

B.Tech

Program Outcomes

- **PO I: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- **PO II: 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.
- **PO III: 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.
- **PO IV: 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.
- **PO V: Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- **PO VI: 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.
- **PO VII: 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.
- **PO VIII: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- **PO IX: Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- **PO X: 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 XI: 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 XII: 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.

B.Tech-CIVIL ENGINEERING:

Program Educational Objectives

- **PEO 1:** Graduates will utilize the foundation in Engineering and Science to improve lives and livelihoods through a successful career in Civil Engineering or other fields.
- **PEO 2:** Graduates will become effective collaborators and innovators, leading or participating in efforts to address Social, Technical and Business challenges.
- **PEO 3:** Graduates will engage in Life-Long Learning and professional development through Self-Study, continuing education or graduate and professional studies in engineering & Business.

Program Specific Outcomes

- **PSO 1:** Educating students with fundamental mathematical, scientific, and engineering knowledge to have a significant and positive long-term impact on the field of civil engineering.
- **PSO 2:** Emphasizing the importance of working in a team effectively and to communicate properly within the team to achieve the desired outcome.
- **PSO 3:** Motivate students in learning to learn and the ability to keep learning for a lifetime to increase their professionalism, update and deepen their knowledge through the development of the profession.

B.Tech- Electrical and Electronics Engineering:

Program Educational Objectives

- **PEO 1:** Apply knowledge and skills to provide solutions to Electrical and Electronics Engineering problems in industry and governmental organizations or to enhance student learning in educational institutions.
- **PEO 2:** Work as a team with a sense of ethics and professionalism, and communicate effectively to manage cross-cultural and multidisciplinary teams.
- **PEO 3:** Update their knowledge continuously through lifelong learning that contributes to personal, global and organizational growth.

Program Specific Outcomes

- **PSO 1:** Apply the engineering fundamental knowledge to identify, formulate, design and investigate complex engineering problems of electric circuits, power electronics, electrical machines and power systems and to succeed in competitive exams like GATE, IES, GRE, TOEFL, GMAT, etc.
- **PSO 2:** Apply appropriate techniques and modern engineering hardware and software tools in power systems and power electronics to engage in life-long learning and to get an employment in the field of Electrical and Electronics Engineering.
- **PSO 3:** Understand the impact of engineering solutions in societal and environmental context, commit to professional ethics and communicate effectively.

B.Tech- Mechanical Engineering :

Program Educational Objectives

- **PEO 1:** To apply deep working knowledge of technical fundamentals in areas related to thermal, production, design, materials, system engineering areas of Mechanical Engineering.
- **PEO 2:** To develop innovative ideas and fine solutions to various mechanical engineering problems.
- **PEO 3:** To communicate effectively as members of multidisciplinary teams.
- **PEO 4:** To be sensitive to professional and societal context and committed to ethical action.
- **PEO 5:** To lead in the conception, design and implementation of new products, processes, services and systems.

Program Specific Outcomes

- **PSO 1:** Apply the knowledge in the domain of engineering mechanics, thermal and fluid sciences to solve engineering problems utilizing advanced technology.
- **PSO 2:** Successfully evaluates the principle of design, analysis and implementation of mechanical systems / processes which have been learned as a part of the curriculum.
- **PSO 3:** Develop and implement new ideas on product design and development with the help of modern CAD / CAM tools, while ensuring best manufacturing practices.

B.Tech-Electronics and Communication Engineering:

Program Educational Objectives

- **PEO 1:** To be equipped with skills for solving complex real-world problems related to VLSI, Embedded Systems, Signal/Image processing, and Digital and Wireless Communication.
- **PEO 2:** To develop professional skills that will equip them to succeed in their careers and encourage lifelong learning in advanced areas of Electronics and communications and related fields.
- **PEO 3:** To communicate effectively, work collaboratively and exhibit high levels of professionalism, moral and ethical responsibility.
- **PEO 4:** To develop the ability to understand and analyze engineering issues in a broader perspective with ethical responsibility towards sustainable development.

Program Specific Outcomes

- **PSO 1: Problem Solving Skills** – Graduates will be able to apply their knowledge in emerging electronics and communication engineering techniques to design solutions and solve complex engineering problems.
- **PSO 2: Professional Skills** – Graduate will be able to think critically, communicate effectively, and collaborate in teams through participation in co and extra-curricular activities.

- **PSO 3: Successful Career** – Graduates will possess a solid foundation in Electronics and Communications engineering that will enable them to grow in their profession and pursue lifelong learning through post-graduation and professional development.
- **PSO 4: Society Impact** – Graduate will be able to work with the community and collaborate to develop technological solutions that would promote sustainable development in the society.

B.Tech-Computer Science and Engineering:

Program Educational Objectives

- **PEO 1:** Graduates will provide solutions to difficult and challenging issues in their profession by applying computer science and engineering theory and principles.
- **PEO 2:** Graduates have successful careers in computer science and engineering fields or will be able to successfully pursue advanced degrees.
- **PEO 3:** Graduates will communicate effectively, work collaboratively and exhibit high levels of professionalism, moral and ethical responsibility.
- **PEO 4:** Graduates will develop the ability to understand and analyse engineering issues in a broader perspective with ethical responsibility towards sustainable development.

Program Specific Outcomes

- **PSO 1: Problem Solving Skills** – Graduate will be able to apply computational techniques and software principles to solve complex engineering problems pertaining to software engineering.
- **PSO 2: Professional Skills** – Graduate will be able to think critically, communicate effectively, and collaborate in teams through participation in co and extra-curricular activities.
- **PSO 3: Successful Career** – Graduates will possess a solid foundation in computer science and engineering that will enable them to grow in their profession and pursue lifelong learning through post-graduation and professional development.

Master Of Business Administration

Program Outcomes

- **PO 1** : Apply knowledge of management theories and practices to solve business problems.
- **PO 2** : Foster analytical and critical thinking abilities for data-based decision making.
- **PO 3** : Ability to develop Value based Leadership ability.
- **PO 4** : Ability to understand, analyze and communicate global, economic, legal, and ethical aspects of business.
- **PO 5** : Ability to lead themselves and others in the achievement of organizational goals, contributing effectively to a team environment.
- **PO 6** : Analyze the alternative solutions using quantitative methods and logical arguments.
- **PO 7** : Identify and analyze the business opportunities in diverse business contexts.
- **PO 8** : Develop a habit of knowing and understanding the latest developments taking place in the field of business management.

Program Educational Objectives

- **PEO 1:** After the completion of the course the students can have knowledge of different functions of business like Marketing, Finance, Human Resources and Systems.
- **PEO 2:** Students will understand the techniques and tools useful for Financial Analysis and Control develop leadership skills, team work, social, legal and ethical aspects in business and society.
- **PEO 3:** Students will be ready to analyze markets and design customer driven strategies and communicate business decisions by delivering superior customer value.
- **PEO 4:** Students achieve better communication skills and higher levels of proficiency for successful career in various fields and will be ready for having highest regard for personal & institutional integrity, social responsibility, teamwork and continuous learning of new environments.

Program Specific Outcomes

- **PSO 1:** The students will be ready to formulate an integrative business plan through the plan through the application of multidisciplinary knowledge comprising of marketing, finance, Human Resources, Entrepreneurship & systems.
- **PSO 2:** The students will be able to analyze the possible alternative solutions for a problem by applying various quantitative techniques for decision making.

Course N	Subject	COs	COURSE OUTCOMES
A10001	ENGLISH	A10001.1	Develop the speaking ability in English both in terms of fluency and comprehensibility
		A10001.2	Apply the ability to write academic papers, essays and summaries using the process approach.
		A10001.3	Evaluate the performance in the four modes of literacy such as writing, speaking, reading and listening
		A10001.4	Develop the ability as critical readers and writers
		AVG	
A10002	MATHEMATICS-1	A10002.1	Evaluate radius of curvature and derivatives of arc length to obtain Taylor's & Maclurin series,
		A10002.2	Apply the partial differentiation to find Total derivative and Jacobians of a given multivariable functions.
		A10002.3	Apply the Vector differential operator on scalar and vector point functions.
		A10002.4	various fields.
		AVG	
A10003	MATHEMATICAL METHODS	A10003.1	Develop nonlinear equations using analytic methods.
		A10003.2	Use mathematics concepts in real world situations.
		A10003.3	Apply ratio and proportion to problems in health sciences.
		A10003.4	Apply basic algebra and geometry to problems in radiological science
		AVG	
A10004	ENGG PHYSICS	A10004.1	To design reversible and irreversible processes of heat engine
		A10004.2	Apply Integral and differential forms of Faraday's law in Electromagnetism material
		A10004.3	Apply principle of propagation of light in optical fibers
		A10004.4	Apply quantum physics to electrical phenomena
		AVG	
A10005	ENGG CHEM	A10005.1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
		A10005.2	environmental pollution.
		A10005.3	Design economically and new methods of synthesis nano materials.
		A10005.4	Apply their knowledge for protection of different metals from corrosion
		AVG	
A10501	COMPUTER PROGRAMMING	A10501.1	Use documented solutions to troubleshoot problems associated with software installation and customization.
		A10501.2	Develop, test, document, deploy, and maintain secure program code based on specifications.
		A10501.3	Apply knowledge of networking concepts to develop, deploy, and maintain program code.
		A10501.4	Use relevant methodologies, policies, and standards to develop secure program code
		AVG	
A10301	ENGINEERING DRAWING	A10301.1	Use drawing for the shapes, angels and lines for essential of engineering application
		A10301.2	Develop the imagination to represent the shape size and specifications of physical objects.
		A10301.3	Develop three dimension objects on the paper and draw the pectoral drawings.
		A10301.4	Explain the principle of projection and sectioning
		AVG	
A10581	COMPUTER PROGRAMMING LAB	A10581.1	Develop appropriate data structures as applied to specified problem definition.
		A10581.2	structures.
		A10581.3	Implement Linear and Non-Linear data structures.
		A10581.4	Implement appropriate sorting/searching technique for given problem.
		AVG	
A10081	Engineering Physics / Engineering Chemistry Lab.	A10081.1	Determine the energy gap of a given semiconductor.
		A10081.2	Determine the Dielectric constant and Curie temperature of PZT material
		A10081.3	Determine the bending losses in a given optical fibers
		A10081.4	Determine the carrier concentration, mobility of charge carrier in Ge semiconductor
		AVG	
A10083	English Language Communication Skills Lab.	A10083.1	Use nuances of English language through audio- visual experience and group activities
		A10083.2	Apply Neutralization of accent for intelligibility
		A10083.3	Develop speaking skills with clarity and confidence which in turn enhances their employability skills.
		A10083.4	Develop the vocabulary concept in drafting
		AVG	
		A10082.1	Use advanced hardware device for different architecture application.
		A10082.2	Analyze different parts of computer devices for making new desktop.

A10082	IT Workshop / Engineering Workshop	A10082.3	devices
		A10082.4	Implement programming coding to activate different devices for different critical network related issues.

II YEAR I SEM

A30008	Probability and Statistics	A30008.1	Apply knowledge of mathematics & probability techniques in engineering problems.
		A30008.2	Analyze the problems using Probability distributions.
		A30008.3	Apply the methods of sampling in estimation of hypothetical values.
		A30008.4	List various sampling tests for testing the hypothetical environment.
		Average	
A30504	Mathematical Foundations of Computer Science	A30504.1	Apply mathematical logic to solve engineering problems
		A30504.2	operations
		A30504.3	several statistical problems.
		A30504.4	Apply induction proof techniques towards solving recurrences and other problems in elementary algebra
		Average	
A30502	Data Structures	A30502.1	Use appropriate data structures to represent data items in real world problems
		A30502.2	Analyze the time and space complexities of algorithms
		A30502.3	trees, heaps, graphs, and B-trees
		A30502.4	Analyze various kinds of searching and sorting techniques
		Average	
A30401	Digital Logic Design	A30401.1	Use Boolean algebra theorems, Properties and Canonical form for digital logic circuit design
		A30401.2	Apply K-Maps and Tabulation methods for Simplification of Boolean expressions and construct logic circuit
		A30401.3	Comparators
		A30401.4	Design Sequential logic circuits using Flip-flops, Shift registers, Counters and Memory unit
		Average	
A30404	Electronic Devices and Circuits	A30404.1	Recognize the transport phenomena of charge carriers in a semiconductor.
		A30404.2	Analyze the different types of diodes, operation and its characteristics.
		A30404.3	Apply different types of filters in AC to DC conversion.
		A30404.4	Describe Bipolar Junction Transistors and Field Effect Transistors for circuits.
		Average	
A30202	Basic Electrical Engineering	A30202.1	Analyze different types of electrical circuits.
		A30202.2	Use the principle of working for different types of Machines
		A30202.3	Use the techniques to measure efficiency and regulation of AC Machines
		A30202.4	Use the working of electrical and electronics measuring instruments.
		Average	
A30282	Electrical and Electronics Lab	A30282.1	Use the principle of working of different types of DC Motors
		A30282.2	Analyze the characteristics of different electronic devices such as Diodes and Transistors.
		A30282.3	Apply different operations for simple circuits like Rectifiers
		A30282.4	Analyze the features of DC Motors
		Average	
A30582	Data Structures Lab	A30582.1	Evaluate the performance of data structures by linked list.
		A30582.2	Analyze the solution of searching & sorting techniques.
		A30582.3	Apply graph traversal techniques on different data for tree structure.
		A30582.4	Distinguish the performance between stacks & queues
		Average	

II YEAR II SEM

A40506	Computer Organization	A40506.1	Use the I/O and Memory Organization in computer architecture.
		A40506.2	Evaluate various modes of data transfer between CPU and I/O devices.
		A40506.3	Develop assembly language programs for various applications.
		A40506.4	Analyze the concept of pipelining, segment registers and pin diagram of CPU
		Average	
A40507	Database Management Systems	A40507.1	model, entity-relationship model.
		A40507.2	relationship diagrams into relational tables,
		A40507.3	Explain principles for logical design of database including the ER model and normalization approach.
		A40507.4	Apply query optimization techniques of transaction processing and concurrency control
		Average	
		A40503.1	Identify Object Oriented concepts through constructs of JAVA.
		A40503.2	JAVA
		A40503.3	Apply Exception handling and Multi-threading concepts in program design using JAVA.

A40503	Java Programming	A40503.4	Develop GUI based applications using Applet class and explore the concept of Event Handling using JAVA
		Average	
A40009	Environmental studies	A40009.1	Apply the concepts of the ecosystem and its function in the environment.
		A40009.2	conserve the natural resources
		A40009.3	web.
		A40009.4	along with waste management practices
		Average	
A40509	Formal Languages and Automata Theory	A40509.1	Analyze Finite state machine and its representation in automata.
		A40509.2	Use various components of formal languages and grammars in finite automata
		A40509.3	science
		A40509.4	properties of languages, grammars and automata
		Average	
A40508	Design and Analysis of Algorithms	A40508.1	Analyze the algorithms and performance of algorithms.
		A40508.2	Apply different designing methods for development of algorithms.
		A40508.3	Describe the dynamic-programming paradigm for different problems
		A40508.4	memory usage
		Average	
A40585	Java Programming Lab	A40585.1	Use the concepts of object oriented Programming in java
		A40585.2	Demonstrate on reusability using inheritance, interfaces and packages in java
		A40585.3	Analyze complex programming problems and optimize the Solutions
		A40585.4	Implement of GUI based applications & JDBC programming .
		Average	
A40584	Database Management Systems Lab	A40584.1	Use database language commands to create simple database
		A40584.2	Analyze the database based on queries to retrieve records
		A40584.3	Applying PL/SQL for processing database
		A40584.4	Analyze front end tools to design forms, reports and menus
		Average	
III YEAR I SEM			
A50511	Principles of Programming Languages	A50511.1	Apply expression for syntax and semantics in formal notation.
		A50511.2	Apply suitable programming paradigm for different language.
		A50511.3	Describe different features of programming languages
		A50511.4	Distinguish among programming language
		Average	
A50017	Human Values and Professional Ethics	A50017.1	Identifies the multiple ethical interests at stake in a real-world situation or practice
		A50017.2	Create a particular course of action on ethically defensible
		A50017.3	Evaluate the ethical values and the social context of problems
		A50017.4	sources,
		Average	
A50518	Software Engineering	A50518.1	Differentiate software process model such as waterfall and evolutionary models.
		A50518.2	Apply software engineering principles, techniques and develop, maintain, evaluate large-scale software systems
		A50518.3	Develop on efficient, reliable, robust and cost-effective software solutions and perform independent research.
		A50518.4	to achieve personal and team goals
		Average	
A50514	Compiler Design	A50514.1	Explain the phases of compiler for any language
		A50514.2	Use lex and yacc tools for developing a scanner and a parser
		A50514.3	Apply and implement LL and LR parsers.
		A50514.4	Design algorithms to perform code optimization in order to improve the performance of a program
		Average	
A50510	Operating Systems	A50510.1	Describe the basic concepts related to operating systems and in detail about process management
		A50510.2	Demonstrate concurrency and control of processes for critical-section of operating systems.
		A50510.3	Apply principles of deadlock and its prevention for file system interface.
		A50510.4	Use mass storage management functions of file system in operating systems.
		Average	
A50515	Computer Networks	A50515.1	Explain the basic of computer networks and various protocols.
		A50515.2	Identify the components required to build different types of networks.
		A50515.3	Develop the algorithms for flow control and congestion control.
		A50515.4	Demonstrate various applications and their protocols.
		Average	

