syntax, semantics, and pragmatics,
CO_{05}	To conceive basics of knowledge representation, inference, and relations to artificial intelligence.

549. IT3EA03 Soft Computing

CO_{01}	Students will be able to understand soft computing techniques and applications
CO_{02}	Students will be familiar with neural network learning.
CO_{03}	Students will be able to understand working knowledge of Fuzzy logic and reasoning in the presence of incomplete and/or uncertain information
CO_{04}	Students will be able to understand to apply genetic algorithms to optimization problems
CO_{05}	Ability to understand the working of hybrid systems.

550. IT3CO06 Design and Analysis of Algorithms

CO_{01}	Analyze the complexities in the Algorithms and Real world
CO_{02}	Student should be able to Decompose system in Modules
CO_{03}	Students must be able to Identify Solution steps in the System
CO_{04}	Applicability of System design Principles as per need and optimization
CO_{05}	Recognize and Identify the problem in real world system

551. IT3EL04 Distributed System

CO_{01}	To understand what and why a distributed system
CO_{02}	To understand IPC, Group Communication & RPC Concepts.
CO_{03}	Understand Clock Synchronization and Algorithms.
CO_{04}	To understand DFS and the concepts of transaction in distributed environment and associated concepts, namely, concurrency control, deadlocks and error recovery.
CO_{05}	Understand Load Distributing and Distributed Database.

552. OE00073 Cyber Security Fundamentals

CO_{01}	Analyze and evaluate the cyber security needs of an organization
CO_{02}	Determine and analyze software vulnerabilities and security solutions to reduce the risk of exploitation.
CO_{03}	Design and develop security architecture for an organization.
CO_{04}	Measure the performance and troubleshoot cyber security systems.
CO_{05}	Design operational cyber security strategies and policies
CO_{06}	Implement cyber security solutions and use of cyber security, information assurance, and cyber/computer forensics software/tools

553. IT3ED06 Predictive Modeling and Data Visualization

CO_{01}	Students will be able to identify the real-world problems from different application domains that can be solved by applying the concepts of predictive modelling
CO_{02}	Students will be able to design and analyze new models for prediction
CO_{03}	Students will be able to integrate and apply the concepts of statistics, mathematics and IT with domain specific knowledge
CO_{04}	Students will be able to communicate the results of predictions using different visualization tools effectively
CO_{05}	Students will be able to write optimized code by making use of libraries to solve the problem and to communicate the results.

554. IT3ED03 Data Analytics

CO_{01}	Student will be able to look at various pieces of data and draw a conclusion
CO_{02}	Students will be able to apply the concepts of statistics to solve business problems.
CO_{03}	Students will understand the fundamentals of various big data analytics techniques.
CO_{04}	Students will be able to apply data modelling techniques to large data sets.
CO_{05}	Students will be able to build a business data analytics solution.

555. IT3CO15 Computer Programming-II

CO_{01}	The student will be able to write and run basic programs in java.
CO_{02}	The student will be able to relate real world problems to Object Oriented programming environment.
CO_{03}	The students will be able to apply the concepts of reusability using the build-in string functions.
CO_{04}	The students will be able to use exception handling in their programs and to apply the concepts of multithreading in java
CO_{05}	The students will be able use input and output functionality, Applets and AWT in java programs.

556. OE00053 E-Commerce

CO_{01}	Students will be able to understand the concept of E-Commerce and different business models for doing any E-Commerce transaction.
CO_{02}	Students will be able to understand and implement the e-commerce Laws, Policies and online marketing Strategies.
CO_{03}	Student will be able to initiate M-Commerce transaction with the help of any wireless device and access the services of E-Governance online.
CO_{04}	Student will be able to define, all the challenges and issues to implement E-Governance and also able to explain how a huge database at government side is managed and used for the betterment of the government services.
CO_{05}	Student will be able to explain all security threats to the Servers machines and techniques to prevent the data and the network from the attacker at server.

557. IT3CO22 Software Engineering

CO_{01}	Apply appropriate Development Life Cycle according to the type of software
CO_{02}	Categorize functional and non-functional requirements and apply all the phases of requirement engineering
CO_{03}	Identify the correct design decision and architectural style for the software
CO_{04}	Decide testing tools and test management strategies
CO_{05}	Know the ethical practices that software professionals are expected to adopt, analyze the breakup of cost and time required to develop a quality software

558. IT3CO19 Object Oriented Programming

CO_{01}	Students will be able to understand Real World objects.
CO_{02}	Student will familiar with problem solving technique and approach.
CO_{03}	Student will be able to understand all the concept of OOPM
CO_{04}	Students will be able to decompose the real world problem into step by step solution by applying domain knowledge.
CO_{05}	Should be able to understand the tools to write the code.

559. IT3ED02 Data Mining and Warehousing

CO_{01}	Student will able to understand need for data warehouse, tools, schemas and distinguish between database and data warehouse.
CO_{02}	Students will know the concept of knowledge discovery process and process of data mining, data cleaning, data reduction etc..
CO_{03}	Students will be able to learn data mining algorithms and pattern evaluation methods.
CO_{04}	Student will know the concept of clustering and its types and social network analysis.
CO_{05}	Student will able to learn Dimensional Modeling application tools and know how to use data mining and olap tools.

560. OE00016 Block chain Architecture

CO_{01}	Student will understand the basic terminology used in Block chain and Bit coin.
CO_{02}	Students will be able to explore Block chain and classification of various crypto currencies.
CO_{03}	Students will learn about various Consensus algorithms.
CO_{04}	Students will able to understand basic Block chain Architecture.
CO_{05}	Students will able to use and understand application of Block chain.

561. OE00055 Data Analytics

CO_{01}	Student will be able to look at various pieces of data and draw a conclusion
CO_{02}	Students will be able to apply the concepts of statistics to solve business problems.
CO_{03}	Students will understand the fundamentals of various big data analytics techniques.
CO_{04}	Students will be able to apply data modeling techniques to large data sets.
CO_{05}	Students will be able to build a business data analytics solution.

562. EN3ES21 Programming-1

CO_{01}	Know the concept of tools and able to design solution before implementation using algorithm.
CO_{02}	Student should be able to know basics of programming language.
CO_{03}	Students must be able to solve some basic logical and mathematical problems using programming
CO_{04}	Students must be able to solve complex problem using array and strings
CO_{05}	Implement user define function and learn code reusability advantage in projects.

563. IT3EL03 Information Storage & Management

CO_{01}	Understand about Information Storage Environment
CO_{02}	Understand Storage Area Networks Content –Addressed Storage
CO_{03}	Understand managing information and will be able to analyze different storage networking technologies and virtualization
CO_{04}	Monitor the storage infrastructure and management activities
CO_{05}	Understand Storage security and Management

564. IT3CO02 Data Structures

CO_{01}	Student will be able to choose appropriate data structure as applied to specific problem definition.
CO_{02}	Student will be able to handle operations like searching, sorting, insertion, deletion, traversing mechanism etc. on various data structures.
CO_{03}	Students will be able to apply concepts like Stack ,Queue ,Linked List and Array in various domains like DBMS, compiler construction and OS etc
CO_{04}	Students will be able to use different searching and sorting algorithms according to problems.
CO_{05}	Students will be able to understand and implement non linear data structure like tree and graph.

565. IT3CO23 Cloud Computing

CO_{01}	Understand cloud-related terminologies and applications with deployment models.
CO_{02}	Virtualization, Cloud computing broker working with capital and operational.
CO_{03}	Service layers with various SLA agreement policy.
CO_{04}	Cloud security concepts with virtualization security.
CO_{05}	Cloud Application Development platforms

566. IT3CO05 Database Management Systems

CO_{01}	Students will be able to identify the major entities of mini world and relationships between them, familiar with conceptual design of database.
CO_{02}	Students will be able to model the database and will be able to convert the Conceptual model into Relational model.
CO_{03}	Students will be able to normalize the relations, remove the redundancy and inconsistency in the database.
CO_{04}	Students will be able to design the transaction in such a way that it never takes the database in an inconsistent state
CO_{05}	Students will be familiar with various types of indexing, searching and file organization techniques.

567. IT3CO24 Compiler Design

CO_{01}	Understand fundamentals of the compiler and identify the relationships among different phases of the compiler.
CO_{02}	Understand the application of finite state machines, recursive descent, production rules, parsing, and language semantics.
CO_{03}	Analyze & implement required modules, which may include front-end, back-end, and a small set of middle-end optimizations.
CO_{04}	Understand how code optimization works.
CO_{05}	Use modern tools and technologies for designing new compilers

568. IT3EL03 Information Storage and Management

CO_{01}	Understand about Information Storage Environment
CO_{02}	Understand Storage Area Networks Content –Addressed Storage
CO_{03}	Understand managing information and will be able to analyse different storage networking technologies and virtualization
CO_{04}	Monitor the storage infrastructure and management activities
CO_{05}	Understand Storage security and Management

569. IT3CO21 Operating System

CO_{01}	Student will understand the history of operating system. Student will be able to understand design issues associated with operating system.
CO_{02}	Students will understand process management concepts including scheduling, synchronization, and deadlocks.
CO_{03}	Students will be able to understand concepts of memory management including virtual memory.
CO_{04}	Students will understand issues related to file system interface and implementation, disk management.
CO_{05}	Students will be familiar with various types of operating systems including LINUX/ UNIX and its services.

570. IT3CO20 Computer System Architecture

CO_{01}	Student will understand Basic structure of computer system, arithmetic operations, and Demonstrate design of basic computer.
CO_{02}	Students will know how to design various electronic circuits and able to perform computer arithmetic operations.
CO_{03}	Students will be able to understand control unit, memory unit, I/O unit and apply the memory hierarchy design, memory access time formula, performance improvement techniques.
CO_{04}	Student will know the concept of memory management, interleaving and mapping, DMA controller.
CO_{05}	Student will distinguish the concept of pipeline, super computer, array processor and their structure.

571. IT3CO16 Computer Programming-III

CO_{01}	Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
CO_{02}	Express different Decision making statements and Function
CO_{03}	Interpret Object oriented programming in Python
CO_{04}	Understand and summarize different File handling operations
CO_{05}	Student will be able to distinguish between mutable and immutable data types.

572. SC6CS01 Advanced Software Engineering

CO_{01}	Students will be able to understand the need of software engineering, software life cycle models, understand the activities in requirements analysis and specification, Project Management, understand the basics of software design and need of software testing.
CO_{02}	Students will be able to apply different SDLC models in different situations, able to apply structured analysis and design during software design, and able to apply different testing techniques at different levels.
CO_{03}	Students will be able to analyze traditional and agile software process models and compare Estimation Approaches, differentiate different testing.
CO_{04}	Students will be able to evaluate design and testing techniques.

573. SC6CW02 Machine Learning

CO_{01}	Student will be able to understand the concept of Machine learning and range of that can be solved problems by machine learning.
CO_{02}	They will be able to compare different types of learning algorithms and their applications.
CO_{03}	Interpret machine learning problems.
CO_{04}	Apply Machine learning techniques for problem solving.
CO_{05}	Identify methods to improve machine learning results for better predictive performance.

