

**Course Outcomes: Students should be able to**  
**First Year (FE) Computer Engineering (Curriculum 2015 Pattern)**

**Semester-I**

<b>Subject</b>	<b>Engineering Mathematics -I</b>
<b>Subject Code</b>	<b>CE 101 (107001)</b>
<b>Course Outcome (COs)</b>	
CE 101.1	Understand the concepts of matrices that serve as an essential basis for several computational techniques.
CE 101.2	Understand and solve algebraic and transcendental equations.
CE 101.3	Acquire the knowledge of infinite series, Taylor series & Malaren's series, Understand and determine the convergence of series
CE 101.4	Apply the knowledge of series expansions of functions
CE 101.5	Prove the results of partial differentiation. Apply partial differentiation for evaluating and proving the results.
CE 101.6	Apply Jacobian for evaluating and proving the results based on Errors and approximations, Maxima and minima.

<b>Subject</b>	<b>Engineering Physics</b>
<b>Subject Code</b>	<b>CE 102 (107002)</b>
<b>Course Outcome (COs)</b>	
CE 102.1	Students are enabled to derive the diffraction grating formula.
CE 102.2	Students are capable to Calculate the reverberation tiCE of a room and suggest how to design a room with optimal reverberation time
CE 102.3	Students will be able to explain working principle of lasers.
CE 102.4	Ability to estimate the charge carrier mobility and density in intrinsic & extrinsic Semiconductor, PN Junction diode
CE 102.5	Students are capable to calculate the wavelength of a particle as a function of its momentum.
CE 102.6	Ability to explain different methods of growth and synthesis of nana particles and its application in Engineering.

<b>Subject</b>	<b>Engineering Graphics I</b>
<b>Subject Code</b>	<b>CE 103(102006)</b>
<b>Course Outcome (COs)</b>	
CE 103.1	Students will be able to develop the manual drawing skill, drawing interpretation skill.
CE 103.2	Students will be able to develop the physical realization of the dimension & views of the objects.
CE 103.3	Student will be able to develop imagination of Physical Objects to be represented on paper for Engineering Communication.

<b>Subject</b>	<b>Basic Electrical Engineering</b>
<b>Subject Code</b>	<b>CE 104(103004)</b>
<b>Course Outcome (COs)</b>	
CE 104.1	Relation between Voltage and Current
CE 104.2	Energy conversions
CE 104.3	Direction of Induced emf
CE 104.4	Transform of energy
CE 104.5	Understanding of a pure parameter
CE 104.6	Concept of three phase supply
CE 104.7	Response of element is identical with various sources

<b>Subject</b>	<b>Basic Civil &amp; Environmental Engineering</b>
<b>Subject Code</b>	<b>CE 105(101005)</b>
<b>Course Outcome (COs)</b>	
CE 105.1	Understand the scientific terminologies related to civil engineering
CE 105.2	Familiarize with different components, equipment and technical of civil engineering materials of construction
CE 105.3	Describe the structure and function of an ecosystem.
CE 105.4	Explains the concept of built environment and its importance
CE 105.5	Explain the causes, effects and control measures of various types of pollutions.

<b>Subject</b>	<b>Fundamental of programming language -I</b>
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<b>Subject Code</b>	<b>CE 106(110003)</b>
<b>Course Outcome (COs)</b>	
CE 106.1	To learn & acquire art of computer programming.
CE 106.2	computer.
CE 106.3	To learn basics of Programming in C

<b>Subject</b>	<b>Workshop Practice</b>
<b>Subject Code</b>	<b>CE 107(102006)</b>
<b>Course Outcome (COs)</b>	
CE 107.1	Introduction to different material in engineering practices with respect to their workability, formability & machinability with hand tools & power & to develop skills through hands on experience.

## Semester-II

<b>Subject</b>	<b>Engineering Mathematics II</b>
<b>Subject Code</b>	<b>CE 108(107008)</b>
<b>Course Outcome (COs)</b>	
CE 108.1	Solve the differential equations by choosing proper method of solution.
CE 108.2	Solve the problems on orthogonal trajectories, simple electrical circuits, and heat flow by applying the methods of Ordinary differential Equations.
CE 108.3	Apply the properties of special functions to evaluate integral.
CE 108.4	Apply the properties of special functions to evaluate integral. Sketch the curve with full justification.
CE 108.5	Demonstrate knowledge and understanding of plane and solid geometry & use geometrical skills to solve simple real-world problems
CE 108.6	Evaluate double integral and change the order of the integration. Evaluate area bounded between two curves, mass of Lamina, moment of inertia.

<b>Subject</b>	<b>Engineering Chemistry</b>
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<b>Subject Code</b>	<b>CE 109(107009)</b>
<b>Course Outcome (COs)</b>	
CE 109.1	Technology involved in improving quality of water for its industrial use.
CE 109.2	Basic concepts of electro analytical techniques that facilitate rapid and reliable measurements.
CE 109.3	To lay foundation for application the applications of polymers for specific applications and as composite materials.
CE 109.4	Study of fossil fuel and derived fuels with its properties and applications.
CE 109.5	An insight into carbon and hydrogen compounds with aspects of modern chemistry.
CE 109.6	The principles of chemical and electrochemical reactions causing corrosion and methods used for minimizing the corrosion.