A50589	Operating Systems Lab	A50589.1	Experiment with Unix commands and shell programming
		A50589.2	Create 'C' program for process and file system management based on system calls
		A50589.3	Analysis the best CPU scheduling algorithm for problem instance in OS.
		A50589.4	Identify the performance of various page replacement algorithms.
		Average	
A50587	Compiler Design Lab	A50587.1	Demonstrate Lexical Analyzer using a C program
		A50587.2	Implement JLex, flex or lex and yacc tools for generating Lexical Analyzer
		A50587.3	Apply BNF rules for yacc form using a C program
		A50587.3	Design using a code for Predictive Parser.
		Average	
III YEAR II SEM			
A60521	DISTRIBUTED SYSTEMS	A60521.1	Describe functionality of distributed system.
		A60521.2	Demonstrate experience in building large-scale distributed applications.
		A60521.3	Design a new distributed system with the desired features.
		A60521.4	support scalability and fault tolerance
		Average	
A60522	INFORMATION SECURITY	A60522.1	Describe security concepts, Ethics in Network Security.
		A60522.2	Use fundamentals of secret and public cryptography
		A60522.3	Distinguish symmetric and asymmetric encryption systems and their vulnerability to various attacks
		A60522.4	Explain the role of third-party agents in the provision of authentication services.
		Average	
A60524	OOAD	A60524.1	Explain OOAD concepts and various UML diagrams
		A60524.2	Select an appropriate design pattern.
		A60524.3	Illustrate about domain models and conceptual classes.
		A60524.4	Compare various testing techniques.
		Average	
A60525	STM	A60525.1	Explain the basic concepts of software testing and its essentials.
		A60525.2	Identify the various bugs and correcting them after knowing the bug.
		A60525.3	Design the basic techniques for deriving test cases.
		A60525.4	Apply appropriate software testing tools, techniques and methods
		Average	
A60010	MEFA	A60010.1	Analyze fundamentals of economics concepts in effective business administration.
		A60010.2	Analysis on cost –out put relations
		A60010.3	Create awareness on market structures and pricing policies of various business
		A60010.4	Identify the types of Business organization of the company and the requirements of each one.
		Average	
A60512	WT	A60512.1	Apply java program to different data manipulation commands on the database.
		A60512.2	Use XHTML and Cascading Style Sheets for web page
		A60512.3	Use JavaScript to build dynamic web pages.
		A60512.4	Create XML documents and Schemas.
		Average	
A60591	CASE TOOLS AND WT LAB	A60591.1	To design the static and dynamic diagrams for ATM , HMS using UML tool.
		A60591.2	Use different testing tools for web technology.
		A60591.3	Use of LAMP stack for web applications
		A60591.4	Use HTML, JavaScript, AJAX,PHP, Servlets and JSPs for web applications.
		Average	
A60086	ADVANCED COMMUNICATION SKILLS LAB	A60086.1	Apply English with good pronunciation.
		A60086.2	Develop own skill through group discussions.
		A60086.3	Develop communication skill with the people effectively.
		A60086.4	Use interpretation data aptly.
		Average	
IV YEAR I SEM			
A70511	LP	A70511.1	Develop shell scripts to perform more complex tasks.
		A70511.2	Illustrate file processing operations such as standard I/O and formatted I/O.
		A70511.3	Generalize Signal generation and handling signals.
		A70511.4	Develop client server Inter Process Communication (IPC) Mechanisms.
		Average	
		A70530.1	List various design patterns.

A70530	DESIGN PATTERNS	A70530.2	Explain how design patterns solve design problems in object oriented application.
		A70530.3	Use design patterns in object oriented software solutions.
		A70530.4	Apply common design patterns to incremental/iterative development.
		Average	
A70520	DWDM	A70520.1	design a data mart or data warehouse for any organization
		A70520.2	asses raw input data and preprocess it to provide suitable input for range of data mining algorithms
		A70520.3	extract association rules and classification model
		A70520.4	identify the similar objects using clustering techniques.
Average			
A70519	CLOUD COMPUTING	A70519.1	Explain the system Modeling, Clustering and Virtualization concepts for cloud computing
		A70519.2	Analyze the basics of Cloud Computing and Integration as a service in cloud
		A70519.3	Design different infrastructure of Cloud computing such as IAAS, PAAS, SAAS.
		A70519.4	Create the service level agreement and management in cloud computing.
Average			
A70540	SPM	A70540.1	Recognize the purpose and importance of project management
		A70540.2	Differentiate organization project structures
		A70540.3	Choose the project schedule and cost estimation
		A70540.4	Relate the suitable project management tool
Average			
A70628	COMPUTER FORENCICS	A70628.1	Utilize a systematic approach to computer investigation.
		A70628.2	Locate & recover relevant electronic evidence from digital media using a variety of tools.
		A70628.3	Present the evidence & conclusions of an investigation in a report form.
		A70628.4	Perform email investigation
Average			
A70596	LP LAB	A70596.1	Apply built in commands for file processing.
		A70596.2	Design and implement Linux shell scripts.
		A70596.3	Design And Implement AWK scripts.
		A70596.4	Develop programs to implement system calls.
Average			
A70595	DWDM LAB	A70595.1	Analyze different algorithms of data mining available by popular commercial data mining software.
		A70595.2	Solve real data mining problems by using the right tools to find interesting Patterns.
		A70595.3	Examine some real time applications and obtain the results using various Data Mining Algorithms.
		A70595.4	Use hands-on experience with some popular data mining software
Average			
IV YEAR II SEM			
A80014	MANAGEMENT SCIENCE	A80014.1	Apply new idea on management analysis organization.
		A80014.2	Execute the principles of marketing management.
		A80014.3	Apply different parts of human resource management in organization
		A80014.4	Use the case studies for different project management.
Average			
A80551	Multimedia & Rich Internet Applications	A80551.1	Use the color models in images, video, graphics and image data representation
		A80551.2	List different image representation techniques and file formats.
		A80551.3	Apply the concepts of Rich internet applications with Adobe flash for developing a Flash Movie.
		A80551.4	List the importance of visual effects using multimedia on any video.
Average			
A80542	Storage Area Networks	A80542.1	Examine the core elements and solutions of the data management
		A80542.2	Design network topologies and implement RAID levels
		A80542.3	Apply topologies for ensuring information in disaster recovery
		A80542.4	Analyze threats at data centers
Average			
A80087	INDUSTRIAL ORIENTED MINI PROJECT	A80087.1	Create mini-projects in specified domain of CSE
		A80087.2	Develop software knowledge for industry projects
		A80087.3	Analyze the software project
		A80087.4	Design software product
Average			
		A80089.1	Engineering
		A80089.2	Analyze complex engineering problems and relevance to the society and industry.
		A80089.3	Develops good communication skills and presentation skills

A80089	SEMINAR	A80089.4	Analyze advanced technology for software product
		Average	
A80088	PROJECT WORK	A80088.1	Identify the problem by acquired knowledge.
		A80088.2	Analyze executable project modules
		A80088.3	Design project modules for software product
		A80088.4	Test all the modules through effective team work.
		Average	
A80090	COMPREHENSIVE VIVA	A80090.1	Create confident in discussing the fundamental aspects of B.Tech course
		A80090.2	Solve Computer Science and Engineering related problem
		A80090.3	Develop the ability to manage the situation and give answers in dealing with them
		A80090.4	Use the satisfactory answers for vive voce.
		Average	

Civil 2018-22 Batch co-po Mapping(R18)			
Course No	Subject	COs	COURSE OUTCOMES
I-I SEMESTER			
CS103ES	PROGRAMMING FOR PROBLEM SOLVING	CS103ES 1	To write algorithms and to draw flowcharts for solving problems.
		CS103ES 2	To convert the algorithms/flowcharts to C programs.
		CS103ES 3	To code and test a given logic in C programming language.
		CS103ES 4	To decompose a problem into functions and to develop modular reusable code.
		CS103ES 5	To use arrays, pointers, strings and structures to write C programs searching and sorting problems
		AVERAGE	
ME104ES	ENGINEERING GRAPHICS	ME104ES 1	Preparing working drawings to communicate the ideas and information.
		ME104ES 2	Read, understand and interpret engineering drawings
		AVERAGE	
PH102BS	ENGINEERING PHYSICS	PH102BS 1	The knowledge of Physics relevant to engineering is critical for converting ideas into technology.
		PH102BS 2	An understanding of Physics also helps engineers understand the working and limitations of existing devices and techniques, which eventually leads to new innovations and improvements.
		PH102BS 3	In the present course, the students can gain knowledge on the mechanism of physical bodies upon the action of forces on them, the generation, transmission and the detection of the waves, Optical Phenomena like Interference, diffraction, the principles of lasers and Fibre Optics.
		PH102BS 4	Various chapters establish a strong foundation on the different kinds of characters of several materials and pave a way for them to use in at various technical and engineering applications.
		AVERAGE	
MA101BS	MATHAMETICS-1	MA101BS 1	Write the matrix representation of a set of linear equations and to analyse the solution of the system of equation
		MA101BS 2	Find the Eigen values and Eigen vectors
		MA101BS 3	Reduce the quadratic form to canonical form using orthogonal transformations.
		MA101BS 4	Analyse the nature of sequence and series.
		MA101BS 5	Solve the applications on the mean value theorems.
		MA101BS 6	Evaluate the improper integrals using Beta and Gamma functions
		MA101BS 7	Find the extreme values of functions of two variables with/ without constraints.
		AVERAGE	
*MC109E			Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis
		AVERAGE	
I-II SEMESTER			
MA201BS	MATHAMETICS-II	MA201BS 1	Identify whether the given differential equation of first order is exact or not
		MA201BS 2	Solve higher differential equation and apply the concept of differential equation to real world problems
		MA201BS 3	Evaluate the multiple integrals and apply the concept to find areas, volumes, centre of mass and Gravity for cubes, sphere and rectangular parallelepiped
		MA201BS 4	Evaluate the line, surface and volume integrals and converting them from one to another
		AVERAGE	
ME203ES	ENGINEERING MECHANICS		Determine resultant of forces acting on a body and analyse equilibrium of a body subjected to a system of forces
			Solve problem of bodies subjected to friction.
			Find the location of centroid and calculate moment of inertia of a given section.
			Understand the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion.
			Solve problems using work energy equations for translation, fixed axis rotation and plane motion and solve problems of vibration.
		AVERAGE	
CH102BS	CHEMISTRY	CH102BS 1	The knowledge of atomic, molecular and electronic changes, band theory related to conductivity.
		CH102BS 2	The required principles and concepts of electrochemistry, corrosion and in understanding the problem of water and its treatments.
		CH102BS 3	The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.
		CH102BS 4	The knowledge of configurational and conformational analysis of molecules and reaction mechanisms.
		AVERAGE	

EN105HS	ENGLISH	EN105HS1	Use English Language effectively in spoken and written forms.
		EN105HS2	Comprehend the given texts and respond appropriately.
		EN105HS3	Communicate confidently in various contexts and different cultures.
		EN105HS4	Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
AVERAGE			
ME205ES	ENGINEERING WORKSHOP	ME205ES1	Study and practice on machine tools and their operations
		ME205ES2	Practice on manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry, house wiring and welding.
		ME205ES3	Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing, measuring, chiseling.
		ME205ES4	Apply basic electrical engineering knowledge for house wiring practice.
AVERAGE			
II-I SEMESTER			
CE301PC	SURVEYING AND GEOMATICS	CE30PC1	Apply the knowledge to calculate angles, distances and levels
		CE30PC2	Identify data collection methods and prepare field notes
		CE30PC3	Understand the working principles of survey instruments, measurement errors and corrective measures
		CE30PC4	Interpret survey data and compute areas and volumes, levels by different type of equipment and relate the knowledge to the modern equipment and methodologies
AVERAGE			
CE302PC	ENGINEERING GEOLOGY	CE302PC1	Site characterization and how to collect, analyze, and report geologic data using standards in engineering practice
		CE302PC2	The fundamentals of the engineering properties of Earth materials and fluids.
		CE302PC3	Rock mass characterization and the mechanics of planar rock slides and topples
AVERAGE			
CE303PC	STRENGTH OF MATERIALS-I	CE303PC 1	Describe the concepts and principles, understand the theory of elasticity including strain/displacement and Hooke's law relationships; and perform calculations, related to the strength of structured and mechanical
		CE303PC 2	Recognize various types loads applied on structural components of simple framing geometries and understand the nature of internal stresses that will develop within the components.
		CE303PC 3	To evaluate the strains and deformation that will result due to the elastic stresses developed within the materials for simple types of loading
		CE303PC 4	Analyze various situations involving structural members subjected to plane stresses by application of Mohr's circle of stress;
		CE303PC 5	Frame an idea to design a system, component, or process
AVERAGE			
MA304BS	PROBABILITY AND STATISTICS	MA304BS 1	Formulate and solve problems involving random variables and apply statistical methods for analysing
		AVERAGE	
CE305PC	FLUID MECHANICS	CE305PC 1	Understand the broad principles of fluid statics, kinematics and dynamics
		CE303PC 2	Understand definitions of the basic terms used in fluid mechanics and characteristics of fluids and its flow
		CE303PC3	Understand classifications of fluid flow
		CE303PC 4	Be able to apply the continuity, momentum and energy principles
AVERAGE			
CE306PC	SURVEYING LAB	CE306PC1	Apply the principle of surveying for civil Engineering Applications
		CE306PC2	Calculation of areas, Drawing plans and contour maps using different measuring equipment at field level
		CE306PC3	Write a technical laboratory report
AVERAGE			
CE306ES	STRENGTH OF MATERIALS LAB	CE306PC 1	Configure & Operate a data acquisition system using various testing machines of solid materials
		CE306PC 2	Compute and Analyze engineering values (e.g. stress or strain) from laboratory measurements.
		CE306PC 3	Write a technical laboratory report
AVERAGE			
CE308PC	ENGINEERING GEOLOGY LAB	CE308PC 1	Understands the method and ways of investigations required for Civil Engg projects
		CE308PC 2	Identify the various rocks, minerals depending on geological classifications
		CE308PC 3	Will able to learn to couple geologic expertise with the engineering properties of rock and unconsolidated materials in the characterization of geologic sites for civil work projects and the quantification of processes such as rock slides and settlement.
		CE308PC 4	Write a technical laboratory report
AVERAGE			
II-II SEMESTER			
EE401ES	BASIC ELECTRICAL & ELECTRONICS ENGINEERING	EE401ES 1	To analyze and solve electrical circuits using network laws and theorems.
		EE401ES 2	To understand and analyze basic Electric and Magnetic circuits
		EE401ES 3	To study the working principles of Electrical Machines
		EE401ES 4	To introduce components of Low Voltage Electrical Installations
		EE401ES 5	To identify and characterize diodes and various types of transistors.
AVERAGE			
CE402ES	BASIC MECHANICAL ENGINEERING FOR CIVIL	CE402ES.1	To understand the mechanical equipment for the usage at civil engineering systems
		CE402ES.2	To familiarize with the general principles and requirement for refrigeration, manufacturing
		CE402ES.3	To realize the techniques employed to construct civil engineering systems
AVERAGE			
CE403PC	MATERIALS, CONSTRUCTION	CE403PC.1	Define the Basic terminology that is used in the industry
		CE403PC.2	Categorize different building materials, properties and their uses
		CE403PC.3	Understand the Prevention of damage measures and good workmanship
AVERAGE			