574. CE3CO01 Engineering Surveying

CO_{01}	Understand working of Surveying instruments.
CO_{02}	Survey position of different points on ground and under water.
CO_{03}	Prepare graphical representation of different measured points
CO_{04}	Understand basic principles and application of latest technologies in the field of surveying

575. CE3CO05 Construction Material and Techniques

CO_{01}	Develop an basic understanding of concrete and its types
CO_{02}	Develop an understanding of fresh and hardened concrete
CO_{03}	Understand process of design mix concrete
CO_{04}	Understand and learn techniques 0f masonry work
CO_{05}	Gain knowledge about various construction equipments

576. CE3CO18 Engineering Geology

CO_{01}	Develop an basic understanding about Interior and outer structure of Earth
CO_{02}	Develop an understanding about Minerals and their physical properties
CO_{03}	Understanding of various Rocks and their importance in civil engineering
CO_{04}	Imparts knowledge of various geological structures like fold, faults and their imp. In civil construction
CO_{05}	Imparts knowledge about Earth movements , aquifers and basic about remote sensing

577. CE3CO19 Fluid Mechanics

CO_{01}	Student will be able to understand the properties of fluids, fundamentals of fluid mechanics; pressure exerted by fluids and measurement of pressure, Forces on submerged bodies.
CO_{02}	Student will be able to learn about different types of fluid flows, different methods applied for describing fluid in motion.
CO_{03}	Students will be able to learn about different types of energies associated with Fluid in motion.
CO_{04}	Students will be able to learn about the measurement of flow in pipes and flow in open channels.
CO_{05}	Students will be able to understand concept of equivalent pipe, Energy losses in flow in pipe.

578. CE3ES11 Strength of Material

CO_{01}	Students will be able to find the stresses in a different types of bar
CO_{02}	Student will be able to draw shear force and bending moment diagram, also draw the behavior of beam under the action of different loads.
CO_{03}	Students will be able to know the distribution of bending and shearing stresses across a beam
CO_{04}	Students will be able to calculate the stresses due to torsion, effect of combined bending and torsion in a beam.
CO_{05}	Students will be able to judge the type of column and how to apply different theories of failure for designing any structure.

579. CE3CO20 Environmental Engineering -I

CO_{01}	Understand the major water supply components.
CO_{02}	Analyze water supply components
CO_{03}	Design the water supply components
CO_{04}	Select and implement appropriate technology for existing conventional systems
CO_{05}	Apply the current advancement in practical scenario with suitable software's

580. CE3CO21 Building Planning Drawing

CO_{01}	Recognize various building components and their types.
CO_{02}	Understand the terms associated with building design and architecture.
CO_{03}	Know the different building services and their types.
CO_{04}	Students will be conversant about design, drawing and drafting of civil engineering works.
CO_{05}	Students will be conversant about AutoCAD software.

581. CE3CO22 Transportation Engineering I

CO_{01}	To distinguish different cross-sectional elements of highway and understand the systems of road planning in India.
CO_{02}	To know the construction and design of flexible pavement.
CO_{03}	To know the comparison of different types of pavements, and design flexible & rigid pavements (as per IRC: 37-2012&IRC: 58-2011), and find stresses in them.
CO_{04}	To know about the method of maintenance of rigid and flexible pavement
CO_{05}	To conversant about Airport Planning, Runway & Taxiway and their elements.

582. CE3CO23 Structural Analysis -I

CO_{01}	Apply the concept of Determinate and Indeterminate Structures.
CO_{02}	Apply the Energy Concepts and principle of virtual work in Analysis of Structures.
CO_{03}	Able to use the influence line diagrams as a valid tool for structural analysis.
CO_{04}	Differentiate various structures and Analyze by Displacement Methods.
CO_{05}	Analyze Arches and Suspension Bridges.

583. CE3CO24 Hydraulic Engineering

CO_{01}	Student will be able to understand the fundamentals of boundary layer, use of displacement, momentum and energy equations and laminar and turbulent boundary layers.
CO_{02}	Student will be able to classify different types of open channels and types of flow in open channel and will able to understand the calculations of uniform flow in open channel.
CO_{03}	Student will be able to learn about non uniform flow and its calculations in an open channel flow.
CO_{04}	Students will be able to understand the concept of Hydraulic jump and its significance.
CO_{05}	Students will be able to understand the use of turbines and pumps and its component parts.

584. EN3HS04 Fundamentals of Management, Economics and Accountancy

CO_{01}	Students will be able to understand Basics of Management Theory.
CO_{02}	Student will be gaining knowledge of Marketing & Human Resource Management.
CO_{03}	Students will be able to understand basic information for Economics.
CO_{04}	Students will be able to get acquainted with the Financial Accounting System.
CO_{05}	Students will be able gain sufficient knowledge of Financial Management

585. CE3CO10 Hydraulics and Hydraulic Machines

CO_{01}	Student will be able to understand the fundamentals of boundary layer, use of displacement, momentum and energy equations and laminar and turbulent boundary layers.
CO_{02}	Student will be able to classify different types of open channels and types of flow in open channel and will able to understand the calculations of uniform flow in open channel.
CO_{03}	Student will be able to learn about non uniform flow and its calculations in an open channel flow.
CO_{04}	Students will be able to understand the concept of Hydraulic jump and its significance.
CO_{05}	Students will be able to understand the use of turbines and pumps and its component parts.

586. CE3CO12 RCC Design and Drawing

CO_{01}	Recognize various material properties and codal limitation about RCC structure
CO_{02}	Analyze the existing strength of structural components Like MOR of beam load carrying capacity of columns etc.
CO_{03}	Design various components by using concepts of analysis and IS recommendations.
CO_{04}	Select appropriate type of approach and design a suitable components according to the existing condition

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587. CE3CO13 Geotechnical Engineering

CO_{01}	differentiate the different types of soil and their engineering properties and classify them;
CO_{02}	determine the soil properties in laboratory and develop a proficiency in handling experimental data;
CO_{03}	Understand the influence of water flow on the engineering behavior of soils.
CO_{04}	Analyze engineering properties like compaction, permeability, soil shear strength.
CO_{05}	classify soil slopes and identify their modes of failure and earth pressure theories

588. CE3CO15 Quantity surveying & Estimation

CO_{01}	Students will be able to pick up the various estimating techniques.
CO_{02}	Students will be able to take rates of civil engineering works
CO_{03}	Students shall be able to estimate the material quantities.
CO_{04}	Students will be able to Evaluate the actual value of any property.
CO_{05}	Students will be able to build up estimates and to compile the tender ready for submission.

589. CE3EL01 Environmental Engineering

CO_{01}	Students will be able to know the Waste water Characteristic of sewages, and primary treatment of sewage.
CO_{02}	Students will be able to know about secondary treatment of sewage. .
CO_{03}	Students will be able to know about Air Pollution and its Measures.
CO_{04}	Students will be able to know about Noise Pollution and its Control.
CO_{05}	Students will be able to know Environmental Impact Assessment.

590. OE00037 Green Building Technology

CO_{01}	Develop an basic understanding and benefits of Green Building.
CO_{02}	Develop an understanding of climatic and environmental challenges.
CO_{03}	Develop an understanding of design to save environment at the stage of construction and operation of building.
CO_{04}	Will be able to reduce waste generation through construction and operation of building.
CO_{05}	Will be able to evaluate the environmental impact of building.

591. CE3CO07 Water Resources Engineering

CO_{01}	Student will be able to understand about components of hydrologic cycle, precipitation, runoff calculation, formation of flood hydrographs used in various civil engineering operations.
CO_{02}	Student will be able to classify different types of floods and various methods of its control and routing.
CO_{03}	Student will be able to learn about characteristics of ground water flow and well irrigation.
CO_{04}	Students will be able to understand the importance of irrigation and various methods of irrigation and calculation water supply for irrigation.
CO_{05}	Students will be able to understand the components of canals and design of canals used in irrigation.

592. CE3CO11 Structural Analysis -II

CO_{01}	distinguish between determinate and indeterminate structures, sway and non-sway structures
CO_{02}	Analyze structures with matrix methods.
CO_{03}	analysis the tall structure by different methods
CO_{04}	Use influence line diagrams as a valid tool for structural analysis.
CO_{05}	Perform plastic analysis. Understand and able to apply plastic theory to structures

593. CE3CO14 Design of Steel Structures

CO_{01}	Students will be able to design of bolted and welded connection and also to determine the efficiency of joints.
CO_{02}	Students will able to design laterally supported beams, plate beam and plate girder.
CO_{03}	Students will be able to know about tension and compression member which will help in design of tension and compression members.
CO_{04}	Students will be able to design the beam and column used in steel structure.
CO_{05}	Students will be able to know about roof trusses and their elements which will help in designing of purlin and truss members.

594. CE3EC05 Construction Project Management

CO_{01}	Gain knowledge of planning & scheduling of different projects. Also able to develop different schedule from project schedule
CO_{02}	Develop Bar chart, Milestone chart and Networks from word problems & able to compute Slack, Critical path of different networks from PERT method.
CO_{03}	Compute Float, Critical path of different networks from CPM method & able to Crash the network according to the field requirement.
CO_{04}	Gain knowledge of various Contracts, Claims, Dispute and Closures & able to manage the resource according to different field conditions.
CO_{05}	Gain knowledge of Project monitoring, control, MS PROJECT and Primavera software.

595. CE3EE09 Water Distribution System

CO_{01}	To know about water distribution systems and their elements.
CO_{02}	To know about various methodologies of hydraulic analysis of the network.
CO_{03}	To use various methodologies for hydraulic analysis of various components.
CO_{04}	To know to design the branch Network.
CO_{05}	To know to formulate the optimization model.

596. EN3HS04 Fundamentals of Management, Economics and Accountancy

CO_{01}	Students will be able to understand Basics of Management Theory.
CO_{02}	Student will be gaining knowledge of Marketing & amp; Human Resource Management.
CO_{03}	Students will be able to understand basic information for Economics.
CO_{04}	Students will be able to get acquainted with the Financial Accounting System.
CO_{05}	Students will be able gain sufficient knowledge of Financial Management

597. CE3EC01 Advanced Construction Equipment & Materials

CO_{01}	Gain knowledge of Modern construction materials and its uses.
CO_{02}	Gain knowledge of Smart material and its applications in various fields.
CO_{03}	Impart knowledge of Excavation by Blasting, blast design and different pile driving equipment.
CO_{04}	Impart knowledge of various Excavating equipment and Hauling equipment
CO_{05}	Impart knowledge of different construction methods

598. CE3EC06 Construction Quality Control & Management

CO_{01}	To Explain about Quality control and quality Assurance and Total quality Management (TQM)
CO_{02}	To Provide detail understanding of Quality system in Architectural and structural Design
CO_{03}	Study of Achieving TQM in Construction Projects.
CO_{04}	Understand the Quality checking as per PWD /CPWD specifications and BIS codes
CO_{05}	To understand Contractor's quality assurance and Quality control plan, Laboratory for Quality control of construction works

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599. CE3EC02 Construction Law & Regulation

CO_{01}	Develop an basic understanding about contracts
CO_{02}	Develop an understanding of Tendering processes in construction projects
CO_{03}	Understand need and role of Arbitration in construction
CO_{04}	Understand and learn various Legal requirements in a cons truction projects
CO_{05}	To know various local government laws

600. CE3ET02 Advanced Design of RCC Structures

CO_{01}	Analyze and Design Building Frames subjected to vertical and lateral loads.
CO_{02}	Analyze and Design Earth Retaining Walls, Design of Cantilever and Counter Fort Retaining Walls.
CO_{03}	Analyze and Design Water Tanks as per IS code.
CO_{04}	Analyze and Design Silos and Bunkers as per IS code.
CO_{05}	Analyze and Design T-beam Bridge and Pre-stressed Concrete Structures.

601. CE3EE09 Environmental Hydraulics

CO_{01}	To Identify the values of fluid properties and to obtain the relationship between them.
CO_{02}	Explain irrigation system, command area development program, soil-crop relationship for water requirement.
CO_{03}	Analyze hydro metrological data and compute yield from surface and sub surface Basin
CO_{04}	Design the water distribution system
CO_{05}	Analysis the Note flow analysis in water distribution system

602. OE00064 Disaster Management

CO_{01}	Understood the Concept disaster management and its Classification
CO_{02}	Understood the Concept of disaster management Mechanism including Risk Management, Response, and Recovery Plans to Mitigate Disaster and its Relief process.
CO_{03}	Assess the Severity of a Disaster and incorporation of Capacity Building for the Disaster.
CO_{04}	Analyze the vulnerable areas for any Disaster and Studied the techniques of Coping up with the Disaster.
CO_{05}	Broadly understood the impact of disaster in a global, economic, environmental, and societal context. Explored the Stakeholders in Disaster Management of India.

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603. OE00063 Environmental Impact Assessment

CO_{01}	Students will be able to recognize Significance and Stages of EIA
CO_{02}	Students will be able to understand Various of Environmental Indices and Indicators and Impact assessment methodologies
CO_{03}	Students will be able to know General Framework and Impact of air, water, noise and Socio- Economic Environment.
CO_{04}	Students will be able to know about Written documents of EIA and Public participation.
CO_{05}	Students will be conversant about Environmental Legislation and Environmental Audit.

604. OE00038 Remote Sensing & GIS

CO_{01}	understand and recognize different coordinate system and different terminologies of digital imaging
CO_{02}	understand mechanism of positioning , sensing as well as digital imagery
CO_{03}	Identify and pick appropriate data from cluster as well perform significant sampling
CO_{04}	Able to process the satellite imagery and its interpretation and other data.

605. CE3ES04 Bridge Engineering

CO_{01}	To develop an understanding about basic requirement data in bridge
CO_{02}	To understand factor affecting and their respective codal provisms in bridge design
CO_{03}	To design some basic type of bridge like deck slab bridge and etc
CO_{04}	To select and implementation appropriate bridge design concept as per existing requirement

606. CE3ES06 Earthquake Resistant Design

CO_{01}	Explain about fundamentals of seismic-resistant building architecture
CO_{02}	Design forces for buildings
CO_{03}	Assess and discuss about Ductility considerations in earthquake resistant design of RCC buildings
CO_{04}	Design Earthquake resistant structure of long two-storey, two- bay RCC building
CO_{05}	Discuss about Base isolation of structures

607. CE3ES07 Experimental Stress Analysis

CO_{01}	Students will be able to understand the fundamental concept of strain measurement , there constants

CO_{02}	Students will be able to apply the fundamental of physics in stress and strain measurement techniques
CO_{03}	Students will be able to determine static and dynamics strains using basic concepts
CO_{04}	Students will be able to apply significant technology according to existing condition of specimen

608. CE3ES08 Prestressed Concrete

CO_{01}	Able to know about prestressed concrete structures
CO_{02}	Able to know about the stresses and deflections in prestressed concrete structures
CO_{03}	Able to understand about flexure and partial prestressing in prestressed concrete
CO_{04}	Student will be able to understand about Shear, Bond, Bearing and anchorage in prestressed concrete
CO_{05}	Student will be able to process Circular Prestressing in prestressed concrete

609. CE3EE01 Air and Noise pollution

CO_{01}	Students will be able to identify air and noise quality parameter
CO_{02}	Students will be able to identify severity of pollution by appropriate sampling and testing

CO_{03}	Students will be able to understand concept of various treatment technology
CO_{04}	Students will be able to design suitable air treatment and sound absorbing mechanism according to severity level

610. CE3EE02 Energy Efficient Buildings

CO_{01}	Develop an basic understanding and benefits of Environment policy
CO_{02}	Develop an understanding of Energy consciousness
CO_{03}	Understand need of green buildings
CO_{04}	Understand and learn techniques for energy efficiency in buildings
CO_{05}	Evaluate materials in terms of energy efficiency

611. CE3EE08 Solid Waste Management

CO_{01}	Student will be able to understand the knowledge about solid waste and its management
CO_{02}	Students will get to know about different of solid waste and primary collection stage
CO_{03}	Students will be able to understand the secondary treatment processes of solid waste
CO_{04}	Students will analyze about energy recovery of different solid waste treatment processes

CO_{05}	Students will learn about disposal of solid waste and its rules and acts

612. CE3EC01 Advanced Construction Equipment & Materials

CO_{01}	Students will be able to understand properties of different modern construction materials
CO_{02}	Students will be able to know about properties of different smart materials
CO_{03}	Students will be able to know about blasting techniques and pile driving equipment
CO_{04}	Students will be able to know about different hauling and excavating equipment
CO_{05}	Students will be able to understand different modern construction methods

613. CE3EC03 Construction Equipment & Materials

CO_{01}	Understand properties of different modern construction materials
CO_{02}	Know about properties of different smart materials
CO_{03}	Know about blasting techniques and pile driving equipment
CO_{04}	Know about different hauling and excavating equipment
CO_{05}	Understand different modern construction methods

614. CE3EC04 Construction Material Management

CO_{01}	Students will be able to recognize the various aspects of material management, its classification and specifications
CO_{02}	Student will be able to understand concepts of material planning, store management, storage tools and their principles
CO_{03}	Students will be able to understand the inventory management models and details about the inventory control
CO_{04}	Students will be able to know the concepts of quality control, its management, purchasing process and other quality related facts
CO_{05}	Students will be able to understand the Buyer-Seller Relationship and also the practical scenario of market and also the waste disposal and legal aspects of material management

615. CE3EC06 Construction Quality Control & Management

CO_{01}	To Explain about Quality control and quality Assurance and Total quality Management (TQM)
CO_{02}	To Provide detail understanding of Quality system in Architectural and structural Design
CO_{03}	Study of Achieving TQM in Construction Projects
CO_{04}	Understand the Quality checking as per PWD /CPWD specifications and BIS codes
CO_{05}	To understand Contractor's quality assurance and Quality control plan, Laboratory for Quality control of construction works

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616. CE3EC07 Construction Safety & Management

CO_{01}	Discuss about the importance of construction safety in construction projects
CO_{02}	Explain safety consideration during construction and demolition work
CO_{03}	Explain basic knowledge of construction management
CO_{04}	Discuss about the application of QMS in safety programs
CO_{05}	Recommend various theory used for accident analysis
CO_{06}	Carry out Safety and Reliability in construction works

617. CE3EC08 Energy Conservation Techniques in Building Construction

CO_{01}	Students will be able to know about different systems of energy and their efficient use
CO_{02}	Students will understand about energy conservation techniques and their resources
CO_{03}	Students will learn about ductility considerations and their factors in Building Design
CO_{04}	Students will get knowledge about systems used during building design for energy conservation
CO_{05}	Students will able to know about codes and policies for energy conservation

618. CE3EE03 Environment and Energy Studies

CO_{01}	Understand concepts of sustainability
CO_{02}	Summarize Causes and effects of air pollution
CO_{03}	Evaluate social ethics and role of human being
CO_{04}	Understand concepts of energy sources and sinks
CO_{05}	Identify renewable energy sources

619. CE3EE07 Planning for Sustainable Development

CO_{01}	Understand the true idea of sustainable development along with its social environmental and economical phase
CO_{02}	Identify the factors which affects the sustainability
CO_{03}	Evaluate gap between practical and theoretical scenario by case studies
CO_{04}	Design an action plan for attainment of key factors of sustainability

620. CE3EE06 Industrial Waste Water Management

CO_{01}	Know the Water demand, Sources for industries

CO_{02}	Analysis about Water collection systems and their elements
CO_{03}	Identify water characteristics and their treatment methods
CO_{04}	Excecution of treated water disposal and reuse techniques

621. CE3EE05 Hazardous & Bio Medical waste Management

CO_{01}	Understand the concept of the biological and chemical reaction of waste
CO_{02}	Determine the severity of different disposal techniques
CO_{03}	Analysis appropriate techniques for waste management
CO_{04}	Design suitable project for desirable neutralization

622. EN3ES01 Basic Civil Engineering

CO_{01}	Students will be able to recognize the civil engineering works and conversant about different construction materials and their uses.
CO_{02}	Student will be able to differentiate force, pressure and stresses.
CO_{03}	Students will be able to know the different building component and its importance.
CO_{04}	Students will be conversant about vertical and horizontal variation of different terrains.

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CO_{05}	Students will be able to apply the theoretical knowledge about structural elements in practical manner.

623. CE5CS01 Theory of Elasticity

CO_{01}	Student will be able to find 1 D stress and strain at points
CO_{02}	Student will be able to solve two Dimensional Problems in Rectangular Co-ordinates
CO_{03}	Student will be able to solve Two Dimensional Problems in Polar Coordinates
CO_{04}	Student will be able to find and Analysis of stress and strain in Three Dimensions
CO_{05}	Student will be able to find Torsion of Prismatic Bars

624. CE5CS02 Advanced Structural Analysis

CO_{01}	Know about Indeterminacy, Energy Concepts for Structural Analysis.
CO_{02}	Know about the analysis using Flexibility Method.
CO_{03}	Know about the analysis using Stiffness Method.
CO_{04}	Understand about Symmetric and Anti-Symmetric Structures, differentiate and analysis.
CO_{05}	Have knowledge about basics of Finite Element Analysis.

625. CE5EL01 Advance Concrete Technology

CO_{01}	Understand the properties of the constituent materials of concrete.
CO_{02}	Understand behavior and properties of chemical and mineral admixtures.
CO_{03}	Apply knowledge of behavior of concrete in its hardened state and associated problems faced by concrete like acid attack etc.
CO_{04}	Know concreting under different condition & special types of concrete.
CO_{05}	Understand and design concrete mix & know the BIS method of mix design.

626. CE5CS05 Structural Dynamics

CO_{01}	Recognize the vibration system in structures
CO_{02}	Interpret dynamic behavior of structures
CO_{03}	Understand single degree of freedom system
CO_{04}	Understand about multi degree of freedom system
CO_{05}	Describe about seismology

627. CE5CS06 Design of concrete structures

CO_{01}	Understand structural behavior of advanced structures like Shear walls, Flat slab, Grid floor, deep beam, Folded plates, Shell Structures
CO_{02}	Apply knowledge to design the advanced structures
CO_{03}	Evaluate crack width and deflections of RCC Structures
CO_{04}	Analyze Shear walls 'performance

628. CE5EL02 Pre-Stressed Design of Concrete Structures

CO_{01}	Know about prestressed concrete structures
CO_{02}	Know about the stresses and deflections in prestressed concrete structures
CO_{03}	Understand about flexure and partial prestressing in prestressed concrete
CO_{04}	Understand about Shear, Bond, Bearing And Anchorage in prestressed concrete.
CO_{05}	Know about Circular Prestressing in prestressed concrete.