	AND PLANNING	AVERAGE	
CE404PC	STRENGTH OF MATERIALS – II	CE404PC.1	Describe the concepts and principles, understand the theory of elasticity, and perform calculations, relative to
		CE404PC.2	To evaluate the strains and deformation that will result due to the elastic stresses developed within the
		CE404PC.3	Analyze strength and stability of structural members subjected to Direct, and Direct and Bending stresses
		CE404PC.4	Understand and evaluate the shear center and unsymmetrical bending.
		CE404PC.5	Frame an idea to design a system, component, or process
		AVERAGE	
CE405PC	HYDRAULICS AND HYDRAULIC MACHINERY	CE405PC.1	Apply their knowledge of fluid mechanics in addressing problems in open channels and hydraulic machinery
		CE405PC.2	Understand and solve problems in uniform, gradually and rapidly varied flows in open channel in steady state
		CE405PC.3	Apply dimensional analysis and to differentiate the model, prototype and similitude conditions for practical
		CE405PC.4	Get the knowledge on different hydraulic machinery devices and its principles that will be utilized in
		AVERAGE	
CE406PC	STRUCTURAL ANALYSIS – I	CE406PC.1	An ability to apply knowledge of mathematics, science, and engineering
		CE406PC.2	Analyse the statically indeterminate bars and continuous beams
		CE406PC.3	Draw strength behaviour of members for static and dynamic loading.
		CE406PC.4	Calculate the stiffness parameters in beams and pin jointed trusses
		CE406PC.5	Understand the indeterminacy aspects to consider for a total structural system
		CE406PC.6	Identify, formulate, and solve engineering problems with real time loading
		AVERAGE	
CE407PC	COMPUTER AIDED CIVIL ENGINEERING DRAWING	CE407PC.1	Use the Autocad commands for drawing 2D & 3D building drawings required for different civil engg
		CE407PC.2	Plan and draw Civil Engineering Buildings as per aspect and orientation
		CE407PC.3	Presenting drawings as per user requirements and preparation of technical report
		AVERAGE	
EE409ES	BASIC ELECTRICAL AND ELECTRONICS ENGINEERING	EE409ES.1	To analyze and solve electrical circuits using network laws and theorems.
		EE409ES.2	To understand and analyze basic Electric and Magnetic circuits
		EE409ES.3	To study the working principles of Electrical Machines
		EE409ES.4	To introduce components of Low Voltage Electrical Installations
		EE409ES.5	To identify and characterize diodes and various types of transistors
		AVERAGE	
CE409PC	HYDRAULICS & HYDRAULIC MACHINERY LAB	CE409PC.1	Describe the basic measurement techniques of fluid mechanics and its appropriate application
		CE409PC.2	Interpret the results obtained in the laboratory for various experiments.
		CE409PC.3	Discover the practical working of Hydraulic machines- different types of Turbines, Pumps, and other
		CE409PC.4	Compare the results of analytical models introduced in lecture to the actual behavior of real fluid flows and
		CE409PC.5	Write a technical laboratory report
		AVERAGE	
MC409/*	GENDER SENSITIZATION LAB	MC409/*MC30	Students will have developed a better understanding of important issues related to gender in contemporary
		MC409/*MC30	Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects
		MC409/*MC30	Students will attain a finer grasp of how gender discrimination works in our society and how to counter it
		MC409/*MC30	Students will acquire insight into the gendered division of labour and its relation to politics and economics
		MC409/*MC30	Men and women students and professionals will be better equipped to work and live together as equals
		MC409/*MC30	Students will develop a sense of appreciation of women in all walks of life
		AVERAGE	
CE501PC	STRUCTURAL ANALYSIS – II	CE501PC.1	Analyze the two hinged arches
		CE501PC.2	Solve statically indeterminate beams and portal frames using classical methods
		CE501PC.3	Sketch the shear force and bending moment diagrams for indeterminate structures.
		CE501PC.4	Formulate the stiffness matrix and analyze the beams by matrix methods
		AVERAGE	
CE505PC	GEOTECHNICAL ENGINEERING	CE505PC.1	Characterize and classify the soils
		CE505PC.2	Able to estimate seepage, stresses under various loading conditions and compaction characteristics
		CE505PC.3	Able to analyse the compressibility of the soils
		CE505PC.4	Able to understand the strength of soils under various drainage conditions
		AVERAGE	
CE503PC	STRUCTURAL ENGINEERING – I (RCC)	CE503PC.1	Compare and Design the singly reinforced, doubly reinforced and flanged sections.
		CE503PC.2	Design the axially loaded, uniaxial and biaxial bending columns.
		CE503PC.3	Classify the footings and Design the isolated square, rectangular and circular footings
		CE503PC.4	Distinguish and Design the one-way and two-way slabs
		AVERAGE	
CE504PC	TRANSPORTATION ENGINEERING	CE504PC.1	An ability to apply the knowledge of mathematics, science and engineering in the areas of traffic engineering,
		CE504PC.2	An ability to design, conduct experiments to assess the suitability of the highway materials like soil, bitumen,
		CE504PC.3	An ability to design flexible and rigid highway pavements for varying traffic compositions as well as soil
		CE504PC.4	An ability to evaluate the structural and functional conditions of in-service highway pavements and provide
		CE504PC.5	An ability to assess the issues related to road traffic and provide engineering solutions supported with an
		AVERAGE	
CE511PE	CONCRETE TECHNOLOGY	CE511PE.1	Determine the properties of concrete ingredients i.e. cement, sand, coarse aggregate by conducting different
		CE511PE.2	Apply the use of various chemical admixtures and mineral additives to design cement-based materials with
		CE511PE.3	Use advanced laboratory techniques to characterize cement-based materials.
		CE511PE.4	Perform mix design and engineering properties of special concretes such
		AVERAGE	
SM505M	ENGINEERING ECONOMICS	SM505MS.1 SM505MS.2	To perform and evaluate present and future worth of the alternate projects and to appraise projects by using To carry out cost benefit analysis of projects and to calculate BEP of different alternative projects.

CE506PC	AND HIGHWAY ENGINEERING & CONCRETE TECHNOLOGY	AVERAGE	
		CE506PC.1	Categorize the test on materials used Civil Engineering Building & Pavement constructions
		CE506PC.2	To perform the tests on concrete for it characterization.
		CE506PC.3	To Design Concrete Mix Proportioning by Using Indian Standard Method.
		CE506PC.4	Examine the tests performed for Bitumen mixes.
CE506PC.5	To prepare a laboratory report		
CE507PC	GEOTECHNICAL ENGINEERING LAB	AVERAGE	
		CE507PC.1	At the end of the course, the student will be able to Classify and evaluate the behavior of the soils subjected to
		AVERAGE	
EN508HS	ADVANCE	EN508HS.1	
CE601PC	HYDROLOGY AND WATER RESOURCES ENGINEERING	CE601PC.1	Understand the different concepts and terms used in engineering hydrology
		CE601PC.2	To identify and explain various formulae used in estimation of surface and Ground water hydrology
		CE601PC.3	Demonstrate their knowledge to connect hydrology to the field requirement
		AVERAGE	
CE602PC	ENVIRONMENTA L ENGINEERING	CE602PC.1	Assess characteristics of water and wastewater and their impacts
		CE602PC.2	Estimate quantities of water and waste water and plan conveyance components
		CE602PC.3	Design components of water and waste water treatment plants
		CE602PC.4	Be conversant with issues of air pollution and control
		AVERAGE	
CE603PC	FOUNDATION ENGINEERING	CE603PC.1	understand the principles and methods of Geotechnical Exploration
		CE603PC.2	decide the suitability of soils and check the stability of slopes
		CE603PC.3	calculate lateral earth pressures and check the stability of retaining walls
		CE603PC.4	analyse and design the shallow and deep foundations
		AVERAGE	
CE604PC	STRUCTURAL ENGINEERING – II	CE604PC.1	Analyze the tension members, compression members.
		CE604PC.2	Design the tension members, compression members and column bases and joints and connections
		CE604PC.3	Analyze and Design the beams including built-up sections and beam and connections.
		CE604PC.4	Identify and Design the various components of welded plate girder including stiffeners
		AVERAGE	
CE611PE	PRESTRESSED CONCRETE	CE611PE.1	Acquire the knowledge of evolution of process of prestressing.
		CE611PE.2	Acquire the knowledge of various prestressing techniques.
		CE611PE.3	Develop skills in analysis design of prestressed structural elements as per the IS codal provisions
		AVERAGE	
CE612PE	ELEMENTS OF EARTHQUAKE ENGINEERING	CE612PE.1	Explain and derive fundamental equations in structural dynamics
		CE612PE.2	Discuss and explain causes and Theories on earthquake, seismic waves, measurement of earthquakes
		CE612PE.3	Evaluate base shear using IS methods
		CE612PE.4	Design and Detail the reinforcement for earthquake forces
		AVERAGE	
CE613PE	ADVANCED STRUCTURAL ANALYSIS	CE613PE.1	Analyze the multistory building frames by various approximate methods.
		CE613PE.2	Solve the continuous beams, portal frames by matrix methods of analysis.
		CE613PE.3	Analyze and design of large frames with or without shear walls
		AVERAGE	
CE605PC	ENVIRONMENTA L ENGINEERING LAB	CE605PC.1	Understand about the equipment used to conduct the test procedures
		CE605PC.2	Perform the experiments in the lab
		CE605PC.3	Examine and Estimate water, waste water, air and soil Quality
		CE605PC.4	Compare the water, air quality standards with prescribed standards set by the local governments
		CE605PC.5	Develop a report on the quality aspect of the environment
		AVERAGE	
CE606PC	COMPUTER AIDED DESIGN LAB	CE606PC.1	Model the geometry of real-world structure Represent the physical model of structural element/structure
		CE606PC.2	Perform analysis
		CE606PC.3	Interpret from the Post processing results
		CE606PC.4	Design the structural elements and a system as per IS Codes
		AVERAGE	
		MC609.1	

MC609	ENVIRONMENTAL SCIENCE	AVERAGE	Based on this course, the Engineering graduate will understand /evaluate / develop technologies on the basis of
CE701PC	TRANSPORTATION ENGINEERING	CE701PC.1	Understand Plan highway networks
		CE701PC.2	Design highway geometrics
		CE701PC.3	Design Intersections and prepare traffic management plans.
		CE701PC.4	Design flexible and rigid pavements
CE702PC	ESTIMATION, QUANTITY SURVEYING	CE702PC.1	Do estimation of Buildings, Roads and Canals.
		CE702PC.2	Understand contracts and specification
CE724PE	REHABILITATION AND RETROFITTING OF STRUCTURES	CE724PE.1	Develop various maintenance and repair strategies
		CE724PE.2	Evaluate the existing buildings through field investigations
		CE724PE.3	Understand and use the different techniques for structural retrofitting
CE733PE	GROUND IMPROVEMENT TECHNIQUES	CE733PE.1	Identify suitable ground improvement techniques for specific project and its implications.
CE741PE	TRAFFIC ENGINEERING	CE741PE.1	Understand basics principles of Traffic Engineering
		CE741PE.2	Analyze parking data and model accidents
		CE741PE.3	Determine capacity and LOS
		CE741PE.4	To provide engineering techniques to achieve Safe and efficient movement of people and goods on roadways
CE703PC	TRANSPORTATION	CE703PC.1	Asses for Highway construction properties of highway materials
CE704PC	ENVIRONMENTAL	CE704PC.1	Students will able to find various properties of water
CE852PE	PAVEMENT DESIGN	CE852PE.1	Characterize the response characteristics of soil, aggregate, asphalt, and asphalt mixes
		CE852PE.2	Analyze flexible pavements
		CE852PE.3	Analyze rigid pavements
		CE852PE.4	Design a flexible pavement using IRC, Asphalt Institute, and AASHTO methods
		CE852PE.5	Design a rigid pavement using IRC, and AASHTO methods
CE862PE	GEOENVIRONME	CE862PE/CN8:	At the end of the course, the student will be able to: Identify sources of contamination, characterize the
CE864PE	INDUSTRIAL WASTE WATER TREATMENT	CE864PE.1	Identify the characteristics of industrial wastewaters
		CE864PE.2	Describe pollution effects of disposal of industrial effluent
		CE864PE.3	Identify and design treatment options for industrial wastewater
		CE864PE.4	Formulate environmental management plan

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING
CO Statements of 17-21 Batch I Year

Subject	Course Outcomes
M-1	Apply the Concept of rank of a matrix applying the concept of rank to know the consistency of linear equations.
	Determine the mean value theorems and to understand the concepts geometrically.
	Evaluate improper integrals using Beta and Gamma functions.
	Solve the differential equations of first and higher order.
EC	Observe the basic knowledge of electrochemical procedures related to corrosion and its control.
	Express the basic properties of water and its usage in domestic and industrial purposes.
	Summarize the use of fundamental principles to make predictions about the general properties of materials.
	Identify the potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs
EP-1	Find the importance of light phenomena in thin films and resolution
	Outline the principle, working of various laser systems and light propagation through optical fibers.
	Distinguish various crystal systems and understand atomic packing factor
	Estimate the various defects in crystals.
PC in ENG	Acquire vocabulary and use it contextually
	Listen and speak effectively
	Develop proficiency in academic reading and writing
	Increase possibilities of job prospects
EM	Determine resultant of forces acting on a body and analyze equilibrium of a body subject to a system of forces
	Solve problem of bodies subjected to friction
	Calculate the location of centroid and calculate moment of inertia of a given section
	Explain the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion
BEEE	Solve and Analyze electrical circuits using network laws and theorems.
	Analyze AC circuits and Resonance
	Draw the phasor diagram and equivalent circuit of Transformer with and without load.
	Categorize the AC and DC machines and their applications
ELCS	Facilitate computer-assisted multi-media instruction enabling individualized and independent language learning
	Sensitize the students to the nuances of English speech sounds, word accent, intonation and rhythm

LAB	Showcase consistent accent and intelligibility in students' pronunciation of English by providing an opportunity for practice in s
	Improve the fluency of students in spoken English and neutralize their mother tongue influence
EW LAB	Facilitate the ability to design and test programs to solve mathematical and scientific problems
	Write structured programs using control structures and functions
EP-II	Realize the importance of behavior of a particle quantum mechanically
	Calculate concentration estimation of charge carriers in semi conductors
	Explain various magnetic dielectric properties and apply them in engineering applications.
	Summarize the basic principles and applications of super conductors
M-II	Use Laplace transform techniques for solving difference eqatus
	Evaluate integrals using Beta and Gamma functions
	Evaluate the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc of regions on a plane
	Evaluate the line, surface, and volume integrals and converting them from one to another
M-III	Differentiate among random variables involved in the probability models which are useful for all branches of engineering
	Calculate mean, proportions and variances of sampling distributions and to make important decisions s for few samples which
	Solve the tests of ANOVA for classified data
	Calculate the root of a given equation and solution of a system of equations
CP in C	Demonstrate the basic knowledge of computer hardware and software.
	Ability to write algorithms for solving problems
	Ability to draw flowcharts for solving problems.
	Ability to code a given logic in C programming language.
EG	Preparing working drawings to communicate the idea and information
	Read, understand and interpret engineering drawings
EP LAB	Use the different measuring devices and meters to record the data with precision.
	Apply the theoretical concepts and correlate it with the experiments.
	Develop the experimental skills .
	Design new experiments in engineering.
EC LAB	Evaluation of hardness, ferrous ions and chloride content present in water
	Analyzing the purity of iron, copper and manganese in various materials
	Applying various instrumentation methods for the determination of strength of acids and ions
	Building molecular chains from phenol, urea and formaldehyde
CP LAB	Facilitate the ability to design and test programs to solve mathematical and scientific problems.
	Write structured programs using control structures and functions.

CO Statements of 17-21 Batch II,III & IV Year

Subject	
Mathematics- IV	Analyze the complex functions with reference to their analyticity
	Solve the complex integrals
	Determine the Laurent series at an isolated singular point.
	Determine the Fourier transform and the inverse Fourier transform of a function.
	Analyze the displacements of one dimensional wave and distribution of one Dimensional heat equation.
Network Analysis	Recall the knowledge on Basic network elements.
	Analyze the RLC circuits' behaviour in detail.
	Analyze the performance of periodic waveforms.
	Analyze characteristics of two port network parameters (Z, Y, ABCD, h & g).
	Analyze the filter design concepts in real world applications.
Electrical Technology	Analyze the performance characteristics of DC machines
	Classify the L-phase transformers based on the constructional features
	Describe the H-phase induction motors based on the rotor construction
	Derive the EMF equation of an alternator
	Analyze the special motors and electrical instruments for domestic and industrial appliances.
Analog Electronics	Design and analyze BJT amplifiers by using h-parameter model.
	Analyze the parameters of Hybrid pi model
	Design and analyze MOSFET and FET amplifiers by using h-parameter model.
	Utilize the concepts of negative feedback to improve the stability of amplifiers and positive feedback to generate sustained oscillations.
	Design and realize different classes of power amplifiers and tuned amplifiers usable for audio and radio applications.
Signals & Stocastic Process	Recognize the characteristics of Linear Time Invariant(LTI) systems.
	Translate any arbitrary analog or Digital time domain signal into frequency domain.
	Relate the Laplace transform and Z-transform
	Explain the concepts of Random Process and its Characteristics. Demonstrate the response of Linear Time Invariant(LTI) system for a Random Processes

Electronics Devices Circuits LAB	Analyze the diode and transistor CE, CB, CS characteristics.
	Verify the rectifier circuits using diodes and implement them using hardware.
	Analyze the construction, operation and characteristics of JFET and MOSFET, which can be used in the design of amplifiers.
Basic Simulation LAB	Utilize simulation tool to know its advantages and capability to generate various signals and Sequences.
	De-noise any arbitrary signal.
	Perform different operations on various signals and sequences.
	Convert various time domain signals into frequency domain
	Analyze various signals to avoid aliasing effect while generating various signals of different frequencies.
BEE LAB	Solve electrical circuits by applying the knowledge of mesh and nodal method and theorems
	Analyze series and parallel resonant circuits and measure its performance
	Construct two port models for given network by determining Z, Y, h and T Parameters
	Identify the characteristics of DC shunt generator and performance of various tests
EST	Explain the importance of ecological balance for sustainable development
	Describe the impacts of developmental activities and mitigation measures
	Summarize the various environmental policies and regulations
Analog Communication	Analyze various modulation and demodulation techniques for analog systems
	Describe the characteristics of noise present in analog systems
	Calculate the Signal to Noise Ratio (SNR) to evaluate the performance of various Analog Communication systems
	Analyze the various Pulse Modulation Systems.
	Explain the concepts of Time Division Multiplexing (TDM) and Frequency Division Multiplexing (FDM)
BEFA	Describe the various forms of Business and economics concepts.
	Classify different types of demand and supply concept for practical use
	Classify different types of markets, productions and pricing strategies for real life situations
	Explain different types of financial statement and ratios for business decision
Control Systems	Measure the system performance by selecting a suitable controller and/or a compensators for a specific application
	Apply various time domain and frequency domain techniques to assess the system performance
	Apply various control strategies to different applications like power systems, electrical drives etc.
	Test the controllability and observability of state space representation to various systems using state space representation and applications
Switching Theory &	Define the numeric information in different forms such as different bases, signed integers, various codes like ASCII, Gray, and BCD
	Analyze Boolean expressions using the theorems and postulates of Boolean algebra and to minimize combinational functions
	Design and analyze small sequential circuits and devices and to use standard sequential functions/blocks to build more complex circuits

Logic Design	Design and analyze small combinational circuits and to use standard combinational functions/ building blocks to build larger more complex circuits.
	Design algorithms for finite state machines
Analog Communication LAB	Select the frequency of the continuous time signal that avoids the aliasing effect
	Analyze different kinds of modulation and demodulation techniques.
	Perform the Time Division Multiplexing(TDM) and Frequency Division Multiplexing(FDM)
	Demonstrate the modulation techniques using simulation tool by individual and team work. and team work.
Pulse & Digital Circuits LAB	Sketch input and output characteristics of linear and non linear wave shaping circuits
	Design various multivibrators
	Implement the various logic gates using diodes and transistors
Analog Electronics LAB	Design various amplifiers like CE, CC, CS amplifiers and implement them using hardware and also observe their frequency
	Design various oscillators implement them using hardware and also observe their frequency responses.
	Utilize the concepts of negative feedback to improve the stability of amplifiers
	Design and realize different classes of power amplifiers and tuned amplifiers useable for audio and radio applications.
Gender Sensitization LAB	Summarize the important issues related to gender in contemporary India.
	Describe the basic dimensions of the biological, sociological, psychological and legal aspects of gender.
	Describe how gender discrimination works in our society and how to counter it.
	Develop necessary skills need will to work and live together with all gender as equals.
	Develop a sense of appreciation of women in all walks of life.
Pulse & Digital Circuits	Demonstrate the applications of diode as Integrator, differentiator, Comparator circuits
	Explain the characteristics of clippers and clamper circuits.
	Describe the characteristics of various switching devices such as diode, transistor, SCR.
	Differentiate between the logic gates and sampling gates
	Design the Multi-vibrators for various applications and sweep circuits.
Linear & Digital IC Applications	Derive and explain the gain equation and working of the Op-amp
	Design 1st order low pass and high pass butter worth filters
	Design and analyze ADC's and DAC's
	Recall the concepts of Digital circuits and Design digital circuits with digital IC's
	Compare different type of computer memories.
Disaster Management	Basic Concepts of Disasters, types of Disasters and Vulnerabilities.
	Explain the types of disaster management mechanism.
	Execute the management mechanism for the Capacity building of Structural and Non Structural measures in Disaster management.
	Organize the Coping Strategies and alternative adjustment processes.