629. CE5EL03 Finite Element Method

CO_{01}	General Introduction of FEM in structural engineering problems.
CO_{02}	Understanding of applicability and solutions of problems using FEM and Variational methods.
CO_{03}	Students can solve typical problems using FEM in very easy way.
CO_{04}	Knowledge of Iso-Parametric element properties enhances the vast applicability of structural engineering.
CO_{05}	Study of general problem formulations and their static analysis will be covered.

630. CE6CW01 ENVIRONMENTAL ENGINEERING

CO_{01}	To Identify the values of fluid properties and to obtain the relationship between them.
CO_{02}	Explain irrigation system, command area development program, soil-crop relationship for water requirement.
CO_{03}	Analyze hydro metrological data and compute yield from surface and sub surface Basin
CO_{04}	Design the water distribution system
CO_{05}	Analysis the Note flow analysis in water distribution system

631. EN3BS01 Engineering Mathematics –I

CO_{01}	To inspect mathematical models involving ordinary and partial differential equations with given boundary conditions which is helpful in all engineering and research work.
CO_{02}	To examine the general mathematical concepts required for the field regarding Laplace and Fourier Transform.
CO_{03}	To compare and contrast importance of partial differential equations in physical problems.
CO_{04}	To prioritize derivatives of vector –point functions, gradient functions, evaluate integral of functions over curves, surfaces and domains in two and three dimensional.
CO_{05}	To examine numerical techniques and investigate its application in solving algebraic and transcendental equations.

632. EN3BS05 Engineering Physics

CO_{01}	To explain working principle of lasers
CO_{02}	To analyze the intensity variation of light due to Polarization, interference and diffraction
CO_{03}	To explain fundamentals of quantum mechanics and apply to one dimensional motion of particles
CO_{04}	To explain of the concept of Acoustics and Superconductivity
CO_{05}	To explain the concept of mechanics

633. EN3ES01 Basic Civil Engineering

CO_{01}	to categorize materials associated with building constructions and their related quality, durability and development
CO_{02}	Analyze and correlate stress, strain and elastic deformation of an engineering material.
CO_{03}	Get an idea of various types of properties, uses, and variety of materials important in construction.
CO_{04}	Interpret survey data and compute areas and volumes
CO_{05}	Establish the fundamental concepts of mechanics involving deformable solids; including static equilibrium, geometry of deformation, material constitutive relationship and to determine corresponding shear force, bending moment and stress distribution.

634. EN3ES03 Basic Mechanical Engineering

CO_{01}	Students will be able to understand the basics of engineering materials, principle of mechanical equipment and measuring instrument and also testing method of physical quantities.
CO_{02}	Identify the unique vocabulary associated with thermodynamics and Explain the basic concepts of thermodynamics like system, properties, equilibrium, pressure, specific volume, and temperature, zeroth law of thermodynamics, temperature measurement and temperature scales.
CO_{03}	Students will demonstrate the ability to perform a thermodynamic analysis of Otto and Diesel cycle.
CO_{04}	To make students understand principal construction and working of different types of boilers used in steam power plants and make them able to evaluate boiler performance.

CO_{05}	Students will be able to determine the centroid & moment of inertia of areas/composite sections and will be able to use parallel and perpendicular axes theorems.

635. EN3ES05 Basic Computer Engineering

CO_{01}	Explain basic concepts of digital computer, binary, arithmetic & different computer programming languages.
CO_{02}	To explain the concepts of data base management system, data models, architecture of DBMS
CO_{03}	To introduce the concept of operating systems such as file management, device management etc.
CO_{04}	Introduction to computer networking , types , topologies
CO_{05}	Introduction to computer software.

636. EN3ES07 Documentation and Presentation

CO_{01}	Students will be able to understand the basics of engineering materials, principle of mechanical equipment and measuring instrument and also testing method of physical quantities.

CO_{02}	Identify the unique vocabulary associated with thermodynamics and Explain the basic concepts of thermodynamics like system, properties, equilibrium, pressure, specific volume, and temperature, zeroth law of thermodynamics, temperature measurement and temperature scales.
CO_{03}	Students will demonstrate the ability to perform a thermodynamic analysis of Otto and Diesel cycle.
CO_{04}	To make students understand principal construction and working of different types of boilers used in steam power plants and make them able to evaluate boiler performance.
CO_{05}	Students will be able to determine the centroid & moment of inertia of areas/composite sections and will be able to use parallel and perpendicular axes theorems.

637. EN3HS01 History of Science and Technology

CO_{01}	Student will be aware about the ancient India & the existence of science & technology in that era & how it is reciprocated.
CO_{02}	Student will be aware about the upliftment done in the field of R & D after independence.
CO_{03}	Student will come to know about the plans and policies that brought about radical changes for the growth of science in India.
CO_{04}	Student will come to know about the major areas of the applied science and their existence. And can set the relationship between the technologies.
CO_{05}	Students will understand the need of technology transfer, its types and processes.

638. EN3HS03 Environmental Science

CO_{01}	To develop a view about the environmental challenges, and participating actively in solving current environmental problems and preventing the future ones.
CO_{02}	Understand the environmental problems and ways of addressing them
CO_{03}	Able to understand the causes, effects of environmental pollution (Air, water, soil, thermal and noise): and ways to controls it
CO_{04}	Understand the Biodiversity and its importance ,levels of biological diversity: genetic, species ; Value of biodiversity:
CO_{05}	To understand the issues related to Sustainable habitat and Green Technology

639. EN3BS02 Engineering Mathematics -II

CO_{01}	To inspect and analyze the mathematical models based on Laplace.
CO_{02}	To examine the general mathematical concepts required for the field regarding Fourier series and Fourier Transform.
CO_{03}	To compare and contrast importance of partial differential equations in physical problems.
CO_{04}	To prioritize derivatives of vector –point functions, gradient functions, evaluate integral of functions over curves, surfaces and domains in two and three dimensional.
CO_{05}	To examine concept of probability and examine the importance of probability in solving the real life problems.

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640. EN3BS04 Engineering Chemistry

CO_{01}	Develop the understanding of Technology involved in improving quality of water for its industrial use
CO_{02}	To analyze fuel quality using its important characteristics.
CO_{03}	Develop the understanding of Chemical structure of polymers and its effect on their various properties when used as engineering materials. Understanding the applications of specific polymers.
CO_{04}	Apply knowledge about engineering materials like cement and composites in practical applications.
CO_{05}	Apply the basic concepts of electro analytical techniques that facilitate rapid and reliable measurements.

641. EN3ES02 Engineering Graphics

CO_{01}	Familiarize with different drawing equipments and technical standards and Know purpose, procedures, materials and conventional symbols used. Create and read an engineering drawing using standard views and have ability to Convert pictorial (3D)drawings to orthographic (2-D) drawings and vice versa
CO_{02}	Understand the projection of points, straight lines and have the ability to convert the practical problems in to projections
CO_{03}	To understand and apply concepts of the projection of simple planes & solids.
CO_{04}	Understand and apply the concepts of Projection & Sections of solids & development of surfaces
CO_{05}	Convert simple 2D orthographic projections into 3D isometric projections with the help of auto cad commands

642. EN3ES04 Basic Electrical & Electronics Engineering

CO_{01}	Apply the knowledge gained to explain the behavior of the DC and AC circuit
CO_{02}	Understand the fundamental behavior of AC circuits and solve AC circuit problems.
CO_{03}	To prepare circuits for starting and speed control of DC machine and induction motor.
CO_{04}	Demonstrate the operating principle and output characteristics of p-n junction diodes. BJT
CO_{05}	To demonstrate the behavior of digital components. Also to construct both combinational and sequential networks.

643. EN3ES06 Computer Programming

CO_{01}	To able to understand transform flow chart and algorithms into a programming language.
CO_{02}	To able to implement to write, compile and debug programs in C language.
CO_{03}	To able to design programs involving decision structures, loops and functions
CO_{04}	To evaluate document their work, write clearly and appropriately.
CO_{05}	To able to create different data structures and create/update basic data files.

644. EN3ES08 Engineering Workshop

CO_{01}	Understand the engineering materials, their properties, and their utilization in manufacturing tool and other equipment's.
CO_{02}	Understand the primary manufacturing process.
CO_{03}	Understand the basic operation involve in casting.
CO_{04}	Understand the basic process of forging.
CO_{05}	Basic knowledge of simple cutting, holding. Marking and striking tool.

645. EN3HS02 Communication Skill

CO_{01}	Apply comprehensive knowledge of grammar for correct construction of sentences.
CO_{02}	Comprehend given passage and summarize them. Draft official letters.
CO_{03}	Apply correct voice and prepositions in formal communication.
CO_{04}	Make sentence using connector for desire meaning.
CO_{05}	Develop presentation skills. Face oral examination and interviews.

646. EC3BS03 Engineering Mathematics-III

CO_{01}	Apply their knowledge in solving problems of graph theory.
CO_{02}	Apply the theory of graphs in network flows.
CO_{03}	Analyze importance of series solutions of ordinary differential equation as well as special functions.
CO_{04}	Apply the concept of two dimensional random variable, random process and ergodicity in their respective fields.
CO_{05}	Elaborate the concept of correlation, regression and testing of hypothesis.

647. EC3CO01 Signal and System

CO_{01}	Understanding of the fundamental concepts of Signal and Systems.
CO_{02}	Analyze and categorize various Signals and systems.
CO_{03}	Perform various operation on the given signal
CO_{04}	Understanding of Various transforms to use signals effectively.
CO_{05}	Analyze and solve the problem with practically approach

648. EC3CO03 Electronic Devices and Circuits

CO_{01}	Students will be able to understand basic of semiconductor, PN diode, and Special diode with their application.
CO_{02}	Students will be able to understand basic of semiconductor, diode, and transistor with its biasing and different circuits.
CO_{03}	Student will be able to bias FET and draw its characteristics.
CO_{04}	Students Will acquire design skills and grow confident in amplifier circuit.
CO_{05}	Students will be able to select suitable oscillator and feedback amplifier.

649. EC3CO05 Circuit Analysis and Synthesis

CO_{01}	Students will be able to understand the concept of circuit theory and various techniques to solve circuit.
CO_{02}	Student will become well conversant with Graph theory.
CO_{03}	Students will be able to understand the concept of transient and steady state analysis. It would able to develop practical approach and understand the technicality behind it.
CO_{04}	Students will be able to applied time domain to frequency domain in Laplace transform and learned the importance & requirement of Laplace in circuit theory.
CO_{05}	Students will be able to Synthesize the circuit by using Foster's and Cauer Form.

650. EC3CO07 Digital Electronics

CO_{01}	Have a thorough understanding of the fundamental concepts and techniques used in digital electronics.
CO_{02}	To understand and examine the structure of various number systems and its application in digital design.
CO_{03}	The ability to understand, analyze and design various combinational and sequential circuits using programmable logic.
CO_{04}	Ability to identify basic requirements for a design application and propose a cost effective solution.
CO_{05}	To develop skill to build and troubleshoot digital circuits.