	Develop the planning for Disaster management
Data Base Management System	Explain the basic concept and the application of database system queries using SQL.
	Interpret commercial relational database system by writing Queries using SQL and relational Database Theory to write relational algebra Expressions.
	Explain logical design of database including the ER model and normalization approach.
	Demonstrate the basics of query evaluation and apply query optimization techniques of transaction processing and concurrency control.
	Explain the basics of storage structures, indexing and page organization methods including B-Tree and Hashing.
FOM	Discuss about significance of management in their profession
	Explain planning and problem solving decision in their profession.
	Discuss organization structure and human resource management process to manage organization.
	Interpret leadership and motivational skills to analyze organization behavior.
	List the controlling and strategies to reach organizational objectives and goals.
Electromagnetic waves & transmission Lines	Define electrostatic and magneto static laws.
	Derive the Maxwell's equations in static and dynamic fields.
	Describe energy density on electric/magnetic fields' and poynting theorem.
	Analyze the EM wave propagation in different mediums.
	Relate the wave propagation through transmission lines and compute the impedance using smith chart for matching the load impedance.
Digital Communication	Describe basic components of Digital Communication Systems.
	Compare different error detecting and error correction codes like block codes, cyclic codes and convolution codes.
	Design optimum receiver for Digital Modulation techniques
	Analyze the error performance of Digital Modulation Techniques.
	Define spread spectrum and its types
Linear IC Applications LAB	Design and perform Op-amp 74L applications
	Calculate pulse width generated in various multivibrators of 555 timer.
	Test and Measure the locking and capturing range of IC 565 PLL.
	Perform load and Line Regulation for IC 7MH.
Digital IC Applications LAB	Design encoder, Comparator and Multiplexer
	Plot the transfer characteristics of 74H,LS and HS series IC
	Design shift registers and counters.
	Implement the various code converters
Digital Communication LAB	Perform various Digital modulation and Demodulation techniques.
	Generate and Demodulate Time Division Multiplexing(TDM) signal.
	Convert analog signal to digital signal
	Study Spectral characteristics of pulse analog modulation systems.

PROFESSIONAL ETHICS	Explain the importance of Values and Ethics in their personal lives and professional careers Discuss the rights and responsibilities as an employee Utilize the rights and responsibilities as a team member and a global citizen.
Antenna Wave Propagation	Explain basic parameters of antenna design. Interpret various antennas and solve their parameters. Illustrate antenna measurements and antenna arrays. Summarize different wave propagations and infer their characteristics
Digital Image Processing	Identify the types of images, acquisition, transforms applied to images Differentiate the techniques of Image Enhancement in the Spatial and Frequency Domain Identify various image restoration process Describe and illustrate various image segmentation and morphological techniques. Summarize various image compression process.
Digital Signal Processing	Construct time, frequency and Z-transform analysis on signals and systems. Compare the inter-relationship between DFT and various transforms. Describe the significance of various filter structures. Design a digital filter for a given specification. Identify the tradeoffs between normal and multi rate DSP techniques and finite length word effects
Cyber Security	Apply the knowledge on security on computers and networks. Analyze the cybercrime and cyber attacks. Design the security model for the organization. Creating the various policies and measures related to security
Microprocessor or Microcontrollers	Analyze the internal architecture and organisation of 8086, 8051 and ARM. Identify the significance of interrupts / serial communication, real time functionality in 8051. Develop skill in simple program writing for 8051 & 8086 applications Describe a typical I/O interface and to Discuss timing issues Identify significance of interrupts/serial communication,real time functionality in ARM
Microprocessor or Microcontrollers	Examine 8086 and 8051 instructions by tracing the execution of a program in MASM and MCU 8051 for microprocessor and Write program in assembly language for 8086 and 8051. Apply their programming skills (assembly and C) for real time applications.
Digital Signal Processing LAB	Realize digital filters using DFT, FFT. Compare Circular Convolution and Linear Convolution Compare auto correlation and cross correlation.
Advanced English Communicative	Acquire vocabulary and use it contextually. Listen and speak effectively. Develop proficiency in academic reading and writing

on Skills LAB	Increase possibilities of job prospects.
	Communicate confidently in formal and informal contexts
MicroWave engineering	Summarize concepts of Microwave frequencies, microstrip lines and microwave components
	Categorize Microwave tubes and Analyze Klystron, TWT
	Explain the working of Magnetron, Gunn diode
	Examine Frequency, Power, VSWR, Attenuation using Microwave Bench
Computer Networking	Describe the hardware, software, components of a network and the interrelations.
	Identify the different types of network topologies and protocols.
	Enumerate the layers of the OSI model and TCP/IP
	Demonstrate the skills of subnetting and routing mechanisms.
	Classify the different types of network devices and their functions within a network.
Artificial Intelligence	Interpret the ability to prepare an efficient problem space expressed in natural language
	Design a search algorithm for a problem and measure its time and space complexities
	Analyze the skill for representing knowledge using the appropriate technique for a given problem
	Apply AI techniques to figure out problems of game playing, and machine learning
	Apply logical reasoning to solve a variety of problems.
Very Large Scale Integration	Explain the fabrication process of CMOS devices.
	Sketch the layout for various logic circuits
	Design circuits using alternative design styles and calculate area, capacitance and delay
	Design memories using MOS transistors.
	Design simple logic circuit using PLA,PAL, FPGA , CPLD
Embedded System Design	Design embedded systems for a specific application.
	Identify the significance of Real Time Operating Systems(RTOS).
	Analyze the types of memory and interfacing to external hardware.
	Describe embedded firmware design approaches.
	Analyze the issues for development of task communication techniques and device drivers.
VLSI &ECAD LAB	Apply switching theory to solve logic design problems.
	Design counters, adders,sequence detectors.
	Program various digital circuits in different models using Verilog.
	Utilize HDL language to transfer and interpret the design results on FPGA kits
	Sketch the transistor level design and layout.
MICROWAVE LAB	Design test bench for measurement of various microwave parameters.
	Analyze various characteristics of microwave junctions and design of microwave communication links.
	Analyze various types of microwave measurements using microwave bench set up.
	Design & analyze the micro wave integrated circuits.

MINI PROJECT	Apply the conceptual skills to a given problem in diverse fields of engineering.
	Identify the needs of society and formulate sustainable solution.
	Able to interact effectively with the members associated with project and work as a part of team with professionalism.
	Evaluate the possible environmental hazards of the project and take appropriate actions to circumvent them.
SEMINAR	Evaluate the challenges and risks involved in the execution of the project
	Present the complex technical concepts effectively in public/professional context.
	Deliver well rehearsed and interactive presentations by using modern tools and technologies.
	Develop audience – centered presentations satisfying professional objectives.
	Enhance one’s own intellectual skills by utilizing available technical resources
Optical Communication	Demonstrate effective writing skills by employing techniques of academic writing, including invention, research, critical analysis
	Analyze the constructional parameters of optical fibers.
	Design an optical communication system
	Estimate the losses due to attenuation, absorption, scattering and bending.
Global Positioning System	Compare various optical detectors and select suitable one for different applications.
	Identify GPS components and their functions
	Select GPS survey method to locate object accurately.
	Interpret the navigational message and signals received by the GPS satellite
Renewable energy Sources	Map the geospatial features
	Explain the concepts of Non-renewable and renewable energy systems
	Outline utilization of renewable energy sources for both domestic and industrial applications
MAJOR PROJECT	Analyse the environmental and cost economics of renewable energy sources in comparison with fossil fuels.
	Apply relevant knowledge and skills to a given problem in diverse fields of engineering.
	Identify the needs of society and formulate sustainable solution.
	Interact effectively with the members associated with project and work as a part of team with professionalism.
MAJOR PROJECT	Evaluate the possible environmental hazards of the project and take appropriate actions to circumvent them.
	Evaluate the challenges and risks involved in the execution of the project and handle them effectively.

HoD  HEAD
 DEPT. OF ELECTRONICS & COMMUNICATIONS ENGINEERING
 K.G. REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
 CHILKUR (V), MOINABAD, R.R. DIST.501 504

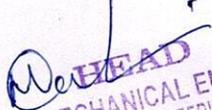
Course No.	Subject	Course Outcomes
MA101BS	M-I	Apply the Concept of rank of a matrix applying the concept of rank to know the consistency of linear equations. Determine the mean value theorems and to understand the concepts geometrically. Evaluate improper integrals using Beta and Gamma functions. Solve the differential equations of first and higher order.
MA102BS	M-II	Use Laplace transform techniques for solving DE's Evaluate integrals using Beta and Gamma functions Evaluate the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc of regions on a plane or in space Evaluate the line, surface and volume integrals and converting them from one to another Find the importance of light phenomena in thin films and resolution Outline the principle, working of various laser systems and light propagation through optical fibers. Distinguish various crystal systems and understand atomic packing factor Estimate the various defects in crystals.
PH103BS	EP	Demonstrate the basic knowledge of computer hardware and software. Ability to write algorithms for solving problems Ability to draw flowcharts for solving problems. Ability to code a given logic in C programming language.
CS104ES	CP in C	Determine resultant of forces acting on a body and analyze equilibrium of a body subject to a system of forces Solve problem of bodies subjected to friction Calculate the location of centroid and calculate moment of inertia of a given section Explain the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotary motion and rigid body motion
ME105ES	EM	Preparing working drawings to communicate the ideas and information Read, understand and interpret engineering drawings. Use the different measuring devices and meters to record the data with precision. Apply the theoretical concepts and correlate it with the experiments. Develop the experimental skills. Design new experiments in engineering.
ME106ES	EG	Demonstrate the basic knowledge of computer hardware and software. Ability to write algorithms for solving problems Ability to draw flowcharts for solving problems. Ability to code a given logic in C programming language.
PH107BS	EP LAB	Explain the importance of behavior of a particle quantum mechanically Estimate concentration of charge carriers in semi conductors List various magnetic dielectric properties and apply them in engineering applications. Demonstrate the basic principles and applications of super conductors
CS108ES	CP in C	Explain electrochemical procedures related to corrosion and its control. Explain the basic properties of water and its usage in domestic and industrial purposes. Summarize the use of fundamental principles to make predictions about the general properties of materials. Identify the potential applications of chemistry and practical utility in order to become good engineers and entrepreneurs Differentiate among random variables involved in the probability models which are useful for all branches of engineering
AP201BS	AP	Calculate mean, proportions and variances of sampling distributions and to make important decisions for few samples which are taken from a large data Solve the tests of ANOVA for classified data Find the root of a given equation and solution of a system of equations
CH202BS	EC	Improve the language proficiency of the students in English with emphasis on LSRW skills Equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus Develop the study skills and communication skills in formal and informal situations Increase possibilities of job prospects
MA203BS	M-III	Solve and Analyze electrical circuits using network laws and theorems. Analyze AC circuits and Resonance Draw the phasor diagram and equivalent circuit of Transformer with and without load. Categorize the AC and DC machines and their applications
EN204HS	Professional communication in English	Evaluate the hardness, ferrous ions and chloride content present in water Analyze the purity of iron, copper and manganese in various materials Apply various instrumentation methods for the determination of strength of acids and ions Build molecular chains from phenol, urea and formaldehyde
EE205ES	BEEE	Improve the language proficiency of the students in English with emphasis on LSRW skills Equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus Develop the study skills and communication skills in formal and informal situations Develop the fluency in spoken English and neutralize mother tongue influence
CH206BS	EC LAB	Study and Practice On Machine Tools and their operations
EN207HS	ELCS LAB	Practice on Manufacturing Components Using work shop Trades Including Plumbing, Fitting, Carpentry, House wiring, Welding, Foundry
ME208ES	EWS LAB	Identify and Apply suitable tools for different trades of Engineering Processes Including Drilling, Material Removing, Measuring, Chisling Electrical Engineering Knowledge for house wiring practice Analyze the Analytic functions. Evaluate contour integrals.
MA301BS	M-IV	Determine the circle or annulus of convergence of a complex functions Compute the Fourier transform and the inverse Fourier transform of a function, and displacements of one dimensional wave. Understand First Law and to define heat, work, thermal efficiency and the difference between various forms of energy Identify and describe energy exchange processes (in terms of various forms of energy, heat and work) in aerospace systems.
ME304ES	TD	Apply the steady-flow energy equation or the First Law of Thermodynamics to a system of thermodynamic components to estimate required balances of heat, work and energy flow. Apply ideal cycle analysis to simple heat engine cycles to estimate thermal efficiency and work as a function of pressures and temperatures at various points in the cycle.
ME302ES	KOM	Build up critical thinking and problem solving capacity of various mechanical engineering problems related to kinematics of machines. Be proficient in the use of mathematical methods to analyze the forces and motion of complex systems of linkages, gears and cams. Be able to design linkage, cam and gear mechanisms for a given motion or a given input/output motion or force relationship. Be able to analyze the motion and the dynamical forces acting on mechanical systems composed of linkages, gears and cams. An ability to function effectively on multidisciplinary teams.
ME305ES	MMS	Analyze different types of materials and their crystal structures, arrangement of atoms & various mechanical properties of materials. Interpret the Phase and phase diagram of Materials & Plot cooling curves. Describe the concept of heat treatment processes of steel and strengthening mechanisms Identify various ferrous metals and alloys based on composition and properties for prescribed application. Classify and Distinguish different types of cast irons, steels and non ferrous alloys
ME303ES	MOS	Analyze the behavior of the solid bodies subjected to various types of loading. Analyze the variation of shear force and bending moment along the length of the beam under different combinations of loads. Understand the distribution of flexural and shear stresses across different cross section of the beam.