651. EC3CO15 Electronics Engineering Workshop

CO_{01}	Students will be able to identify components and familiar to their electrical behavior of components.
CO_{02}	Students will be able to use measuring instruments / devices / manufacturing procedure for PCB
CO_{03}	Students will be able to simulate project on software.
CO_{04}	Students will be able to develop circuits.
CO_{05}	Students will be able to troubleshoot circuits and analyze the circuit with different inputs.

652. EN3MC09 Soft Skills-II

CO_{01}	Become more effective individual through goal/target setting, self motivation and practicing creative thinking.
CO_{02}	Effectively communicate through verbal/oral communication and improve the listening skills
CO_{03}	Write precise briefs or reports and technical documents
CO_{04}	Actively participate in group discussion / meetings / interviews and prepare & deliver presentations
CO_{05}	Become more effective individual through goal/target setting, self motivation and practicing creative thinking. Function effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership quality.

653. EN3MC15 Universal Human Values and Professional Ethics

CO_{01}	Students get knowledge about the process of value education.
CO_{02}	Understand human being as a co-existence
CO_{03}	Understanding values in human -human relationship
CO_{04}	Understanding Existence as Co-existence(Sah-astitva) of mutually interacting units in all-pervasive space
CO_{05}	Understanding Natural acceptance of human values

654. EC3CO17/EI3CO17 Linear Integrated Circuit

CO_{01}	To design and analyze differential amplifier and operational amplifier circuits.
CO_{02}	Designing of operational amplifier based summing, subtractor, integrator and wave shaping circuits.
CO_{03}	To design and analyze active filters and advanced applications of OP-AMP such as AGC, AVC etc.
CO_{04}	To design and analyze applications of 555 timer.
CO_{05}	To design and analyze unregulated and regulated power supply and SMPS.

655. EC3CO04 Analog Communication

CO_{01}	Students will be able to understand the fundamental concept of Analog communication system
CO_{02}	Student will become well conversant with different types of modulation techniques
CO_{03}	Students will be able to select suitable transmitter and receiver for the particular application and can design of their own communication systems
CO_{04}	Students will be able to understand the performance of communication system in presence of noise.
CO_{05}	Students will able to understand the basics used for moving from analog to digital communication.

656. EC3CO06/EI3CO06 Digital Signal Processing

CO_{01}	Use concepts of trigonometry, complex algebra, Fourier transform, z-transform to analyze the operations on signals and acquire knowledge about Systems.
CO_{02}	Select proper tools for analog-to-digital and digital-to-analog conversion. Also select proper tools for time domain and frequency domain implementation.
CO_{03}	Design, implementation, analysis and comparison of digital filters for processing of discrete time signals.
CO_{04}	Integrate computer-based tools for engineering applications
CO_{05}	Employ signal processing strategies at multidisciplinary team activities.

657. EC3CO08 Engineering Electromagnetic

CO_{01}	Understand the basic mathematical concepts related to electromagnetic vector fields
CO_{02}	Apply the principles of electrostatics to the solutions of problems relating to electric field and electric potential, boundary conditions and electric energy density
CO_{03}	Apply the principles of magneto statics to the solutions of problems relating to magnetic field and magnetic potential, boundary conditions and magnetic energy density.
CO_{04}	Understand the concepts related to Faraday‘s law, induced emf and Maxwell‘s equations.
CO_{05}	Apply Maxwell‘s equations to solutions of problems relating to transmission lines and uniform plane wave propagation.

658. EC3EL08 / EI3EL08 Program Elective I (Computer Organization and Architecture)

CO_{01}	Explain the basics of organizational and architectural issues of a digital computer and Classify and compute the performance of machines, Machine Instructions.
CO_{02}	Describe various data transfer techniques in digital computer and the I/O interfaces.
CO_{03}	Analyze the performance of various classes of Memories, build large memories using small memories for better performance and analyze arithmetic for ALU implementation
CO_{04}	Demonstrate an understanding of the design of the functional units of a digital computer system. To analyze the IO devices communication with processor
CO_{05}	Design a pipeline for consistent execution of L5 instructions with minimum hazards

659. EC3ES09 Engineering Material

CO_{01}	Students will be able to predict physical chemical and mechanical behavior of a material and use the knowledge of the crystal structure (BCC, FCC, and HCP) of a metal to make general predictions about the metals ability to plastically deform.
CO_{02}	Students will be able to predict magnetic material and its properties and able to select materials for different applications based on magnetic material.
CO_{03}	Students will be able to predict electronic material and able to select materials for different applications based on different electronic and electrical applications.
CO_{04}	Students will be able to examine the electronic behavior and uses of material and devices.

CO_{05}	Students will be able to select materials for different applications based on the constraints of the given optical applications.

660. EN3HS04 Fundamentals of Management, Economics and Accountancy

CO_{01}	To understand the accounting fundamentals like accounting concepts, branches of accounting, nature of accounting, accounting standards
CO_{02}	Prepare financial statements, cost and management accounting fundamentals, financial analysis, planning and control.
CO_{03}	To develop awareness of emerging trends in financial accounting
CO_{04}	To identify and analyze financial accounting problems and opportunities in real life situations.

661. EC3CO09 / EI3CO09 Control System

CO_{01}	Demonstrate an understanding of the fundamentals of (feedback) control systems.
CO_{02}	Determine and use models of physical systems in forms suitable for use in the analysis and design of control systems.
CO_{03}	Determine the stability of a closed-loop control system using Routh-Hurwitz criterion, Root-locus, Bode-plots and Nyquist-plot techniques to analyze and design control systems.

CO_{04}	Determine the time and frequency-domain responses of first and second-order control systems.
CO_{05}	Practice the fundamentals of state-variable models (Modern Control Theory)

662. EC3CO11 Digital Communication

CO_{01}	Understand working of waveform coding techniques and analyze their performance.
CO_{02}	Analyze the performance of a baseband and pass band digital communication system in terms of error rate and spectral efficiency
CO_{03}	Perform the time and frequency domain analysis of the signals in a digital communication system.
CO_{04}	Understand working of spread spectrum communication system and analyze its performance
CO_{05}	Design a digital communication system.

663. EC3CO13 Antennas and Propagation

CO_{01}	Students will be able to understand near field and far field wave propagation through Antenna.
CO_{02}	Student will become well conversant with different types of Antenna.
CO_{03}	Will acquire design skills and grow confident how antenna transmit and receive signals.
CO_{04}	Students will be able to identify the atmospheric and terrestrial effects on radio wave propagation.

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664. EC3CO10 / EI3CO10 Microprocessor & Microcontrollers

CO_{01}	To understand the architecture of 8085, 8086 microprocessor and 8051 microcontroller with their real-time application.
CO_{02}	To write 8086 microprocessor and 8051 microcontroller assembly language program.
CO_{03}	To illustrate the operation of microcomputer-based system consisting of processor, memory and peripherals.
CO_{04}	To compare features of ARM processors and design and implement microcontroller based project.
CO_{05}	To Interface Microprocessor with other devices

665. EN3MC10 Soft Skill – III

CO_{01}	Use basic concepts of communication in life and make effective conversion with individuals and in groups.
CO_{02}	Frame correct sentences.
CO_{03}	Use the concept of Sentence completion and Para- jumbles
CO_{04}	Carry out the reading comprehension strategies and apply data arrangement techniques.
CO_{05}	To understand the appropriate utilization of Ratio and Proportion, Articles, Prepositions and Interrogatives

666. EC3CO12 VLSI Design

CO_{01}	Understand, analyze and design various circuits and systems using MOSFETs.
CO_{02}	Understand impact of various parameters on circuit design.
CO_{03}	Acquire design skills and grow confidence in design methods of VLSI circuits.
CO_{04}	Minimization of machines and removing redundant state.
CO_{05}	Ability to identify basic requirements for a system and propose an effective solution.

667. EC3CO14 / EI3CO14 Fiber Optic Communication

CO_{01}	Students will be able familiar with optical communication and advantages and types of optical fiber.
CO_{02}	Realize the need of low loss fiber with less dispersion effect.
CO_{03}	Student will become recognize role and working of main components or equipments of an optical communication system.
CO_{04}	Students will be able to understand the performance measurement & monitoring techniques
CO_{05}	Students will be able to understand the OFC multiplexing techniques and application

668. EC3CO16 Microwave Engineering

CO_{01}	Students will be able to understand wave propagation effects in waveguides and waveguide circuits.
CO_{02}	Student will become well conversant with different types of Microwave devices and circuits.
CO_{03}	Will acquire design skills and grow confident.
CO_{04}	Students will be able to select suitable sources for the particular application and can design of their own.
CO_{05}	Students will be able to design microwave filters.

669. EC3EC04 / EI3EC04 Satellite Communication

CO01	Explain the methodologies and operation of satellite communication systems
CO02	Define orbital mechanics, compute look angles: Elevation and azimuth
CO03	Explain the space segment
CO04	Explain earth segment, link power budget for satellites
CO05	Explain satellite access techniques: FDMA,TDMA, CDMA

670. EC3EC05 Wireless & Mobile Communications

CO01	Students shall be able to understand service requirements & propagation environment of wireless communication. Students shall be able to give mathematical description of wireless channel.
CO02	Students shall become well conversant with modeling of narrow band & wideband and wireless channel.
CO03	Students shall aware of various channel sounding methods. Students shall know how to select suitable antenna of for specific wireless communication application.
CO04	Students will be able to understand various errors with different modulation format & techniques for error reduction.
CO05	Student shall understand use of diversity & equalization for quality improvement of wireless link.

671. EC3EL02 Data Communication and Computer Networks

CO_{01}	Describe the components and process of data communication system and Computer Network.
CO_{02}	Identify the services offered and issues of various layers of TCP/IP protocol suites.
CO_{03}	To have the knowledge of underlying technique and methodology for implementation of computer network.
CO_{04}	To have an understanding of protocols used for data communication and Computer networks.
CO_{05}	To understand the quality of service issues in a network.

672. EC3EL08 Program Elective I (Computer Organization and Architecture)

CO_{01}	Evaluate the performance of a computer system and understand the basic functionality of a computer system.
CO_{02}	Well conversant with number representation and programming of a computer system.
CO_{03}	Improve their skills in instruction pipelining parallel processing.
CO_{04}	Using of multi core architectures to improve the performance of a computer system.
CO05	Acquire skills in organizing the memory hierarchy for a computer system.

673. EC3EL05 Information Theory And Coding

CO_{01}	Students will be able to understand to quantify information.
CO_{02}	Student will become well conversant with different types of channels and their limits
CO_{03}	Will acquire skills of source coding for optimal performance
CO_{04}	Students will be able to perform different linear coding techniques.
CO_{05}	Students will be able to select suitable error control coding technique for different applications

674. EC3EL06 Optical Networks

CO_{01}	Become well conversant with basic fundamental of optical and computer networking
CO_{02}	Become well conversant with components of optical network
CO_{03}	Able to understand and explain various architectures of optical network.
CO_{04}	Able to understand and represent issues of Wavelength routing and Survivability for an optical network
CO_{05}	Able to design an optical network

675. EC3ET01 Artificial Intelligence

CO_{01}	Understand basic fundamental of artificial intelligent and able to differentiate between AI algorithm and normal algorithm
CO_{02}	Become well conversant with heuristic function and optimization algorithms.
CO_{03}	Able to understand and represent various methods used for knowledge representation in artificial intelligent system
CO_{04}	Able to understand and represent different type of reasoning and planning to design in artificial intelligent system
CO_{05}	Student able to implement AI algorithms to solve block problems and game design

676. EC3ET04 Data Structure

CO_{01}	Analyze basic programs/Algorithm of various operations used in linear data structure by applying concept of algorithms complexities.
CO_{02}	CO 02 Analyze basic programs/Algorithm of various operations used in non linear data structure by applying concept of algorithms complexities.
CO_{03}	CO 03 Design different types of trees by knowing advantage of one tree over another.
CO_{04}	CO 04 Analyze basic programs/Algorithm for various sorting methods and how sorting techniques are used differently for external and internal sort.
CO_{05}	CO 05 Understand the use of data structures in searching and in indexing of data base.