		Apply the theories of failures to various design problems. Understand the concept of torsion on shafts and hoop and longitudinal stresses in thin cylinders.
ME306ES	F&L LAB	Describe the manufacturing & refining process of fuels and lubricants Describe various types of frictions in engine and lubrication system and verify the properties through viscometer List the requirements, types and classification of lubricating oils, grease and solid lubricants used in automobiles Describe the different properties and testing procedures of fuels used in automobiles and verify those with flash and fire point Describe the combustion theories in SI and CI Engines and additives used to enhance the engine performance
ME307ES	MOS LAB	Analyze the behavior of the solid bodies subjected to various types of loading Apply knowledge of materials and structural elements to the analysis of simple structures. Undertake problem identification, formulation and solution using a range of analytical method
		Analyze and interpret laboratory data relating to behavior of structures and the materials they are made of, and undertake associated laboratory work individually and in teams.
		Expectation and capacity to undertake lifelong learning.
ME308ES	MMS LAB	Ability to relate properties to microstructure Understand various crystal structures and relationship to properties Ability to select metals and alloys for industrial applications Understanding heat treatment procedures and the change of properties Improving material properties by different heat treatment processes
*MC309HS	GS LAB	Develop the important issues related to gender in contemporary India. Determine a finer grasp of how gender discrimination works in our society and how to counter it. Create insight into the gendered division of labour and its relation to politics and economics. Develop a sense of appreciation of women in all walks of life.
ME403ES	DOM	Understand the effect of gyroscopic couple and static and dynamic force analysis of planar mechanisms Compute the forces acting on engine components and eventually turning moment diagram Comprehend the basic principles, working, advantages, disadvantages and applications of clutches, brakes and dynamometers Visualize the working of governors and explain the balancing of masses Analyze the vibrations in a system and compute the natural frequencies
		Explain the effect of fluid properties on a flow system. Identify type of fluid flow patterns and describe continuity equation.
ME401ES	FMHM	Analyze a variety of practical fluid flow and measuring devices and utilize fluid Mechanics Principles in design and Demonstrate boundary layer concepts. Select and analyze an appropriate turbine with reference to given situation in power plants. Estimate performance parameters of a given Centrifugal and Reciprocating pump
		Preparation of engineering and working drawings with dimensions and bill of material during design and development. Developing assembly drawings using part drawings of machine components.
ME404ES	MD	Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribs. Types of sections – selection of section planes and drawing of sections and auxiliary sectional views. Parts not usually sectioned Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and tapered features Title boxes, their size, location and details - common abbreviations and their liberal usage and Types of Drawings – working drawings for machine parts
		Understand the idea for selecting materials for patterns. Know Types and allowances of patterns used in casting and analyze the components of moulds.
ME405ES	MP	Design core, core print and gating system in metal casting processes. Understand the arc, gas, solid state and resistance welding processes. Develop process-maps for metal forming processes using plasticity principles Identify the effect of process variables to manufacture defect free products
		Understand the elasticity of the demand of the product, different types, and measurement of elasticity of demand and factors influencing on elasticity of demand.
SM405MS	BEFA	Recognize the Production function, features of Iso-Quants and Iso-Costs, different types of internal economies, external economies and law of returns with appropriate examples. Illustrate the features, merits and demerits of different forms of business organizations existing in the modern business. Enumerate the concept of capital budgeting and allocations of the resources through capital budgeting methods and compute simple problems for project management. Evaluate different types of financial ratios for knowing liquidity and profitability positions of business concern.
		Understand types of motion Analyze forces and torques of components in linkages Understand static and dynamic balance Understand forward and inverse kinematics of open-loop mechanisms
ME406ES	KOM DOM LAB	Students can able to understand to analyze practical problems in all power plants and chemical industries Analyze a variety of practical fluid-flow devices and utilize fluid mechanics principles in design Given the required flow rate and pressure rise, select the proper pump to optimize the pumping efficiency To provide the students with a solid foundation in fluid flow principles To provide the students knowledge in calculating performance analysis in turbines and pumps and can be used in power plants
ME407ES	FMHM LAB	Understanding the properties of moulding sands and pattern making. Fabricate joints using gas welding and arc welding. Evaluate the quality of welded joints.
ME408ES	MP LAB	Basic idea of press working tools and performs moulding studies on plastics.
*MC400ES	ES&T	understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development
		To interpret the knowledge about the principles of design, material selection, component behavior subjected to loads, and criteria of failure
ME501PC	DMM-I	To discuss the concepts of principal stresses, stress concentration in machine members and fatigue loading. To perform the different tests on the basis of strength and rigidity and analyze the stresses and strains induced in a machine element To compare the design procedure of different fasteners, joints, shafts and couplings.
ME502PC	TE-I	To apply the laws of Thermodynamics to analyze air standard cycles To illustrate & evaluate the perform analysis of the major components & systems of IC engines, refrigeration cycles. To analyze IC engines and refrigeration cycle applications.
		Describe the principle, working and various operations on lathe machines. Understand working of drilling machines, shaper, planer and estimate the machining time Explain the principle of milling machines and methods of indexing. Design the limit gauges and minimize the errors measurement. Identify methods and devices to measure surface roughness and machine tool alignment.
ME503PC	MMT	
SM504MS	FOM	understand the significance of Management in their Profession. The various Management Functions like Planning, Organizing, Staffing, Leading, Motivation and Control aspects Explore the Management Practices in their domain area.
CE511OE	DM	To applying of disaster concepts to management Analyzing relationship between developments and disasters. Understanding categories of disasters Realization of responsibilities to society
		Determine the valve timing diagram of SI engine & CI engine & Analyze the influence of variations in TDC and BDC operations . Calculate the IP, BP, brake thermal efficiency & Calculate & Compare the performance characteristics. Analyse the efficiency of reciprocating air compressor & Determine the principle of various parameters in boilers. Experiment on IC engine load variations with Air fuel ratio & Apply the concept of Morse test on SI engine (multi cylinder)
ME505PC	TE LAB	
		Apply the procedures to measure length, width, depth, bore diameters, internal and external tapers, tool angles, and surface roughness by using different instruments.
ME506PC	MT LAB	Measure effective diameter of Thread profile using different methods Familiarize different machine tools used in production floor. Impart hands on experience on lathe, drilling, shaping, milling, slotting, grinding and tool and cutter grinding machines. Measure the chordal addendum and chordal height of the spur gear by using gear tooth vernier calipers. Perform Machine tool alignment of test on the lathe machine.

ME507PC	EM LAB	Measure angle of a screw thread using Tool maker's microscope. Measure the Angle of a given wedge by bevel protractor and sine bars. Measure the flatness of surface plate using spirit level and optical flats and Measure the pitch of a screw Thread wedge by 2-wire and 3-wire methods.
*MC500HS	PE	Understanding basic purpose of profession, professional ethics and various moral and social issues Awareness of professional rights and responsibilities of a Engineer, safety and risk benefit analysis of a Engineer Acquiring knowledge of various roles of Engineer In applying ethical principles at various professional levels Professional Ethical values and contemporary issues Excelling in competitive and challenging environment to contribute to industrial growth
ME601PC	TE-II	Develop state – space diagrams based on the schematic diagrams of process flow of steam and gas turbine plants. Apply the laws of Thermodynamics to analyze thermodynamic cycles. Differentiate between vapour power cycles and gas power cycles. Infer from property charts and tables and to apply the data for the evaluation of performance parameters of the steam and gas turbine plants.
ME602PC	DMM-II	Understand the functionality of major components of steam and gas turbine plants and to do the analysis of these components. Explain about journal bearing design using different empirical formulas. Estimation of life of rolling element bearings and their selection for given service conditions. Design The engine parts like piston and connecting rod. Analyze different stresses and deflections in springs and belts. Design the Mechanical components like gears by using the data available in design data books.
ME603PC	HT	Understand the basic modes of heat transfer and Compute one dimensional steady state heat transfer with and without heat generation Understand and analyse heat transfer through extended surfaces and Understand one dimensional transient conduction heat transfer Understand concepts of continuity, momentum and energy equations and Interpret and analyse forced and free convective heat transfer Understand the principles of boiling, condensation and radiation heat transfer and Design of heat exchangers using LMTD and NTU methods.
CS621OE	CS	Apply the knowledge on security on computers and networks. Analyze the basics of Cyber crime and cyber attacks. Design the model for security of the organization using cyber features Creating the various policies and measures related to security Use Cyber crime tools and methods to avoid the attacks.
CE621OE	RS&GIS	Describe different concepts and terms used in Remote Sensing and its data Understand the Data conversion and Process in different coordinate systems of GIS interface Evaluate the accuracy of Data and implementing a GIS Understand the applicability of RS and GIS for various applications
ME611PE	FEM	Apply finite element method to solve problems in solid mechanics, fluid mechanics and heat transfer. Formulate and solve problems in one dimensional structure including trusses, beams and frames. Formulate FE characteristic equations for two dimensional elements and analyze plain stress, plain strain, axisymmetric and plate bending problems. ANSYS, ABAQUS, NASTRAN, etc.
ME612PE	R&AC	Differentiate between different types of refrigeration systems with respect to application as well as conventional and unconventional refrigeration systems. Thermodynamically analyse refrigeration and air conditioning systems and evaluate performance parameters. Apply the principles of Psychometrics to design the air conditioning loads for the industrial applications.
ME604PC	HT LAB	Perform steady state conduction experiments to estimate thermal conductivity of different materials Perform transient heat conduction experiment Estimate heat transfer coefficients in forced convection, free convection, condensation and correlate with theoretical values Obtain variation of temperature along the length of the pin fin under forced and free convection Perform radiation experiments: Determine surface emissivity of a test plate and Stefan Boltzmann's constant and compare with theoretical value
ME605PC	CADD & MAT LAB	Utilize standard software tools to create part, assemblies and check for clearances. Modify 2D drafting to 3D using modeling software. Summarize the modern control in manufacturing systems (FANUC, SIEMENS) Acquire vocabulary and use it contextually Listen and speak effectively
ENG606HS	AECS LAB	Develop proficiency in academic reading and writing Increase possibilities of job prospects Communicate confidently in formal and informal contexts Define geometric transformation techniques in CAD.
ME701PC	CAD/CAM	Develop mathematical models to represent curves and surfaces .Model engineering components using solid modeling techniques. Develop programs for CNC to manufacture industrial components. Analyze the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system.
ME702PC	ICS	Able to Explain the Basic principles of measurement ,generalized configuration and functional descriptions of measuring instruments Ability to describe theory and construction of various transducers to measure displacement,pressure, temperature by instruments. Can able to Analyze and differentiate the Direct method and Indirect methods in Measurement of Level ,Measurement of Speed, Flow Measurement ,Measurement of Acceleration and Vibration. Ability to develop relation between Various types of stress and strain measurements. Can able to evaluate the Absorption psychrometer , Dew point meter, Measurement of Force,Torque And Power: Elastic force meters, load cells, Torsion meters, Dynamometers.
ME722PE	IM	Able to draw the block diagrams of Open and closed systems Servomechanisms, Temperature, speed and position control systems. Understand the Fundamentals of Management and Behavioral aspects of individual and groups in an organization. Explain various functions on multidisciplinary teams Develop design and conduct experiments, as well as to analyze and interpret data Determine various functions on multidisciplinary teams
ME723PE	PPE	Describe the basic principles of steam power plant and combustion process. Understand the principles of internal combustion engine plant, gas turbine plant and direct energy conversion. Enumerate the hydro electric power plant, hydro projects, plants and power from non-conventional energy sources. Demonstrate the nuclear power station and types of reactors. Apply the power plant economics and environmental considerations.
ME731PE	ET	Study of various parameters such as viscosity, flow of fluids, and its variation. Gain knowledge and analyze of different theories of lubrication to reduce friction and wear. Understand, analyze and evaluate the friction characteristics in journal bearings. Understand, analyze and evaluate the friction characteristics in journal bearings.
ME733PE	Robotics	Analysis and apply of hydrostatic and hydrodynamic bearing. Identify the general requirements of bearing materials, types of bearing materials. Identify Robots Motion of various configured robots by designing various links, actuators and en effectors Analyze the Forward and inverse kinematics of robots manipulators and matrices Analyze the forces in links, joints and end effectors of robot Analyze the trajectory planning and designing the path of the robots Analyze the robots application in Industry.
ME743PE	MEMS	understand working principles of currently available micro apply scaling laws that are used extensively in the conceptual design of micro devices and systems. use materials for common micro components and devices. choose a micromachining technique, such as bulk micromachining and surface micromachining for a specific MEMS fabrication process. understand the basic principles and applications of microfabrication processes, such as photolithography, ion implantation, diffusion,oxidation, CVD, PVD, and etching
ME703PC	CAD/CAM Lab	Describe the role of computer graphics especially geometric transformations for CAD/CAM application. Demonstrate manual part programming with G and M codes using CAM
ME704PC	ICS LAB	Characterize and calibrate measuring devices. Identify and analyze errors in measurement. Analyze measured data using regression analysis. Calibration of Pressure Gauges, temperature, LVDT, capacitive transducer, rotameter Apply the conceptual skills to a given problem in diverse fields of engineering.

ME705PC	IOMP	Identify the needs of society and formulate sustainable solution. Able to interact effectively with the members associated with project and work as a part of team with professionalism. Evaluate the possible environmental hazards of the project and take appropriate actions to circumvent them. Evaluate the challenges and risks involved in the execution of the project.
ME706PC	SEMINAR	Present the complex technical concepts effectively in public/professional context. Deliver well rehearsed and interactive presentations by using modern tools and technologies. Develop audience – centered presentations satisfying professional objectives. Enhance one's own intellectual skills by utilizing available technical resources. Demonstrate effective writing skills by employing techniques of academic writing, including invention, research, critical analysis and evaluation, and revision.
CE331OE	EIA	Identify the environmental attributes to be considered for the EIA study Formulate objectives of the EIA studies. Understand phenomena of impacts in the environment Identify the suitable methodology and prepare Rapid EIA
ME553PE	RES	Knowledge of renewable energy sources Applying the working principle of various energy systems Analyzing basic design of renewable energy systems Evaluate the various energy systems
ME554PE	PPC	Understand production systems and their characteristics. Evaluate MRP and JIT systems against traditional inventory control systems Understand basics of variability and its role in the performance of a production system. Analyse aggregate planning strategies. Apply forecasting and scheduling techniques to production systems. Understand theory of constraints for effective management of production systems
ME561PE	AE	To apply the principles of mechanical engineering to design the fuel supply systems for automobiles. To design cooling, ignition and electrical systems for automobiles. To design transmission and suspension systems by applying the principles of mechanical engineering to automobiles. To design braking and steering systems for automobiles. To apply various methods to reduce emissions from automobiles.
ME563PE	UCMP	Understand the basic techniques of machining processes modeling Understand the mechanical aspects of orthogonal cutting mechanics Understand the thermal aspects of orthogonal cutting mechanics Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes Estimate the material removal rate and cutting force, in an industrially useful manner, for practical machining processes.
ME591PC	MP	Apply relevant knowledge and skills to a given problem in diverse fields of engineering. Identify the needs of society and formulate sustainable solution. Interact effectively with the members associated with project and work as a part of team with professionalism. Evaluate the possible environmental hazards of the project and take appropriate actions to circumvent them. Evaluate the challenges and risks involved in the execution of the project and handle them effectively.

Principal


DEPT. OF MECHANICAL ENGINEERING
K.G. REDDY COLLEGE OF ENGINEERING & TECHNOLOGY
CHILKUR (V), MOHABAD, R.R. DIST, TS-501 504.

Course No.	Subject	Course Outcomes
MA101BS	M-I	Apply the Concept of rank of a matrix applying the concept of rank to know the consistency of linear equations.
		Determine the mean value theorems and to understand the concepts geometrically.
		Evaluate improper integrals using Beta and Gamma functions.
		Solve the differential equations of first and higher order.
PH102BS	EP	Find the importance of light phenomena in thin films and resolution
		Outline the principle, working of various laser systems and light propagation through optical fibers.
		Distinguish various crystal systems and understand atomic packing factor
CS103ES	P for PS	Estimate the various defects in crystals.
		To write algorithms and to draw flowcharts for solving problems
		To convert the algorithms/flowcharts to C programs
		To code and test a given logic in C programming language
		To decompose a problem into functions and to develop modular reusable code
		To use arrays, pointers, strings and structures to write C programs
ME104ES	EG	Searching and sorting problems
		Preparing working drawings to communicate the ideas and information
PH105BS	EP LAB	Read, understand and interpret engineering drawings.
		Use the different measuring devices and meters to record the data with precision.
		Apply the theoretical concepts and correlate it with the experiments.
CS106ES	P for PS LAB	Develop the experimental skills .
		Design new experiments in engineering.
		formulate the algorithms for simple problems
		translate given algorithms to a working and correct program
		correct syntax errors as reported by the compilers
		identify and correct logical errors encountered during execution
		represent and manipulate data with arrays, strings and structures
use pointers of different types		
*MC109ES	ES	create, read and write to and from simple text and binary files
		modularize the code with functions so that they can be reused
MA201BS	M-II	understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which inturn helps in sustainable development
		Use Laplace transform techniques for solving DE's
		Evaluate integrals using Beta and Gamma functions
		Evaluate the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc of regions on a plane or in space
CH202BS	CHEMISTRY	Evaluate the line, surface and volume integrals and converting them from one to another
		The knowledge of atomic, molecular and electronic changes, band theory related to conductivity
		The required principles and concepts of electrochemistry, corrosion and in understanding the problem of water and its treatments.
		The required skills to get clear concepts on basic spectroscopy and application to medical and other fields.
ME203ES	EM	The knowledge of configurational and conformational analysis of molecules and reaction mechanisms.
		Determine resultant of forces acting on a body and analyze equilibrium of a body subject to a system of forces
		Solve problem of bodies subjected to friction
ME205ES	EWS	Calculate the location of centriod and calculate moment of inertia of a given section
		Explain the kinetics and kinematics of a body undergoing rectilinear, curvilinear, rotatory motion and rigid body motion
		Study and Practice On Machine Tools and their operations
		Practice on Manufacturing Components Using work shop Trades Including Plumbing ,Fitting,Crapentary,House wiring,Welding,Foundary
EN205HS	ENGLISH	Identify and Apply suitable tools for differents trades of Engineering Processes Including Drilling,Material Removing,Mesuring,Chislling
		Electrical Engineering Knowledge for house wiring practice
		Use English Language effectively in spoken and written forms.
		Comprehend the given texts and respond appropriately.
CH206BS	EC LAB	Communicate confidently in various contexts and different cultures
		Acquire basic proficiency in English including reading and listening comprehension, writing and speaking skills.
		Determination of parameters like hardness and chloride content in water
		Estimation of rate constant of a reaction from concentration – time relationships.
		Determination of physical properties like adsorption and viscosity
		Calculation of Rf values of some organic molecules by TLC technique

EN207HS	ELCS LAB	Improve the language proficiency of the students in English with emphasis on LSRW skills
		Equip the students to study academic subjects more effectively using the theoretical and practical components of the English syllabus
		Develop the study skills and communication skills in formal and informal situations
		Develop the fluency in spoken English and neutralize mother tongue influence
MA301BS	P&S & CV	Formulate and solve problems involving random variables and apply statistical methods for analysing experimental data.
		Analyse the complex function with reference to their analyticity, integration using Cauchy's integral and residue theorems.
		Taylor's and Laurent's series expansions of complex function
ME302PC	MOS	Analyze the behavior of the solid bodies subjected to various types of loading;
		Analyze the variation of shear force and bending moment along the length of the beam under different combinations of loads.
		Understand the distribution of flexural and shear stresses across different cross section of the beam.
		Apply the theories of failures to various design problems.
ME303PC	MS&M	Understand the concept of torsion on shafts and hoop and longitudinal stresses in thin cylinders.
		Analyze different types of materials and their crystal structures, arrangement of atoms & various mechanical properties of
		Interpret the Phase and phase diagram of Materials & Plot cooling curves.
		Describe the concept of heat treatment processes of steel and strengthening mechanisms
ME304PC	PT	Identify various ferrous metals and alloys based on composition and properties for prescribed application.
		Classify and Distinguish different types of cast irons, steels and non ferrous alloys
		Understand the idea for selecting materials for patterns
		Know Types and allowances of patterns used in casting and analyze the components of moulds.
ME305PC	TD	Design core, core print and gating system in metal casting processes
		Understand the arc, gas, solid state and resistance welding processes.
		Develop process-maps for metal forming processes using plasticity principles.
		Identify the effect of process variables to manufacture defect free products.
ME306PC	PT LAB	Understand First Law and to define heat, work, thermal efficiency and the difference between various forms of energy
		Identify and describe energy exchange processes (in terms of various forms of energy, heat and work) in aerospace systems.
		Apply the steady-flow energy equation or the First Law of Thermodynamics to a system of thermodynamic components to estimate required balances of heat, work and energy flow.
		Apply ideal cycle analysis to simple heat engine cycles to estimate thermal efficiency and work as a function of pressures and temperatures at various points in the cycle.
ME307PC	MDP	Understanding the properties of moulding sands and pattern making
		Fabricate joints using gas welding and arc welding
		Evaluate the quality of welded joints
		Basic idea of press working tools and performs moulding studies on plastics.
ME308PC	MS & MOS LAB	Preparation of engineering and working drawings with dimensions and bill of material during design and development.
		Conventional representation of materials, common machine elements and parts such as screws, nuts, bolts, keys, gears, webs, ribs.
		Types of sections – selection of section planes and drawing of sections and auxiliary sectional views. Parts not usually sectioned
		Methods of dimensioning, general rules for sizes and placement of dimensions for holes, centers, curved and tapered features
*MC309	CI	Title boxes, their size, location and details - common abbreviations and their liberal usage and Types of Drawings – working drawings for machine parts
		knowledge based associated materials properties, and their selection and application.
		Analyze the behavior of the solid bodies subjected to various types of loading
		Apply knowledge of materials and structural elements to the analysis of simple structures
EE401ES	BE&EE	Undertake problem identification, formulation and solution using a range of analytical methods
		Analyze and interpret laboratory data relating to behavior of structures and the materials they are made of, and undertake associated laboratory work individually and in teams.
		Expectation and capacity to undertake lifelong learning.
		Understand the emergence and evolution of Indian Constitution.
		Understand the structure and composition of Indian Constitution
		Understand and analyse federalism in the Indian context.
		Analyse Panchayathi Raj institutions as a medium of decentralization
		Understand and analyse the three organs of the state in the contemporary scenario.
		Understand and Evaluate the Indian Political scenario amidst the emerging challenges.
		Evaluate Indian foreign relations under cold war and post cold war era.
		To analyze and solve electrical circuits using network laws and theorems
		To understand and analyze basic Electric and Magnetic circuits
		To study the working principles of Electrical Machines
		To introduce components of Low Voltage Electrical Installations
		To identify and characterize diodes and various types of transistors.
		Build up critical thinking and problem solving capacity of various mechanical engineering problems related to kinematics of
		Be proficient in the use of mathematical methods to analyze the forces and motion of complex systems of linkages, gears and

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ME402PC	KOM	<p>Be able to design linkage, cam and gear mechanisms for a given motion or a given input/output motion or force relationship.</p> <p>Be able to analyze the motion and the dynamical forces acting on mechanical systems composed of linkages, gears and cams.</p> <p>An ability to function effectively on multidisciplinary teams.</p>
ME403PC	TE-I	<p>To apply the laws of Thermodynamics to analyze air standard cycles</p> <p>To Illustrate & evaluate the perform analysis of the major components & systems of IC engines, refrigeration cycles.</p> <p>To analyze IC engines and refrigeration cycle applications.</p>
ME404PC	FMHM	<p>Explain the effect of fluid properties on a flow system.</p> <p>Identify type of fluid flow patterns and describe continuity equation.</p> <p>Analyze a variety of practical fluid flow and measuring devices and utilize fluid Mechanics Principles in design and Demonstrate</p> <p>Select and analyze an appropriate turbine with reference to given situation in power plants.</p> <p>Estimate performance parameters of a given Centrifugal and Reciprocating pump</p>
ME405PC	ICS	<p>Able to Explain the Basic principles of measurement ,generalized configuration and functional descriptions of measuring</p> <p>Ability to describe theory and construction of various transducers to measure displacement,pressure, temperature by instruments.</p> <p>Can able to Analyze and differentiate the Direct method and Indirect methods in Measurement of Level ,Measurement of Speed, Flow Measurement ,Measurement of Acceleration and Vibration.</p> <p>Ability to develop relation between Various types of stress and strain measurements.</p> <p>Can able to evaluate the Absorption psychrometer , Dew point meter, Measurement of Force,Torque And Power: Elastic force meters, load cells, Torsion meters, Dynamometers.</p> <p>Able to draw the block diagrams of Open, and closed systems Servomechanisms, Temperature,speed and position control systems.</p>
EE409ES	BE&EE LAB	<p>To analyze and solve electrical circuits using network laws and theorems</p> <p>To understand and analyze basic Electric and Magnetic circuits</p> <p>To study the working principles of Electrical Machines</p> <p>To introduce components of Low Voltage Electrical Installations</p> <p>To identify and characterize diodes and various types of transistors</p>
ME407PC	FMHM LAB	<p>Students can able to understand to analyze practical problems in all power plants and chemical industries</p> <p>Analyze a variety of practical fluid-flow devices and utilize fluid mechanics principles in design</p> <p>Given the required flow rate and pressure rise, select the proper pump to optimize the pumping efficiency</p> <p>To provide the students with a solid foundation in fluid flow principles</p> <p>To provide the students knowledge in calculating performance analysis in turbines and pumps and can be used in power plants</p>
ME408PC	ICS LAB	<p>Characterize and calibrate measuring devices.</p> <p>Identify and analyze errors in measurement.</p> <p>Analyze measured data using regression analysis. Calibration of Pressure Gauges, temperature, LVDT, capacitive transducer,</p>
*MC409	GS LAB	<p>Develop the important issues related to gender in contemporary India.</p> <p>Determine a finer grasp of how gender discrimination works in our society and how to counter it.</p> <p>Create insight into the gendered division of labour and its relation to politics and economics.</p> <p>Develop a sense of appreciation of women in all walks of life.</p>
ME501PC	DOM	<p>Understand the effect of gyroscopic couple and static and dynamic force analysis of planar mechanisms</p> <p>Compute the forces acting on engine components and eventually turning moment diagram</p> <p>Comprehend the basic principles, working, advantages, disadvantages and applications of clutches, brakes and dynamometers</p> <p>Visualize the working of governors and explain the balancing of masses</p> <p>Analyze the vibrations in a system and compute the natural frequencies</p>
ME502PC	DMM-I	<p>To interpret the knowledge about the principles of design, material selection, component behavior subjected to loads, and criteria of failure</p> <p>To discuss the concepts of principal stresses, stress concentration in machine members and fatigue loading.</p> <p>To perform the different tests on the basis of strength and rigidity and analyze the stresses and strains induced in a machine</p> <p>To compare the design procedure of different fasteners, joints, shafts and couplings.</p>
ME503PC	M&MT	<p>Describe the principle, working and various operations on lathe machines.</p> <p>Understand working of drilling machines, shaper, planer and estimate the machining time .</p> <p>Explain the principle of milling machines and methods of indexing.</p> <p>Design the limit gauges and minimize the errors measurement.</p> <p>Identify methods and devices to measure surface roughness and machine tool alignment.</p>
SM504MS	BEFA	<p>Understand the elasticity of the demand of the product, different types, and measurement of elasticity of demand and factors influencing on elasticity of demand.</p> <p>Recognize the Production function, features of Iso-Quants and Iso-Costs, different types of internal economies, external economies and law of returns with appropriate examples.</p> <p>Illustrate the features, merits and demerits of different forms of business organizations existing in the modern business.</p> <p>Enumerate the concept of capital budgeting and allocations of the resources through capital budgeting methods and compute simple problems for project management.</p> <p>Evaluate different types of financial ratios for knowing liquidity and profitability positions of business concern.</p>
ME505PC	TE-II	<p>Develop state – space diagrams based on the schematic diagrams of process flow of steam and gas turbine plants.</p> <p>Apply the laws of Thermodynamics to analyze thermodynamic cycles.</p> <p>Differentiate between vapour power cycles and gas power cycles.</p> <p>Infer from property charts and tables and to apply the data for the evaluation of performance parameters of the steam and gas</p> <p>Understand the functionality of major components of steam and gas turbine plants and to do the analysis of these components.</p> <p>Understanding the problem</p>

ME506PC	OR	identifying variables & constants Formulation of optimization model applying appropriate optimization technique
ME507PC	TE LAB	Determine the valve timing diagram of SI engine & CI engine & Analyze the influence of variations in TDC and BDC operations Calculate the IP, BP, brake thermal efficiency & Calculate & Compare the performance characteristics. Analyze the efficiency of reciprocating air compressor & Determine the principle of various parameters in boilers. Experiment on IC engine load variations with Air fuel ratio & Apply the concept of Morse test on SI engine. (multi cylinder)
ME508PC	M&MT LAB	Apply the procedures to measure length, width, depth, bore diameters, internal and external tapers, tool angles, and surface roughness by using different instruments Measure effective diameter of Thread profile using different methods Conduct different machine alignment tests Demonstrate knowledge of different machine tools used in machine shop. Perform step, taper turning, knurling and threading Produce stepped surface using shaper and keyway using milling machine
ME509PC	KOM&DOM LAB	Understand types of motion Analyze forces and torques of components in linkages Understand static and dynamic balance Understand forward and inverse kinematics of open-loop mechanisms
*MC510	IPR	Distinguish and Explain various forms of IPRs Identify criteria's to fit one's own intellectual work in particular form of IPRs Apply statutory provisions to protect particular form of IPRs.
ME601PC	DMM-II	Explain about journal bearing design using different empirical formulas. Estimation of life of rolling element bearings and their selection for given service conditions. Design The engine parts like piston and connecting rod. Analyze different stresses and deflections in springs and belts. Design the Mechanical components like gears by using the data available in design data books.
ME602PC	HT	Understand the basic modes of heat transfer and Compute one dimensional steady state heat transfer with and without heat generation Understand and analyse heat transfer through extended surfaces and Understand one dimensional transient conduction heat transfer Understand concepts of continuity, momentum and energy equations and Interpret and analyse forced and free convective heat transfer Understand the principles of boiling, condensation and radiation heat transfer and Design of heat exchangers using LMTD and NTU methods.
ME603PC	CAD & CAM	Define geometric transformation techniques in CAD. Develop mathematical models to represent curves and surfaces .Model engineering components using solid modeling techniques. Develop programs for CNC to manufacture industrial components.
		Analyze the application of computers in various aspects of Manufacturing viz., Design, Proper planning, Manufacturing cost, Layout & Material Handling system.
ME611PE	UCMP	Understand the basic techniques of machining processes modeling Understand the mechanical aspects of orthogonal cutting mechanics Understand the thermal aspects of orthogonal cutting mechanics Ability to extend, through modeling techniques, the single point, multiple point and abrasive machining processes Estimate the material removal rate and cutting force, in an industrially useful manner, for practical machining processes.
ME613PE	PPC	Understand production systems and their characteristics. Evaluate MRP and JIT systems against traditional inventory control systems Understand basics of variability and its role in the performance of a production system. Analyse aggregate planning strategies. Apply forecasting and scheduling techniques to production systems. Understand theory of constraints for effective management of production systems
EC600OE	FUNDAMENTALS OF IOT	Known basic protocols in sensor networks Program and configure Arduino boards for various designs Python programming and interfacing for Raspberry Pi Design IoT applications in different domains.
ME604PC	FEM	Apply finite element method to solve problems in solid mechanics, fluid mechanics and heat transfer. Formulate and solve problems in one dimensional structure including trusses, beams and frames. Formulate FE characteristic equations for two dimensional elements and analyze plain stress, plain strain, axisymmetric and plate bending problems. ANSYS, ABAQUS, NASTRAN, etc.
ME605PC	HT LAB	Perform steady state conduction experiments to estimate thermal conductivity of different materials Perform transient heat conduction experiment Estimate heat transfer coefficients in forced convection, free convection, condensation and correlate with theoretical values Obtain variation of temperature along the length of the pin fin under forced and free convection Perform radiation experiments: Determine surface emissivity of a test plate and Stefan Boltzmann's constant and compare with theoretical value
ME606PC	CAD CAM LAB	Describe the role of computer graphics especially geometric transformations for CAD/CAM application. Demonstrate manual part programming with G and M codes using CAM Acquire vocabulary and use it contextually


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EN608HS	AECS LAB	Listen and speak effectively
		Develop proficiency in academic reading and writing
		Increase possibilities of job prospects
		Communicate confidently in formal and informal contexts
*MC609	ES	understand /evaluate / develop technologies on the basis of ecological principles and environmental regulations which return helps in sustainable development
ME701PC	R&AC	Understand and differentiate between different thermodynamic systems and processes.
		Understand and apply the laws of Thermodynamics to different types of systems undergoing various processes and to perform thermodynamic analysis.
		Understand and analyze the Thermodynamic cycles and evaluate performance parameters.
ME711PE	ADM	Describe various CAD issues for 3D printing and rapid prototyping and related operations for STL model manipulation
		Formulate and solve typical problems on reverse engineering for surface reconstruction from physical prototype models through digitizing and spline-based surface fitting
		Formulate and solve typical problems on reverse engineering for surface reconstruction from digitized mesh models through topological modelling and subdivision surface fitting.
		Explain and summarize the principles and key characteristics of additive manufacturing technologies and commonly used 3D printing and additive manufacturing systems.
		Explain and summarize typical rapid tooling processes for quick batch production of plastic and metal parts.
ME712PE	AIM	Determining the process of automation and its types.
		Students will get exposure to workstation, which refers to the location in the factory where some well-defined task or operation is accomplished by an automated machine.
		Validating the Worker-and-machine combination or a worker using hand tools.
		Categorizing the various Material handling equipments and types.
ME721PE	PPE	Student gets exposure on portable power tools
		Understand the concept of Rankine cycle.
		Understand working of boilers including water tube, fire tube and high pressure boilers and determine efficiencies.
		Analyze the flow of steam through nozzles
ME722PE	AE	Evaluate the performance of condensers and steam turbines
		Evaluate the performance of gas turbines
		To apply the principles of mechanical engineering to design the fuel supply systems for automobiles.
		To design cooling, ignition and electrical systems for automobiles.
		To design transmission and suspension systems by applying the principles of mechanical engineering to automobiles.
ME733PE	FPS	To design braking and steering systems for automobiles.
		To apply various methods to reduce emissions from automobiles.
		Understand the Properties of fluids, Fluids for hydraulic systems,
		Understand governing laws. distribution of fluid power, Design and analysis of typical hydraulic circuits
CE700OE	RS&GIS	To Know accessories used in fluid power system, Filtration systems
		Understand the maintenance of system
		Describe different concepts and terms used in Remote Sensing and its data
ME702PC	IOMP	Understand the Data conversion and Process in different coordinate systems of GIS interface
		Evaluate the accuracy of Data and implementing a GIS
		Understand the applicability of RS and GIS for various applications
ME703PC	SEMINAR	Identify the needs of society and formulate sustainable solution.
		Able to interact effectively with the members associated with project and work as a part of team with professionalism.
		Evaluate the possible environmental hazards of the project and take appropriate actions to circumvent them.
		Evaluate the challenges and risks involved in the execution of the project
ME704PC	MP	Present the complex technical concepts effectively in public/professional context.
		Deliver well rehearsed and interactive presentations by using modern tools and technologies.
		Develop audience – centered presentations satisfying professional objectives.
		Enhance one's own intellectual skills by utilizing available technical resources
		Demonstrate effective writing skills by employing techniques of academic writing, including invention, research, critical analysis
MM813PE	CM	Apply relevant knowledge and skills to a given problem in diverse fields of engineering.
		Identify the needs of society and formulate sustainable solution.
		Interact effectively with the members associated with project and work as a part of team with professionalism.
		Evaluate the possible environmental hazards of the project and take appropriate actions to circumvent them.
MM813PE	CM	Evaluate the challenges and risks involved in the execution of the project and handle them effectively.
		Knowledge of the crystal structures of a wide range of ceramic materials and glasses
		Able to explain how common fibers are produced and how the properties of the fibers are related to the internal structure.
MM813PE	CM	Able to select matrices for composite materials in different applications.
		Able to describe key processing methods for fabricating composites