677. EC3ET05 Introduction to Machine Learning

CO_{01}	To explain the concepts of machine learning and its applications
CO_{02}	To explain the concepts of neural network, its architecture, learning and application
CO_{03}	To explain the different types of Machine Learning models.
CO_{04}	To analyze and use concepts of training in machine learning and popular machine learning algorithms for neural network training
CO_{05}	To apply the deep learning concepts for construction of CNN and RNN

678. EC3ET06 Metaheurisctic Techniques

CO_{01}	Learner is able understand the fundamental concept of Optimization techniques and categorizing them.
CO_{02}	Develop the skill to understand and implement ,Genetic Algorithm for various optimization problems
CO_{03}	Develop the understanding and knowledge of Ant colony and BEE optimization technique
CO_{04}	Develop the understanding and knowledge of Particle swarm Optimization technique
CO_{05}	Develop the understanding and knowledge of Bacterial Foraging Optimization technique

679. EC3EV01 Design for Testability

CO_{01}	Apply the concepts in testing which can help them design a better yield in IC design
CO_{02}	Tackle the problems associated with testing of semiconductor circuits at earlier design
CO_{03}	Analyse the various test generation methods for static & dynamic CMOS circuits.
CO_{04}	Identify the design for testability methods for combinational & sequential CMOS circuit
CO_{05}	Recognize the BIST techniques for improving testability.

680. EC3EV03 Low Power VLSI Design

CO_{01}	Ability to identify the sources and types of power dissipation existing in a CMOS VLSI Circuits.
CO_{02}	Understand the effect of miniaturization of transistors for low power techniques
CO_{03}	Competence for designing various systems and architectures like multiplexers, adders etc using low power approach
CO_{04}	Capability to locate the sources of power dissipation in SRAM & DRAM circuits and design them using low power approach.
CO_{05}	Acquiring knowledge for estimation of power at different level- behavioral level, Architectural level, logic level and circuit level.

681. EC3EV05 VLSI for Wireless Communication

CO_{01}	To explain the basic concepts of communication , path loss, fading
CO_{02}	To design receiver and CMOS low noise amplifiers and addressing the issues of noise , stability and nonlinearity
CO_{03}	To design CMOS mixers
CO_{04}	To design data converters
CO_{05}	To design frequency synthesizers

682. EC3EV07 VLSI Technology

CO_{01}	To develop environmental conditions for VLSI technology
CO_{02}	Perform the operation of oxidation required in fabrication
CO_{03}	Perform the operation of lithography
CO_{04}	Able to explain and perform Metallization techniques
CO_{05}	Able to explain and implement layout design rules.

683. OE00040 Optimization Techniques

CO_{01}	Able understand the fundamental concept of Optimization techniques and categorizing them.
CO_{02}	Develop the skill to understand and use Linear Programming for various optimization problems
CO_{03}	Develop the skill to understand and use Unconstrained Nonlinear Programming for various optimization problems
CO_{04}	Develop the skill to understand and use Constrained Nonlinear Programming for various optimization problems
CO_{05}	Develop the understanding and knowledge of Dynamic Programming

684. OE00041 Random Process

CO_{01}	Analyze the randomness involved in various phenomenon using probability, probability distribution and moments
CO_{02}	To apply various probability norms and correlation analysis for bivariate random variables.
CO_{03}	To explain random process
CO_{04}	To explain the correlation and PSD for random processes.
CO_{05}	Able to calculate and analyze the response of linear systems to random processes.

685. OE00018 Python Essentials

CO_{01}	Explain basic principles of Python programming language
CO_{02}	Implement object oriented concepts,
CO_{03}	Implement database and GUI applications.
CO_{04}	Install runtime environment and perform programming

686. OE00042 DATA ACQUISITION SYSTEMS

CO_{01}	Explicate the elements of data acquisition techniques.
CO_{02}	Design and simulate signal conditioning circuits.
CO_{03}	Elucidate various data transfer techniques
CO_{04}	Understand the components of data acquisition system

687. OE00003 Industrial Electronics

CO_{01}	Students will be able to understand about power semiconductor devices.
CO_{02}	Student will become familiar with SCR and its use in rectifiers.
CO_{03}	Students will be able to understand DC-DC conversion circuits.
CO_{04}	Acquire knowledge about inverter.
CO 05	Acquire knowledge about AC voltage regulator.

688. OE00058 Internet of Things

CO_{01}	Define IoT and illustrate logical and physical design of IoT.
CO_{02}	Describe the next generation IoT networking architecture and various protocols used for connecting M2M devices.
CO_{03}	Illustrate the features and working of various protocols in Constrained Restful Environment.
CO_{04}	Illustrate the use of sensors and actuators in IoT applications and working principle of data communication technologies used in IoT.
CO_{05}	Describe the IoT system design methodology, use of IoT deployment boards like Raspberry Pi and Arduino and elaborate the IoT system deployment in smart city.

689. OE00059 Cyber Security

CO_{01}	Students will be able to understand Cybercrime, and Cyber Security, Internet Governance.
CO_{02}	Student will become well conversant with different types of Cyber Security Vulnerabilities
CO_{03}	Develop requirement and understanding of Cryptography and Network Security
CO_{04}	Students will be able understand Cyber Forensics, Cyber Security Regulations.

690. OE00061 Solar Energy and its Utilization

CO_{01}	Explain and use the basics of Solar thermal conversion.
CO_{02}	Explain the principles of photosynthetic processes and use it for the efficient solar energy conversion.
CO_{03}	Explain photovoltaic conversion and design efficient solar cells and panels.
CO_{04}	To perform economic analysis of solar system

691. OE00081 Robotics and Automation

CO_{01}	To explain fundamentals of robotics, its scope and applications.
CO_{02}	Configure effectively the robotic spaces , understanding the task, constraints and degree of freedom
CO_{03}	Effectively select actuators and grippers for robotic applications
CO_{04}	Effectively select sensors and signal conditioning instruments for control and automation of robots
CO_{05}	Explain intelligent process automation and use elements of AI in intelligent robotics

692. EN5BS01 Advanced Mathematics

CO_{01}	Analyze the randomness involved in various phenomenon using probability, probability distribution and moments

CO_{02}	To apply various probability norms and correlation analysis for bivariate random variables.
CO_{03}	To explain random process
CO_{04}	To explain and apply numerical solution techniques for solving the birth- death process and others
CO_{05}	To explain the concept of Queuing Networks

693. EC5CC01 Advanced Digital Communication

CO_{01}	To explain the building blocks of digital communication system, band pass signals and linear modulation
CO_{02}	To effectively explain nonlinear modulation schemes
CO_{03}	To explain digital modulation schemes and spread spectrum communication system.
CO_{04}	To explain and design band limited channels and communication over band limited channels.

694. EC5CC02 Advanced Digital Signal Processing

CO_{01}	Effectively apply the digital signal processing tools like sampling and others in engineering problems
CO_{02}	Effectively explain and apply DFT and FFT for spectral analysis of discrete signals
CO_{03}	Design of Digital Filters considering the issue of Finite Word length Effects

CO_{04}	To explain the DSP Architectures and Synthesis of DSP Architectures

695. EC5EL01 Wireless Mobile Communication

CO_{01}	Students shall be able to understand service requirements & propagation environment of wireless communication. Students shall be able to give mathematical description of wireless channel.
CO_{02}	Students shall become well conversant with modeling of narrow band & wideband and wireless channel.
CO_{03}	Students shall aware of various channel sounding methods. Students shall know how to select suitable antenna of for specific wireless communication application.
CO_{04}	Students will be able to understand various errors with different modulation format & techniques for error reduction.
CO_{05}	Student shall understand use of diversity & equalization for quality improvement of wireless link.

696. EN5RD01 Research Methodology

CO_{01}	Knowledge application: An ability to apply the knowledge of science, mathematics, engineering principles for developing problems solving attitude.

CO_{02}	Problem analysis: An ability to analyze, develop and implement solutions for the problems persisting in industry , society
CO_{03}	Modern tool usage: To develop programming skills for tools such as simulation, synthesis, verification and algorithm
CO_{04}	Conduct investigations of complex problems: To familiarize with industry relevant goals and practices as a final project.
CO_{05}	Compile the findings from therein, alongside defending the analysis of the achieved solution.

697. EC5MC01 Values and Ethics

CO_{01}	Student will able to explain the meaning of human values
CO_{02}	Student will able to explain and apply engineering ethics in life.
CO_{03}	Student will able to consider and interpret engineering as social experiment
CO_{04}	Student will able to perceive the safety, responsibilities and rights which are available under the skin of an engineer
CO_{05}	Student will able to understand and engineer the holistic aspects of ethics

698. EC5EL03 Advance Communication Networks

CO_{01}	Model and analyze communication networks.

CO_{02}	Explain IMS Architecture - IMS services and current communication protocols
CO_{03}	Analyze and apply the concepts of MPLS & QoS, MPLS services and components
CO_{04}	Analyze and apply the concepts of MPLS Multicast VPN overview
CO_{05}	Analyze and apply the concepts of Network Management and Provisioning

699. EC5CC06 Advanced Antenna Engineering

CO_{01}	Students will be able to understand near field and far field wave propagation through Antenna.
CO_{02}	Student will become well conversant with analysis and synthesis of Antenna.
CO_{03}	Will acquire design skills and grow confident how smart antenna transmit and receive signals.
CO_{04}	Students will be able to analyze and explain micro strip antennas

700. EC5CC05 Information Theory and Coding

CO_{01}	Students will be able to understand to quantify information.
CO_{02}	Student will become well conversant with different types of channels and their limits
CO_{03}	Will acquire skills of source coding for optimal performance

CO_{04}	Students will be able to perform different linear coding techniques.
CO_{05}	Students will be able to select suitable error control coding technique for different applications

701. EN5HS02 Technical Paper Writing

CO_{01}	Adapt rhetorical knowledge to create effective technical writing documents
CO_{02}	Apply and adapt flexible writing process strategies to produce clear, high-quality deliverables in technical writing genres
CO_{03}	Use professional technical writing conventions of clean and clear design, style, and layout of written materials
CO_{04}	Gather and apply researched information that is appropriate to your field, as demonstrated by reading and analyzing documents, and citing sources correctly, concept of Plagiarism. Frame plagiarism free technical documents.
CO_{05}	Write a technical document clearly, correctly, and concisely in terms of abstract, paraphrasing, chapterization

702. EC5EL02 VLSI for Wireless Communication

CO_{01}	To explain the basic concepts of communication , path loss, fading
CO_{02}	To design receiver and CMOS low noise amplifiers and addressing the issues of noise , stability and nonlinearity
CO_{03}	To design CMOS mixers

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CO_{04}	To design data converters
CO_{05}	To design frequency synthesizers

703. EN3ES17 BASIC ELECTRICAL ENGINEERING

CO_{01}	Solve AC and DC circuits to find various quantities like current, voltage and power.
CO_{02}	Demonstrate and identify the types of static and rotating electrical machine used for a particular application.
CO_{03}	Demonstrate the functioning of power supply and illustrate domestic wiring system along with all protective measures.
CO_{04}	Signify the major components of power system.
CO_{05}	Explain major utilization of electrical energy.