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ME821PE	IM	apply principles of management
		design the organization structure
		apply techniques for plant location, design plant layout and value analysis
		Able to carry out work study to find the best method for doing the work and establish standard time for a given method
CES000E	EIA	apply various quality control techniques and sampling plans
		Able to do job evaluation and network analysis.
		Identify the environmental attributes to be considered for the EIA study
		Formulate objectives of the EIA studies
		Identify the methodology to prepare rapid EIA
		Prepare EIA reports and environmental management plans

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

LIST OF ALL COURSE OUTCOMES A.Y-2020-2021

I-I SEM

Course No.	Subject	Course Outcomes
MA101BS	Mathematics-I	Solve the matrix representation of a set of linear equations and to analyze the solution of the system of equations
		Analyze the nature of sequence and series
		Solve the applications on the mean value theorems.
		Evaluate the improper integrals using Beta and Gamma functions
CH102BS	Chemistry	Outline the basic knowledge of atomic, molecular and electronic modifications which makes the student to
		Identify atomic, molecular and electronic changes, band theory related to conductivity
		Summarize the knowledge of stereochemistry and synthetic aspects useful for understanding reaction pathways
EE103ES	Basic Electrical Engineering	Make use of to the concepts of chemistry and to acquire the required skills to become a perfect engineer
		Analyze and solve electrical circuits using network laws and theorems
		Apply and analyze basic Electric and Magnetic circuits
		Demonstrate the working principles of Electrical Machines
ME105ES	Engineering Workshop	Introduce components of Low Voltage Electrical Installations
		Experiment with on machine tools and their operations
		Test for manufacturing of components using workshop trades including plumbing, fitting, carpentry, foundry,
EN105HS	English	Identify and apply suitable tools for different trades of Engineering processes including drilling, material removing,
		Apply basic electrical engineering knowledge for house wiring practice
		Use English Language effectively in spoken and written forms
		Identify the given texts and respond appropriately
CH106BS	Engineering Chemistry Lab	Develop confidently in various contexts and different cultures
		Examine English including reading and listening comprehension, writing and speaking skills
		Determine of parameters like hardness and chloride content in water
		Estimate of rate constant of a reaction from concentration – time relationships
EN107HS	English Language and Communication Skills	Determine of physical properties like adsorption and viscosity
		Evaluate for Rf values of some organic molecules by TLC technique
		Improve Communicate effectively in english with fluency
EE108ES	Basic Electrical Engineering Lab	Improve the language proficiency of the students in English with emphasis on LSRW skills
		Develop the students to study academic subjects more effectively using the theoretical and practical components
		Develop the study skills and communication skills in formal and informal situations
		Evaluate, measure and get the relation between basic electrical parameters
		Analyze the performance characteristics of DC and AC electrical machines
		Analyze a given network by applying various electrical laws and network theorems
		Identify the responses of different types of electrical circuits to different excitat ions
I YEAR II SEM		
MA201BS	Mathematics-II	Use Laplace transform techniques for solving DE 's
		Evaluate integrals using Beta and Gamma functions
		Evaluate the multiple integrals and can apply these concepts to find areas, volumes, moment of inertia etc of regions on a plane or in space
		Evaluate the line, surface and volume integrals and converting them from one to another

AP202BS	Applied Physics	Explain the fundamental concepts on Quantum behaviour of matter in its micro state
		Explain fundamentals of Semiconductor physics, Optoelectronics, Lasers and fibre optics enable the students to apply to various systems like communications, solar cell, photo cells and so on
		Design, characterization and study of properties of material help the students to prepare new materials for various engineering applications.
		Recall the applications in engineering like memory devices, transformer core and electromagnetic machinery
CS203ES	Programming for Problem Solving	Sketch the flowchart and write algorithm for solving problems.
		Translate the algorithms/flowcharts to C programs
		Test for a Code to given a logic in C programming language. Use arrays, pointers, strings and structures to write C programs. •Searching and sorting problems.
ME204ES	Engineering Graphics	Make use of standard principles of orthographic projection of objects
		Sketch sectional views and pictorial views of solids
		Develop working drawings to communicate the ideas and information interpret engineering drawings.
AP205BS	Applied Physics Lab	Apply the knowledge on Fundamentals of Quantum Mechanics, Statistical Mechanics to various systems like Communications Solar Cells, Photo Cells and so on
		Design, Characterization and study of properties of materials help the student to prepare new materials for various Engineering applications
		Develop experimental skills to design new experiments in Engineering Compare the theory and correlate with experiment in physics
CS206ES	Programming for Problem Solving Lab	Implement a c programs using the Dynamic Memory Allocation concept
		Formulate the algorithms for simple problems
		Identify and correct logical errors encountered during execution Create, read and write to and from simple text and binary files
	Environmental Science	Apply the concepts of the ecosystem and its function in the environment.
		Explain the natural resources and their importance for the sustenance of the life and recognize the need to conserve the natural resources
		Analyze the need for protecting the producers and consumers in various ecosystems and their role in the food web. Describe Various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
II-I SEM		
	Analog and Digital Electronics	Know the characteristics of various components
		Understand the utilization of components.
		Design and analyze small signal amplifier circuits.
		Know about the logic families and realization of logic gates.
CS302PC	Data Structures	Analyze linear data structures such as Linked list, Stack, and Queues for efficient data organizations and manipulations.(K4)
		Predict data structures such as hash tables and Dictionaries for storing the data.(K6)
		Analyze non linear data structures such as Trees and operations for storing the data. (K6)
		Evaluate non linear data structures such as Graphs and application of algorithms for sorting techniques. (K6) Compare the data structures such as Pattern Matching Algorithms for identify the data. (K3)
MA303BS	Computer Oriented Statistical Methods	Describe real-world statistical method.
		Explain binomial, geometric and poisson distribution to solve statistical prpbem.
		Apply the concept of probability and distribution to some case studies. Analyze the point and interval estimators for statistical data by using MS-Excel, SPSS, R, Python, SAS.

CS304PC	Computer Organization and Architecture	Memorize the representation of numbers stored in digital computers
		Apply the tools to design CPU using basic components
		Analyze different sizes of instruction formats like 8 bits, 16 bits and 32 bits.
		Evaluate the use of memory hierarchy for computer programming cost and performance.
CS305PC	Object Oriented Programming using C++	Explain concepts of object oriented Programming.
		Implement data abstraction in a given problem.
		Identify the difference among types of Inheritance.
		Use Exception Handling techniques to solve the errors in a given problem
CS307PC	Analog and Digital Electronics Lab	Develop Boolean Expressions using Gates
		Design logic gates using universal gates, full adder and subtractor.
		Design of convertors, registers using flipflops
		Design Asynchronous counters using flip-flops, Multiplexers and comparators
CS308PC	Data Structures Lab	Evaluate the performance of data structures by linked list.
		Analyze the solution of searching & sorting techniques.
		Apply graph traversal techniques on different data for tree structure.
CS309PC	IT Workshop Lab	Distinguish the performance between stacks & queues
		Rearrange computer assembling and software installation and solve trouble shooting problems.
		Make use of internet and World Wide Web
CS309PC	C++ Programming Lab	Utilize the internet, www and web browsers
		Apply the tools for documentation and tools for ppt, Budget sheet etc
		Implement Encapsulation concepts in a given Program
		Use Inheritance Concepts in a given Program
*MC309	Gender Sensitization Lab	Implement Exception Handling Techniques in a given Program
		Apply file operations on files in a given program
		Develop the important issues related to gender in contemporary India.
		Determine a finer grasp of how gender discrimination works in our society and how to counter it
II YEAR II SEM		
CS401PC	Discrete Mathematics	Create insight into the gendered division of labour and its relation to politics and economics.
		Develop a sense of appreciation of women in all walks of life.
		Solve and construct precise mathematical proofs
		Use logic and set theory to formulate precise statements
SM402MS	Business Economics & Financial Analysis	Analyze and solve counting problems on finite and discrete structures to describe and manipulate sequences
		Apply graph theory in solving computing problems
		Identify the various types of business entities in the market.
		Examine the Elasticity of Demand in decision making.
CS403PC	Operating Systems	Analyze the market structure for identifying the price- output relationship.
		Apply the knowledge of accounting principle for Financial Analysis.
		Apply optimization techniques for the improvement of system performance.
		Explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.
CS403PC	Operating Systems	Describe and extrapolate the interactions among the various components of computing systems
		Analyze OS components such as System calls, Schedulers, Memory management systems, Virtual Memory and Paging systems.
		Demonstrate the fundamentals of DBMS, database design and normal forms

CS404PC	Database Management Systems	Make use of SQL basics for retrieval and management of data.
		Summarize transaction processing and concurrency control.
		Recognize the database storage structures and access techniques
CS405PC	Java Programming	Solve real world problems using OOP techniques.
		Identify the use of Packages and Interface in java.
		Apply Exception handling Techniques in a given Problem
		Design GUI based applications and develop applets for web applications.
CS406PC	Operating Systems Lab	Develop application programs using system calls in Unix
		Implement interprocess communication between two processes
		Design and solve synchronization problems
CS407PC	Database Management Systems Lab	Implement and Simulate operating system concepts such as scheduling, deadlock management, file management
		Use database language commands to create simple database
		Analyze the database based on queries to retrieve records
		Applying PL/SQL for processing database
CS408PC	Java Programming Lab	Examine the front end tools to design forms, reports and menus
		Implement Encapsulation concepts in a given Program
		Use Inheritance Concepts in a given Program
		Design and Develop frontend and backend of an web application
		Implement classical problems using java programming
III YEAR I SEM		
CS501PC	Formal Languages & Automata Theory	Describe the concept of abstract machines and their power to recognize the languages.
		Construct finite state machines for modeling and solving computing problems.
		Design context free grammars for formal languages.
		Distinguish between decidability and undecidability.
CS502PC	Software Engineering	Identify the minimum requirements for the development of application.
		Identify and apply appropriate software architecture and patterns to carry out high level design of system.
		Develop, maintain efficient, reliable and cost effective software solutions.
CS503PC	Computer Networks	Criticize thinking and evaluate assumptions and arguments.
		Explain the basic computer network technology.
		Describe the functions of each layer in the OSI and TCP/IP reference model.
		Develop the skills of subnetting and routing mechanisms
CS504PC	Web Technologies	Identify the essential protocols of computer networks, and how they can be applied in network design and implementation.
		Analyze and solve common Web application tasks by writing PHP programs.
		Create XML DTD, Schema namespaces and XML parsers.
		Develop dynamic web pages using servlets and JSP.
CS513PE	Professional Elective - I (Data Analytics)	Apply and implement Client side scripting by using javascript.
		Demonstrate the impact of data analytics for business decisions and strategy
		Explain how to Carry out data analysis/statistical analysis, standard data visualization and formal inference procedures
		Develop Data Architecture
		Expain various Data Sources
	Professional	Describe theoretical and practical aspects of distributed database systems.

CS524PE	Elective -II (Distributed Databases)	Identify various issues related to the development of distributed database systems.
		Discuss the design aspects of object-oriented database systems and related development.
		Make use of a database to sustain distributed transaction.
CS525PE	Professional Elective -II (Natural Language)	Identify the syntax and semantics in NLP.
		Identify and implement various issues in NLP applications such as information retrieval and information extraction.
		Identify the complexity of speech and the challenges facing speech engineers
		Apply machine learning techniques used in NLP
CS505PC	Software Engineering Lab	Design a Modeling with UML
		Apply the knowledge of software engineering and project management
		Examine estimation about schedule and cost for project development
		Develop Architectural for software product
CS506PC	Computer Networks & Web Technologies	Apply the encryption and decryption concepts in Linux environment
		Design appropriate algorithm for the finding of shortest route.
		Configure the routing table.
EN508HS	Advanced Communication Skills Lab	Implement the case studies
		Use vocabulary and its contextually for writing
		Develop proficiency in academic reading and writing
		Develop the Communication confidently in formal and informal contexts
*MC510	Intellectual Property Rights	Apply behavioral skills for their personal and professional life
		Recognize the patent laws, patent and searching process
		Relating International cooperation on intellectual property
		Describe the patent rights and transfer of technology.
		Apply the techniques of interpretation and making scientific presentation
III YEAR II SEM		
CS601PC	Compiler Design	Explain the phases of compiler for any language
		Use lex and yacc tools for developing a scanner and a parser
		Apply and implement LL and LR parsers.
		Design algorithms to perform code optimization in order to improve the performance of a program
CS602PC	Web Technologies	Analyze and solve common Web application tasks by writing PHP programs.
		Create XML DTD, Schema namespaces and XML parsers
		Build dynamic web pages using servlets and JSp
CS603PC	Cryptography and Network Security	Design Client side scripting by using javascript
		Explain security concepts, ethics in network security.
		Recognise basic cryptographic algorithms and their vulnerability to various attacks.
		Identify information system requirements for both of them such as client and server.
CE6230E	Intellectual Property right(OE-II)	Illustrate the current legal issues towards information security, message and web
		Recognize the patent laws, patent and searching process
		Relating International cooperation on intellectual property
		Describe the patent rights and transfer of technology.
Artificial		Apply the techniques of interpretation and making scientific presentation
		Formulate an efficient problem space for a problem expressed in English.
		Select a search algorithm for a problem and characterize its time and space complexities.

CS615PE	IntelligencePE-I	Develop the skill for representing knowledge using the appropriate technique
		Apply AI techniques to solve problems of Game Playing, Expert Systems, Machine Learning and Natural Language Processing
CS615PE	Introduction to Analytics (Associate Analytics -	Implement the basics of R programming for Analytical Purpose
		Analyze the R-Programming summarized data
		Apply No SQL and Integrate Excel and R
		Demonstrate Models for Correlations and Regression
CS604PC	Cryptography and Network Security Lab	Build the cipher techniques
		Develop the various security algorithms
		Use different open source tools for network security and analysis
		Implement the case studies
CS605PC	Web Technologies Lab	Implement client-side technologies (XHTML, CSS, forms and Java Scripts)
		Create server-side technologies (Servlets and JSP) to implement dynamic websites.
		Develop simple back-end database to support a website, Recognize and evaluate website organizational structure and design elements.
		Apply an XML application.
EN606HS	Advanced English Communication Skills Lab	Use vocabulary and its contextually for writing
		Develop proficiency in academic reading and writing
		Develop the Communication confidently in formal and informal contexts
		Apply behavioral skills for their personal and professional life
IV YEAR I SEM		
CS701PC	Data Mining	Utilize the existing tool and perform data pre-processing
		Make use of association rules, classification and clusters in large data sets
		Solve real world problems in business and scientific information using data mining
		Classify web pages, extracting knowledge from the web
CS702PC	Principles of Programming Languages	Describe syntax and semantics in formal notation
		Apply suitable programming paradigm for the application.
		Use the features of various programming languages for software Development.
		Distinguish the programming paradigms of modern programming languages.
CS721PE	Python Programming PE-II	Use Python syntax semantics, Control flow statements and Built in Modules in handling File Systems and Exceptions. .
		Implement RES and Threading Module of Python for a given problem.
		Design interactive GUIs using the Tkinter Package and Web clients
		Build simple applications in Python by establishing Data base connectivity.
CS724PE	Internet of Things PE-II	Apply the concepts of IOT
		Evaluate protocols used in IOT devices
		Develop smart city through IOT
		Estimate the data received through sensors in IOT
CS734PE	Software Process and Project Management	Compare the model from the conventional software product to the modern.
		Formulate an efficient problem space for a problem expressed in English.
		Analyze software project organizations and metrics in project.
		Implement new approach of software development and next generation software
		Describe functionality of distributed system.

CS732PE	Distributed Systems PE-III	Design a new distributed system with the desired features.
		Compare different distributed system architecture and further research in any subarea.
		Develop new distribute applications.
CS743PE	Blockchain Technology PE-IV	Analyze the incentive structure in a blockchain based system and critically assess its functions, benefits and vulnerabilities
		Evaluate the setting where a blockchain based structure may be applied, its potential and its limitations
		Describe the differences between the most prominent blockchain structures
		Identify new challenges that exist in monetizing businesses around blockchains and smart contracts
CS742PE	Cloud Computing PE-IV	Apply the knowledge on computing paradigms through cloud computing.
		Analyze the basics of Cloud Computing on its characteristics and deployment models.
		Survey different infrastructure of Cloud computing based on its architecture and management.
		Create the service level agreement and management for several service models in cloud computing such as IAAS, PAAS, SAAS.
CS751PC	Python Programming Lab	Demonstrate the basic concepts scripting and the contributions of scripting language
		Use python especially the object oriented concepts, and the built in objects of Python.
		Create practical and contemporary applications such as TCP/IP network programming, Web applications, discrete event simulations
		Apply python programming for IOT
CS754PC	Internet of Things Lab	Create blocks of Internet of Things and its characteristics
		Use of IOT in Mobile Devices, Cloud & Sensor networks
		Develop Interfaces, and Programming for IOT Devices.
		Use Python programming for Logical Design of Internet of Things
CS703PC	Data Mining Lab	Develop mining algorithms as a component to the exiting tools
		Apply mining techniques for realistic data.
		Examine some real time applications and obtain the results using various Data Mining Algorithms.
		Use hands-on experience with some popular data mining software
CS705PC	Industry Oriented Mini Project	Create mini-projects in specified domain of CSE
		Develop software knowledge for industry projects
		Analyze the software project
		Design software product
CS706PC	Seminar	Develop an insight into modern technologies, tools and systems in the field of Computer Science and Engineering
		Analyze complex engineering problems and relevance to the society and industry.
		Design good communication skills and presentation skills
		Analyze advanced technology for software product
IV YEAR II SEM		
EE831OE	Entreprener Resource Planning(OE-III)	Implement the business benefits and methodologies of ERP.
		Analyze the Project Evaluation proposal for ERP
		Identify Quality Management skills for marketing
		Apply E-Business for ERP
CS852PE	Real-Time System	Develop concepts of Real-Time systems and modeling
		Recognize the characteristics of a real-time system
		Develop document on an architectural design of a real-time system
		Build and document Task scheduling, resource management, real-time operating systems

CS854PE	Modern Software Engineering	Classify the given project in various phases of a lifecycle
		Identify appropriate process model depending on the user requirements.
		Use various processes in all the phases of the product.
		Apply the knowledge, techniques, and skills in the development of a software product.
CS861PE	Advanced Algorithms	Analyse a variety of algorithms with practical applications and the resource requirements of each
		Determine the most suitable algorithm for any given task and then apply it to the problem.
		Demonstrate adequate comprehension of the theory of intractability and prove when certain kinds of problems are intractable.
		Use Advanced algorithm for real life problem
CS863PE	Computer Forencics	Utilize a systematic approach to computer investigation.
		Identify Locate & recover relevant electronic evidence from digital media using a variety of tools
		Analyze various data acquisition tools for collecting digital evidence.
		Identify email investigation
CS801PC	Major Projects	Identify the problem by acquired knowledge.
		Analyze executable project modules
		Design project modules for software product
		Test all the modules through effective team work.



HoD, CSE

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I MBA I SEMSTER

Course Objectives and Course Outcomes

19MBA01: Management & Organizational Behavior

Course Objectives: The course will help students to

1. To understand the managerial concepts and theories.
2. To interpret various types of plans and decision making styles.
3. To interpret the different organizational structures and types of controls.
4. To assess group dynamics.
5. To analyze different leadership and motivation theories.

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

CO1: Apply the gained knowledge of managerial concepts and theories.

CO2: Develop the suitable plans and decisions.

CO3: Identify the various organization structures and understand the control process.

CO4: Identify and evaluate the employee behavior at workplace.

CO5: Identify and critically assess assumptions that influence decisions and actions on management, leadership, teamwork and relationship building.

19MBA02: Business Economics

Course Objectives: The course will help students to

1. To explain the basic economic principles and the concepts of business economics.
2. To identify and analyze various determinants of demand and supply.
3. To simplify and establish relationship between production and associated costs.
4. To classify various market structures and determine the optimum price-output level.
5. To evaluate pricing methods and develop the suitable pricing strategy.

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

CO1: Make use of economic principles in business decision making process.

CO2: Estimate and predict the demand and supply through gained knowledge.

CO3: Evaluate and apply various production and cost concepts in business.

CO4: Compare the various market structures in order to determine the optimum price-output level.

CO5: Design various pricing strategies and adapt the suitable pricing strategy.

19MBA03: Financial Accounting and Analysis

Course Objectives: The course will help students to

1. To explain the Principles of Accounting and Accounting system.
2. To identify the accounting process based on the current practices.
3. To examine the inventory valuation methods.
4. To examine the changes in financial position and operating position.
5. To evaluate the financial statements.

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

CO1: Apply the gained knowledge on accounting concepts and principles.

CO2: Translate their understanding into practice of preparing financial statements.

CO3: Choose the optimum inventory valuation method as per requirements

CO4: Make use of funds flow statement in assessing the long range financial strategy and cash flow statement in understanding the short-term phenomena affecting the liquidity of the business.

CO5: Interpret the observations of financial state of business.

19MBA04: Research Methodology and Statistical Analysis

Course Objectives: The course will help students to

1. To identify and discuss the issues and concepts salient to the research process.
2. To identify and discuss the complex issues inherent in selecting a research problem, selecting an appropriate research design, and implementing a research study.
3. To classify the data according to attributes or numerical characteristics and differentiate between simple and manifold classification of data
4. To examine the strength of relationship between interpreting variables in the research studies.
5. To develop and present a good research report.

Course outcomes: After the completion of the course students will be able to

CO1: Explain key research concepts and issues in research.

CO2: Choose appropriate research design and conduct research studies.

CO3: Create and develop representation of data in tabular form and graphical form.

CO4: Identify and evaluate the applications of variables relationship measuring tools like ANOVA, Chi-square, Correlation and Regression.

CO5: Construct research studies and make an excellent research report.

19MBA05: Legal and Business Environment

Course Objectives: The course will help students to

1. To explain the procedure for incorporation of company and various types of meetings.
2. To illustrate the various elements of Contract and sale of Goods Act.
3. To utilize the different types of negotiable instruments.
4. To identify the necessary business reforms and its application in industrial policies.
5. To make use of consumer protection act and application of IPR.

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

CO1: Analyze the Companies Act and various types of meetings.

CO2: Apply the various elements of Contract and sale of Goods Act.

CO3: Prioritize the importance of negotiable instruments.

CO4: Adapt suitable business reforms to make use of industrial policies.

CO5: Justify the importance of consumer protection act and application of IPR.

19MBA06A: Business Ethics and Corporate Governance

Course Objectives: The course will help students to

1. To explain business ethics and principles.
2. To compile code of ethics required to be inculcated in a profession.
3. To identify the course and committees recommendations in corporate governance.
4. To realize role of the board in corporate governance.
5. To analyze corporate social responsibility.

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

CO1: Identify the use of ethics in business environment.

CO2: Realize and assimilate importance of professional ethics while working in an organization.

CO3: Apply the codes and committees recommendations in corporate governance.

CO4: Identify the role of the board in corporate governance.

CO5: Support the initiation of CSR utility in business decisions.

19MBA06B: Project Management

Course Objectives: The course will help students to

1. To explain the concept of project management and its application in various sectors.
2. To outline the various facets of project planning taking into an account to estimate various cost and risk factors.
3. To apply the knowledge of project finance and various techniques of capital budgeting.
4. To demonstrate the various control techniques used in the management of projects.
5. To choose the organizational structure and different management techniques.

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

CO1: Make use of the basic knowledge of project management into business applications.

CO2: Classify the various facets of project planning taking into an account to estimate various cost and risk factors.

CO3: Evaluate the knowledge of project finance, various techniques of capital budgeting and their applications.

CO4: Compare the various control techniques used in the management of projects.

CO5: Justify the organizational structure and different management techniques in project management.

19MBA06C: Technology Management

Course Objectives: The course will help students to

1. To identify the need and the process that drive technological innovation.
2. To explain the evolution and the collaborative arrangements in technology strategy.
3. To develop research that helps in the deployment of technology.
4. To analyze technological forecasting that helps in decision making.
5. To apply technological intelligence for mapping the technology environment.

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

CO1: Evaluate the need and the process that contributes to technological innovation.

CO2: Assess the evolution, the designing of collaborative arrangements in implementing the technology strategy.

CO3: Build the research process which helps in the development of competitive strategy in making business decisions.

CO4: Interpret the forecasting system inputs, outputs and techniques that help in decision making.

CO5: Develop technological intelligence for mapping the technology environment.

19MBA06D: Cross Cultural Management

Course Objectives: The course will help students to

1. To illustrate the various facets of culture and their influence on business.
2. To examine the value orientations and dimensions of culture.
3. To infer the various corporate structures.
4. To identify the business communication across cultures and the barriers to intercultural communication.
5. Summarize cross-cultural team management and developing inter cultural relationships.

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

CO1: Analyze the various facets of culture and their influence on business.

CO2: Determine the value orientations and dimensions of culture in order to use them in management contexts.

CO3: Analyze the various corporate structures in formulating the suitable business strategy.

CO4: Importance of business communication to overcome the barriers while interacting globally.

CO5: Develop management teams to deal with cross-cultural and inter cultural relationships.

19MBA07: Business Communications Lab

Course Objectives: The course will help students to

1. Classify the various business communication skills and its importance.
2. Demonstrate the writing and drafting skills required by the various businesses.
3. Summarize the concept of business reports and business proposals.
4. Identify the framing of the content for presentation.
5. Examine Business etiquette, Cross Cultural and Global Communication.

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

CO1: Develop the gained business communication skills.

CO2: Relate the writing and drafting skills in business decisions.

CO3: Analyze various business reports and business proposals.

CO4: Interpret employment communication and presentation skills.

CO5: Build and incorporate business etiquette to meet cross cultural and global communication needs.

19MBA08: Statistical Data Analysis Lab

Course Objectives: The course will help students to

1. To enable the students to make use of MS-Excel work sheets for business problem solving.
2. To construct the data and manipulating data using menu bar options.
3. To summarize the manipulated data using tabulation and graphs.
4. To illustrate the measures of central tendency.
5. To apply various statistical tools and its importance in measuring relationship between variables.

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

CO1: Illustrate the practices for scalable and reliable Excel based reporting and analysis solutions.

CO2: Make use of menu bar functions in worksheet for effective work outcomes.

CO3: Interpret the data and represent the data in tabulation and graphical form.

CO4: Infer the results of measures of central tendency for better representation of data in research studies.

CO5: Select the suitable statistical tool for better representation of data analytical results and interpretation.


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II MBA I SEMSTER

Course Objectives and Course Outcomes

19MBA16: PRODUCTION AND OPERATIONS MANAGEMENT:

Course Objectives: The course will help students

1. To analyze product design and concepts for optimum decision making.
2. To explain plant location and different plant layouts.
3. To analyze scheduling procedure for quality control.
4. To identify material management techniques to minimize the cost and maximize the returns of firm.
5. To explain the material management.

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

CO1: Identify the elements of production and operation management various transformation process to enhance process productivity and competitiveness.

CO2: Explain Product design and process design.

CO3: Analyse and evaluate various facility location alternatives.

CO4: Explain scheduling to ascertain machine idle time.

CO5: Analyze various techniques of Inventory Management to maintain optimum level of stock.

19MBA17: MANAGEMENT INFORMATION SYSTEM:

Course Objectives: The course will help students to

1. Explain the information systems in the organisation.
2. Analyze the various aspects of information systems.
3. Explain Management of information system.
4. Analyze the new approaches for system building in the digital firm era.
5. Explain the concepts of Cyber Crime in E Business.

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

CO1: Examine the concepts of Information System in Business.

CO2: Evaluate various aspects of management information systems.

CO3: Apply various models of Management Information System.

CO4: Explain the new approaches for system building in the digital firm era.

CO5: Evaluate the security measures to control cyber crime.

19MBA18: DATA ANALYTICS:

Course Objectives: The course will help students

1. To identify the importance of analytics and representation of data.
2. To classify the data using measures, data modeling and data filtering.
3. To determine the various statistical tools while analyzing data for the effective prediction.
4. To list the appropriate approaches in data mining.
5. To List the relevant simulation analysis for the business decisions.

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

CO1: Construct data roadmap for representation of data using data analytics.

CO2: Examine the measures of data, data modeling and data filtering.

CO3: Estimate the suitable performance management system for the development of employee.

CO4: Select the suitable approach in the process of data mining.

CO5: Examine the data and representing the data using suitable simulation method for effective decisions.

19MBA19M1: DIGITAL MARKETING:

Course Objectives: The course will help students to

- 1 Apply digital marketing concepts and digital marketing trends.
2. Examine various channels of digital marketing in digital era.
3. Analyze various plans in digital marketing.
4. Explain payment methods of online advertising and its importance.
5. Analyze social media marketing in current scenario.

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

CO1: Analyze the concepts of digital marketing and its trends.

CO2: Evaluate various channels of digital marketing in digital era.

CO3: Evaluate the elements of digital marketing plans.

CO4: Evaluate online advertising and traditional advertising.

CO5: Explain the importance of social media marketing.

19MBA19M12: ADVERTISING & SALES MANAGEMENT:

Course Objectives: The course will help students

1. Explain various types, functions of Advertising and Principles of Advertising Layout.
2. Examine the various types of media.
3. Identify the various functions of sales management.
4. Apply the Sales Promotion concepts and Strategies to improve sales.
5. Explain sales distribution in the market.

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

CO1: Apply the various concepts of Advertising and elements of Advertising Layout.

CO2: Evaluate different types of Media and various methods of setting Advertising Budget.

CO3: Apply the various functions of Sales Management.

CO4: Explain the various types of Sales Promotion, Legal and Ethical aspects of Sales Promotion.

CO5: Analyze various distribution channels and **evaluate** various channel members.

19MBA21M3: CONSUMER BEHAVIOUR:

Course Objectives: The course will help students

1. Explain the Consumer Research process segmentation, Targeting and Positioning.
2. Interpret the various environmental Influences on Consumer Behaviour.
3. Apply the various concepts of Consumer Behaviour.
4. Analyze Consumer Decision Making Process.
5. Explain Marketing Ethics towards Consumers.

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

CO1: Apply the gained knowledge of Consumer Research process segmentation, Targeting and Positioning Strategies.

CO2: Analyze various environmental Influences on Consumer Behaviour.

CO3: Examine the concepts of Personality, Motivation, perception and Learning.

CO4: Evaluate the various processes involved in Consumer Decision Making.

CO5: Apply the concepts of Consumerism and Ethics in Consumer Behaviour.

19MBA19F1 SECURITY ANALYSIS AND PORTFOLIO MANAGEMENT:

Course Objectives: The course will help students

1. Classify the different type's investments available in the market.
2. Estimate the Risk and Return of different kind of portfolios.
3. List the different types of bonds and Measure the bond yields.
4. Evaluate the performance of equity shares.
5. Classify the derivatives and mutual fund schemes.

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

CO1: Identify the Investment Avenues available for Investors.

CO2: Evaluate the performance of Portfolio for better decision making.

CO3: Examine the types of bonds and theories.

CO4: Analyse the markets with the help of Fundamental and Technical Analysis.

CO5: Examine the performance of Mutual Funds and take a decision.

19MBA20F2: FINANCIAL INSTITUTIONS, MARKETS & SERVICES:

Course Objectives: The course will help students

1. To Explain the Structure of Financial System.
2. To Analyze the Banking and Non- Banking Institutions.
3. To Identify the various types of securities.
4. To Examine Lease Finance Systems in current scenario.
5. To Analyze Fee based or Advisory Services.

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

CO1: Identify Financial Institutions in Financial System.

CO2: Evaluate Structure of Commercial banks and Non Banking Financial Institutions.

CO3: Explain various types of securities.

CO4: Evaluate various types of lease to take optimum decisions.

CO5: Evaluate various types of Services in Investment Banking.

19MBA21F3: STRATEGIC MANAGEMENT ACCOUNTING:

Course Objectives: The course will help students

1. To analyse the various types of Accounting and costs.
2. To apply various methods of Costing.
3. To evaluate Marginal costing Applications.
4. To analyse Break Even Analysis.
5. To identify various types of budgets and analyse different kinds of variances.

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

CO1: Explain the various types of Accounting and costs.

CO2: Determine cost of production at every stage to control the cost.

CO3: Evaluate the marginal costing for making decisions.

CO4: Estimate future profits and sales.

CO5: Explain budgets and variance.

19MBA19H 1 PERFORMANCE MANAGEMENT SYSTEM:

Course Objectives: The course will help students

1. To identify the essence of performance management.
2. To inspect the communication of performance management.
3. To apply the performance management practice for developing the employee.
4. To compare and select the appropriate reward system.
5. To List the relevant concepts and it's add –on to employee performance.

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

CO1: Select the suitable performance management strategy for implementing PMS at workplace.

CO2: Examine the communication of performance management.

CO3: Build the suitable performance management system for the development of employee.

CO4: Evaluate initiated reward system and develop suitable reward system by bring necessary changes in the exiting.

CO5: Examine the relevant concepts of performance for improving the knowledge scope of employees at work.

19MBA20H2: LEARNING & DEVELOPMENT:

Course Objectives: The course will help students to

1. Analyze the theories and process of learning.
2. Evaluate Training strategy and designing training.
3. Explain training methods.
4. Examine employee development and formal education assessment.
5. Evaluate Contemporary issues in Training and development.

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

CO1: Examine the learning process and phases in learning.

CO2: Apply assessment of training needs in the present scenario.

CO3: Examine e-learning and use of technology in training.

CO4: Evaluate various approaches to employee development.

CO5: Explain various training methods to control Contemporary issues.

19MBA21H3: MANAGEMENT OF INDUSTRIAL RELATIONS:

Course Objectives: The course will help students to

- The current and emerging industrial relations, trends and their impact on the parties, processes and rules of Indian industrial relations.
- Acquainted with the concepts, principles and issues connected with trade unions, collective bargaining, grievance redressal, and employee discipline and dispute resolution.
- Important provisions of Wage Legislations, in reference to Payment of wages Act 1936, Factories act 1948 & Payment of bonus Act 1965
- The legal norms regulating employment contract, labor relations and the rights and

obligations of employees and employers

- **Extend** the safe practices of working under the provisions of mine rules and regulations at the workplace.

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

- **Evaluate** the key processes of industrial relations at the workplace level and their relationships to the institutions.
- **Explain** the basic framework for industrial relations including the mechanics of the grievance process and collective bargaining.
- **Demonstrate** the administration of collective bargaining agreement through the grievance and arbitration process.
- **Summarize** wage policy and minimum wage issues of India and help to contribute the design, setting and implementation of wage policies at the national and state level.
- **Apply** the factories Act rules and regulations to ensure to the workers employed in the factories, health, safety, welfare, proper working hours, leave and other benefits.


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