704. EE3CO08 Microprocessors and Microcontrollers

CO_{01}	Identify a detailed software & hardware structure of the Microprocessor.
CO_{02}	Illustrate how the different peripherals (8255, 8253 etc.) are interfaced with Microprocessor.
CO_{03}	Distinguish the properties of Microprocessors & Microcontrollers by analysing its features.

CO_{04}	Apply appropriate technique for the data transfer information through microprocessor & microcontroller.
CO_{05}	Outline the architecture of ARM processor along with the instruction set of RISC and CISC processor.

705. EE3CO24 Advance Power System Analysis

CO_{01}	Student will be able to model and analyze the power system components for capability limits.
CO_{02}	Student will be able to apply and evaluate compensation methods for Load bus voltage in power system.
CO_{03}	Student will be able to explain and evaluate the sensitivity relationships and sensitivity factors.
CO_{04}	Student will be able to model and evaluate the sensitivity analysis methods.
CO_{05}	Student will be able to model and analyze the power system voltage stability problems.

706. EE/EX3EL13 Electric Vehicle Charging Infrastructures

CO_{01}	Explain basic terms and parameters of Energy Sources & Charging in an electric vehicle.
CO_{02}	Distinguish various Charging process.
CO_{03}	Compare various technologies behind Location and planning of charging stations electrical hazards and investigate its zones and provide proper safety for it.Being able to analyze different motor technology of EV.

CO_{04}	Develops better understanding of EV Charging Infrastructure system.
CO_{05}	Distinguish various Charging process and their connection in power system

707. EX3EL12 Electric Vehicle

CO_{01}	Understand the basic need of EV and HEV.
CO_{02}	Being able to understand the basic idea behind EV technology.
CO_{03}	Being able to analyze different motor technology of EV.
CO_{04}	Develops better understanding of EV, HEV electric propulsion system.
CO_{05}	Develops better understanding of Electric Vehicle Data Acquisition, Sensors, and Control Systems.

708. OE00049 Industrial Instrumentation and Sensor technology

CO_{01}	Understand basic types of industries and instruments .
CO_{02}	Being able to understand basic idea sensor technology.
CO_{03}	Being able to understand Level and flow measurement.

CO_{04}	Being able to analyze different Analytical Instrumentation.
CO_{05}	Develops better understanding of selection, installation and calibration of all sensors.

709. EE3CO04 Electrical Machine-I

CO_{01}	Demonstrate operational aspects of Transformer & Induction Machines
CO_{02}	Solve the analytical problems related with the Transformer & Induction Machines and carry out their analysis
CO_{03}	Demonstrate applicability of different types of Induction Motors and Transformers in the industrial perspective
CO_{04}	Demonstrate applicability of single phase phase Induction Motors for domestic purposes.
CO_{05}	Select appropriate starting method for 3-phase Induction Motors.

710. FT3CO11 Electrical Tech. & safety in electrical system

CO_{01}	Explain basic terms and parameters of Electrical Engineering and recognize effect of electrical current and voltage on human body
CO_{02}	Distinguish various protective devices and their connection in power system
CO_{03}	Compare various electrical hazards and investigate its zones and provide proper safety for it.

CO_{04}	Explain various test done on electrical Equipment before installing in plant and its maintenance
CO_{05}	Discuss Indian Electricity Acts and Rules

711. EE/EX3EL03 Digital Signal Processing

CO_{01}	Analyze different types of discrete signals and systems and its properties for finding stability and its uses in different fields.
CO_{02}	Apply digital filters using z transform obtained from the solutions of difference equations.
CO_{03}	Apply frequency analysis in filters of continuous time signals and discrete time signals.
CO_{04}	Develop periodic sequences of discrete signals and systems using Fourier series.
CO_{05}	Design different digital FIR and IIR filters using a number of methods.

712. EE3CO02 Power Electronics Devices & Circuits

CO_{01}	Define the various power semiconductor devices to be used in rectifiers, inverters, choppers and cyclo-converters.
CO_{02}	Understand the basic concept of operation of various power semiconductor devices, passive components, switching circuits like rectifiers, inverters, choppers and cyclo-converters.

CO_{03}	Implement the desired characteristics of various power semiconductor devices as per our own requirement in rectifiers, inverters, choppers and cyclo-converters.
CO_{04}	Analyze thedesign of rectifiers, inverters, choppers and cyclo-converters on the basis of output performance received and applying in various application fields.

713. EE3CO05 Magnetic Theory

CO_{01}	To Understand Basic terms and parameters of Co-ordinate systems in scalar and vectors form and how to use them in different fields of Electrical Engineering.
CO_{02}	To predict the behavior of any electrical field effects and its application.
CO_{03}	Have knowledge of magnetic field and its applications in electrical field. Able to understand basics concepts of self-inductance and mutual inductance.
CO_{04}	To understand behavior of any electrical and magnetic field effects in a combined form and able to solve wave equation for time varying fields.
CO_{05}	To be able to analyze polarization reflection and transmission line analogy.

714. EE3CO15 Linear Control System

CO_{01}	Able to know the basic working of linear control system and its equipment’s

CO_{02}	Understand the effects of various signals in different linear control system
CO_{03}	Analyze the stability related issues using various techniques
CO_{04}	Apply various compensation used in linear control system
CO_{05}	Apply state space analysis in linear control system

715. EE3CO03 Electrical Measurement & Instrumentation

CO_{01}	Identify electrical/electronic instruments, their use and errors associated with the instruments and how to minimize such errors along with its working & construction.
CO_{02}	Apply methods for the measurement of electrical power.
CO_{03}	Apply methods for the measurement of resistance, capacitance and inductance with ability to choose suitable current and potential transformer.
CO_{04}	Ability to apply the concepts of ridges for the measurement of various electrical quantities.
CO_{05}	Ability to measure frequency, phase with oscilloscope and will analyze the physical quantities using transducers at industry level.

716. EE3CO07 Circuit Analysis & Synthesis

CO_{01}	Able to know the basic working of various circuit elements and their combination.
CO_{02}	Apply theorems for solutions of electrical networks.
CO_{03}	Analyze the transient and steady state condition of electrical networks and its effect.
CO_{04}	Ability to measure the various parameters related to electrical networks.

717. EE/EX3EW03 Electrical Distribution System

CO_{01}	Conceptualize the basics of existing power distribution system networks in Utilities in the public and private sectors along with their Rating methods.
CO_{02}	Develop the ability to select the appropriate equipment and implement suitable design methods for the electrical distribution system by enhancing the efficiency of the distribution system with environment-friendly technology.
CO_{03}	Utilize basic mathematical, physical, and electrical principles to formulate significant distribution parameters.
CO_{04}	Recognize the need to continuously follow the advancements in technology and incorporate them into the present system to improve efficiency.
CO_{05}	Demonstrate a future integrated approach of reduction of losses and reduction of transformer failures.

718. EE/EX3CO21 Digital Electronics

CO_{01}	Became familiar with the digital signal, positive and negative logic, Boolean algebra, logic gates, logical variables, the truth table, number systems, codes, and their conversion from to others.
CO_{02}	Learn the minimization techniques to simply the hardware requirements of digital circuits, implement it, design and apply for real time digital systems.
CO_{03}	Understand the working mechanism and design guidelines of different combinational, sequential circuits and their role in the digital system design.
CO_{04}	Became able to know various types of components-ADC and DAC, memory elements and the timing circuits to generate different waveforms, and also the different logic families involved in the digital system.
CO_{05}	The ability to identify and prevent various hazards and timing problems in a digital design and develop skill to build, and troubleshoot digital circuits.

719. EE/EX3CO13 Electrical Machine II

CO_{01}	The student would be able to illustrate constructional features of DC machines, winding details, and induce EMF.
CO_{02}	The student would be able to illustrate constructional details and stating of DC motors and interpret its losses and efficiency.
CO_{03}	The student would be able to develop phasor diagram & examine steady state performance of synchronous machines, determine voltage regulation of an alternator.

CO_{04}	The student would be able to explain transient behavior of synchronous machines, determination of time constant and equivalent circuit parameters under transient conditions analyze the behavior of synchronous machine connected to infinite bus and interpret parallel operation of alternators.
CO_{05}	The student would be able to understand load toque characteristics of synchronous motor and working principle of special machines.

720. ME3CO21 Sensors & Controls

CO_{01}	The student would be able touse concepts in common methods for converting a physical parameter into an electrical quantity.
CO_{02}	The student would be able to evaluate the performance characteristics of different types of control systems.
CO_{03}	The student would be able to gain knowledge about sensors for the measurement of displacement, strain, velocity, pressure, acceleration, etc.
CO_{04}	The student would be able to choose an appropriate sensor comparing different standards and guidelines to make sensitive measurements of physical parameters.
CO_{05}	The student would be able to locate the different types of sensors used in real-life applications and paraphrase their importance, and also can create analytical design and development solutions for sensors.

721. EE/EX3EL04 Energy Conservation and Management

CO_{01}	Importance of energy and its efficient used. Method of energy conservation. Significance of energy audit. Role of energy managers and energy auditors. Provisions of energy conservation act 2001.Importance and use of renewable energy .environmental safety
CO_{02}	Know the significances of demand side management to differ the fictitious demand of new power generating station. Benefit of energy efficient Equipment/Devices to insure power quality.
CO_{03}	Cost benefit analysis and payback period .Time vale of money. Evaluation methods of projects. Economics analysis considering cash outflows and cash inflow net present value methods.

722. FOID and Electric Drives

CO_{01}	Determine the type of electrical drives as per the requirements.
CO_{02}	Analyze and justify the DC drives as per the specific requirements of industry.
CO_{03}	Identify, Analyze the AC drives as per the specific quadrant and load requirements.
CO_{04}	Understand and classify the synchronous motor drives.
CO_{05}	Understand and Explain the PLC control of industrial drives.

723. OE00008 Fundamentals of Service marketing

CO_{01}	Student will be able to understand concept of service marketing and service sector challenge, complex problem marketing mix, pricing and service development process.
CO_{02}	Students will be Acquainted with market segmentation, service positioning and application of service marketing in various service sectors.
CO_{03}	Students will be conversant with type quality of services, services quality models, changes in life style, technology and changing economy detailed overview
CO_{04}	Meaning of financial services, hospitality services, professional services, health services, educational services etc
CO_{05}	Types of non business nonprofit organizations, scope of non business, nonprofit organization and their objective, nonprofit Vs profit oriented marketing.

724. EE3ES09 Engineering Materials

CO_{01}	To provide students with a thorough understanding of the electrical properties and characteristics of various materials used in the electrical appliances, devices & instruments.
CO_{02}	To provide students with a moderate level of understanding of the physics behind the electrical engineering materials.
CO_{03}	To provide the knowledge of materials behavior while it is dealing with heavy surges or undergoing sudden changes of electrical load.
CO_{04}	An understanding of the electrical engineering material science essential for them to work in different industries

CO_{05}	To motivate them to do innovative research while going for higher studies and also to work in R & D with scientific enthusiasm.

725. EN3HSO4 Fundamentals of management, Economics and Accountancy

CO_{01}	The student will be able to understand concept of administration and management. Managerial role cross cultural issues and conflict resolution
CO_{02}	Student will be able to understand concept and fundamentals of marketing and human resource management and customer relationship management.
CO_{03}	Students will be familiarized with fundamentals of economic, Demand and supply meaning and phases of business cycle.
CO_{04}	Students will understand accounting and financial principle and their application in business.
CO_{05}	Students will understand time value of money price elasticity of demand types of inflation.

726. EE3CO19 Advance Electrical Engineering Laboratory

CO_{01}	Student able to learn principle of operation of different types of relay in power system system protection scheme.
CO_{02}	Student able to learn operation of different types of circuit breaker in power system system protection scheme
CO_{03}	Student able to learn concept of power system faults (Symmetrical & Asymmetrical) using MATLAB tool.

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CO_{04}	Student able to learn principle of operation of different types of electrical drive fed with power electronics converter.
CO_{05}	Student able to analyze design and modelling of power system component with MATLAB tool.

727. EE3CO24 PS-II

CO_{01}	Students shall be able to evaluate the power system bus admittance and impedance matrix, modelling of regulating transformer.
CO_{02}	Students shall be able to apply the concept of Gauss Seidel, Newton-Raphson and FDLF methods for the solution of the power flow equations.
CO_{03}	Students would able to understand of fundamental of speed governing, modelling of speed control mechanism.
CO_{04}	Students learnt about concept of Production & absorption of reactive power method of voltage control.
CO_{05}	Students would understand the concept of Steady-state, dynamic and transient stability of power system.

728. EE3CO11 Power System-I

CO_{01}	Explain the load curves, different factors, generation selection and to compute the tariff.
CO_{02}	Cite the working of thermal, hydroelectric and nuclear power plants along with some calculations.
CO_{03}	Illustrate and Calculate the parameters related to the electrical characteristics of the transmission lines.

CO_{04}	Calculate the transmission lines modelling parameters.
CO_{05}	Demonstrate the mechanical modelling of transmission lines and its calculation, and classify the qualities of cables.

729. EX3CO06 Signal and Systems

CO_{01}	Describe the basic signals, categorize the signals and systems and perform signal operations.
CO_{02}	Analysis of signals in frequency domain using Fourier series and Fourier transform and understand the conversion of continuous time signal to discrete time signal.
CO_{03}	Classify continuous time system based on their properties and determine the response using convolution.
CO_{04}	Describe the properties of discrete time system and analyze discrete time system.
CO_{05}	Analyze signal and system properties like stability and causality using Z transforms.

730. EN3ES11 Principle of Electrical Engineering

CO_{01}	Apply the knowledge of basic circuital law and simplify the network using reduction techniques.
CO_{02}	Analyze the DC circuit using network theorems.

CO_{03}	Analyze Single Phase AC Circuits to represent alternating quantities and to determine the power in these circuits
CO_{04}	Demonstrate knowledge about the electrostatics and electro mechanics and analyze the principle of operation and performance of single-phase transformer.
CO_{05}	Apply the concept of sensors in measurement of various electrical quantities; elucidate the earthling, wiring system and safety devices.

731. EE3CO30 Analog Electronics

CO_{01}	Design amplifier circuit using BJT and FET's.
CO_{02}	Observe the effect of negative and positive feedback on different parameters of an amplifier and different types of feedback topologies.
CO_{03}	Apply op-amps fundamentals in project design, evaluation and analysis.
CO_{04}	Design adder, subtractor, integrators and differentiators, filters, oscillators.
CO_{05}	Observe the function of regulators and timers.

732. EE/EX3EW06 Introduction to Smart Grid

CO_{01}	Classify issues, opportunities & challenges in Smart grid. To distinguish Indian and globally power distribution sector.
CO_{02}	Describe operation and importance of smart grid and micro grid elements.
CO_{03}	Discuss on renewable energy source integration in present grids as well as in micro grid.
CO_{04}	Recognize utility analysis in terms of energy management, network analysis and operation of renewable based smart grids.
CO_{05}	Explore issues of smart grid in operation, analysis, management, control, protection and monitoring.

733. OE00066 Renewable and Photovoltaic System

CO_{01}	Recognize the need of renewable energy technologies and their role in the India and world energy demand.
CO_{02}	Describe operation and importance of Solar PV energy system.
CO_{03}	Design MPPT algorithms for PV energy systems..
CO_{04}	Describe the energy storage methods e.g. electrical, mechanical and chemical
CO_{05}	Describe about the biomass energy system and fuel cell technology.

734. RA3CO09 Industrial Electronics

CO_{01}	Develop the ability to understand the design and working of BJT amplifier. Able to design OP-AMP circuit.
CO_{02}	Apply sequential and combinational circuits in project design, evaluation and analysis.
CO_{03}	Ability to analyze and operation of various power semiconductor devices.
CO_{04}	Design and Analyze power inverter and chopper circuits and learn to select suitable power electronic devices by assessing the requirements of application fields.
CO_{05}	Ability to analyze and operation of various power supplies.

735. EX/EE3EP03 Wind and Solar Energy Conversion Systems

CO_{01}	Recognize the need of renewable energy technologies and their role in the India and solar &wind energy conversion systems.
CO_{02}	Demonstrate the Solar Thermal and PV applications along with its storage systems
CO_{03}	Describe different wind energy conversion systems.
CO_{04}	Design a standalone PV system and wind energy system.
CO_{05}	Describe different hybrid system and concept of micro grid.

736. EE/EX3CO24 Power System Protection

CO_{01}	Students could able to evaluate the different type of power system faults and various methods to solve them at different levels.
CO_{02}	Students learnt the relay working principle, its types and determination of tripping concept.
CO_{03}	Students would able to analyze the mechanism, working, types and selection criteria of particular CB for proposed requirements the given power system.
CO_{04}	Students learnt about the various protection schemes opt for the protection of main power system elements like alternators, transformers and transmission lines.
CO_{05}	Students would understand the concept of surge protection and importance of insulation coordination.

737. EE3EW04 Power System Automation

CO_{01}	Introduction of power system automation tasks
CO_{02}	Hardware structure of power system automation.
CO_{03}	Delivery of power, monitoring and control of power delivery systems in the substation
CO_{04}	Conversant with communication protocol to protect the power system.
CO_{05}	Distribution automation monitoring by SCADA, Shorten the duration of outages.

738. EE5CP07 Advance Power System Protection

CO_{01}	Learn a practical exposure of different type of static relays of fault protection.
CO_{02}	Analyses and demonstrate practically the static differential relays scheme and static distance relay schemes in power system substation.
CO_{03}	Analyses and demonstrate the phenomenon of static over current relays and relaying protection scheme.
CO_{04}	Understand about the Hybrid comparators and effect of power swings on the performance of distance relay.
CO_{05}	To solved the mathematical problem of distance relays and mho relay.

739. EE5CP06 Reactive Power and Voltage Control

CO_{01}	Analyze the difficulties associated with reactive power and methods adopted to overcome.
CO_{02}	Understand the basic concept of FACTS devices for overcoming the imbalance between real power and reactive power and relate it with conventional methods applied.
CO_{03}	Analyze the harmonics and methods to filter them on dc and ac side.
CO_{04}	Ability to analyze the Objectives of Voltage and Phase angle regulators, Thyristor controlled Voltage and Phase angle Regulators.

740. EE5CP02 Reliability Engineering

CO_{01}	Design reliability modal of any system.
CO_{02}	Apply network methods of reliability evaluation to any given system.
CO_{03}	Calculate MUT and MDT of any system.
CO_{04}	Determine components of the system which affects the reliability significantly.

741. EN6EE03 Application of reliability engineering to power system

CO_{01}	Carry out reliability analysis of any system and deliver ways to improve it.
CO_{02}	Apply network techniques for reliability evaluation.
CO_{03}	Calculate MUT and MDT of electrical System.
CO_{04}	Evaluate generation system reliability indices e.g. LOLP, LOLE, EENS etc.
CO_{05}	Evaluate distribution system reliability indices e.g. LOLP, LOLE, EENS etc.

742. EE5CP01 Power Electronics Application to Power Systems

CO_{01}	Formulate system components models like OLTC, admittance matrix and analyze capability and reactive power transmission of the system.
CO_{02}	Formulate and analyze voltage stability in power system.
CO_{03}	Formulate and analyze sensitivity analysis in power system and calculate rescheduling.
CO_{04}	Describe Reactive power control and compare performance of FACTS controllers.
CO_{05}	Demonstrate the role and modes of power electronics controllers like SVC and TCSC

743. EE5CP05 Advance Control systems

CO_{01}	Apply appropriate compensation method using Root locus and Bode plots.
CO_{02}	Acquire and show knowledge of state space and state feedback in modern control systems.
CO_{03}	Perform time domain analysis and pole placement, design of observers and output feedback controllers
CO_{04}	Demonstrate non-linear system behavior by Popov criterion and Liapunov methods and Relate adaptive control system.
CO_{05}	Perform the stability analysis of nonlinear systems develop design skills in optimal control problems

744. EE5EL02 Computer Applications in Power Systems

CO_{01}	Describe problems in deregulated power systems as well as the economic and transmission issues.
CO_{02}	Formulate and perform matrix operations like LU factorization, Modal analysis, Sherman Morison and Schur's inequality.
CO_{03}	Formulate and perform load flow analysis and optimal power flow.
CO_{04}	Describe Security analysis and perform security constraint dispatch and state estimations.
CO_{05}	Demonstrate the reliability of power system with Indexes like, LOLP calculation considering maintenance.

745. EN6EE02 Advance Power System Theory

CO_{01}	Formulate admittance matrix with transformer and perform NR, FDLF load flow analysis along with DC and optimal power flow.
CO_{02}	Formulate and perform sensitivity using different sensitivity factors like LODF, GSDF and CSF.
CO_{03}	Describe Security analysis and perform pre and post contingency correctivere scheduling using LP formulation.
CO_{04}	Formulate and analyze voltage stability in power system using PV curves and analyze effect of load models, effect of series and shunt compensation on it.

CO_{05}	Demonstrate the generating capacity reliability evaluation using Markov process, capacity outage probability table, load duration curve, LOLP calculations.

746. OE00066 Renewable and Photovoltaic System

CO_{01}	Understand the renewable and non-renewable sources of energy and its scenario in India.
CO_{02}	Describe the solar energy operation and its characteristics.
CO_{03}	Understand the wind energy operation and bio-mass energy generation.
CO_{04}	Explain the hydro power generation and its potential applications.
CO_{05}	Acquire the knowledge of wave power generation, tidal power generation and its applications.