<b>Subject</b>	<b>Basic Computer Engineering</b>
<b>Subject Code</b>	<b>CE 110(102013)</b>
<b>Course Outcome (COs)</b>	
CE 110.1	This Course will help the students to acquire knowledge of Computer engineering.
CE 110.2	Describe the scope of Computer engineering with multidisciplinary industries.
CE 110.3	Understand & identify common machine element with their functions & power transmission deviMEs.
CE 110.4	Learn conventional machine tools & understand the concept of design in Computer engineering.
CE 110.5	Impart knowledge of basic concept of thermodynamics applied to industrial applications.
CE 110.6	Understand lying principles of energy conversion system & power plant.

<b>Subject</b>	<b>Engineering Mechanics</b>
<b>Subject Code</b>	<b>CE 111(101011)</b>
<b>Course Outcome (COs)</b>	
CE 111.1	Apply fundamental knowledge of mathematics, science, and engineering.
CE 111.2	Design and conduct mechanics experiments.
CE 111.3	Analyze and interpret experimental and computational mechanics data
CE 111.4	Design a system, component or process to meet desired needs by synergistically combining mechanics of materials, fluid
CE 111.5	Identify, formulate, and solve engineering problems involving mechanics of rigid bodies.
CE 111.6	Effectively function as a member of multi-disciplinary technical team and engage in life-long learning.

<b>Subject</b>	<b>Basic Electronics Engineering</b>
<b>Subject Code</b>	<b>CE 112(104012)</b>
<b>Course Outcome (COs)</b>	
CE 112.1	Get knowledge of some basic electronic components and circuits
CE 112.2	Understand basics of diodes and transistor circuits
ME 112.3	Understand working of some IC based circuits
CE 112.4	Analyze the logic gates and their usage in digital circuits
CE 112.5	Expose the students to working of some power electronics devices, transducers and application of transducers
CE 112.6	Understand the basic aspect of electronic communication systems

<b>Subject</b>	<b>Fundamental of programming language -II</b>
<b>Subject Code</b>	<b>CE 113(110010)</b>
<b>Course Outcome (COs)</b>	
CE 113.1	To learn & acquire art of computer programming.
CE 113.2	computer.
CE 113.3	To learn basics of Programming in C , Advanced Programming.

<b>Subject</b>	<b>Engineering Graphics II</b>
<b>Subject Code</b>	<b>CE 114(102006)</b>
<b>Course Outcome (COs)</b>	
CE 114.1	Students will be able to develop the computerized drawing skill, drawing interpretation skill.
CE 114.2	Students will be able to develop the physical realization of the dimension & views of the objects.
CE 114.3	Student will be able to develop imagination of Physical Objects to be represented on software.

**Course Outcomes: Students should be able to**

## Second Year Computer Engineering (SE) (Curriculum 2015 Pattern)

### Semester-I

<b>Subject</b>	<b>Discrete Mathematics</b>
<b>Subject Code</b>	CE 201(210241)
<b>Course Outcome (COs)</b>	
CE 201.1	Solve real world problems logically using appropriate set, function, and relation models and interpret the associated operations and terminologies in context.
CE 201.2	Analyze and synthesize the real world problems using discrete mathematics.

<b>Subject</b>	<b>Digital Electronics &amp; Logic Design</b>
<b>Subject Code</b>	CE 202(210242)
<b>Course Outcome (COs)</b>	
CE 202.1	Realize and simplify Boolean Algebraic assignments for designing digital circuits using KMaps
CE 202.2	Design and implement Sequential and Combinational digital circuits as per the specifications.
CE 202.3	Apply the knowledge to select the logic families IC packages as per the design specifications.
CE 202.4	Design the minimum systems using VHDL.
CE 202.5	Develop minimum embedded system for simple real world application

<b>Subject</b>	<b>Data Structures and Algorithms</b>
<b>Subject Code</b>	CE 203(210243)
<b>Course Outcome (COs)</b>	
CE 203.1	To discriminate the usage of various structures in approaching the problem solution.

CE 203.2	To design the algorithms to solve the programming problems.
CE 203.3	To use effective and efficient data structures in solving various Computer Engineering domain problems.
CE 203.4	To analyze the problems to apply suitable algorithm and data structure.
CE 203.5	To use appropriate algorithmic strategy for better efficiency

<b>Subject</b>	<b>Computer Organization and Architecture</b>
<b>Subject Code</b>	CE 204(210244)
<b>Course Outcome (COs)</b>	
CE 204.1	Understand the basic concepts and properties of Material.
CE 204.2	Understand about material fundamental and processing.
CE 204.3	Select proper metal, alloys, nonmetal and powder metallurgical component for specific requirement
CE 204.4	Detect the defects in crystal and its effect on crystal properties.
CE 204.5	Evaluate the different properties of material by studying different test
CE 204.6	Recognize how metals can be strengthened by cold-working and hot working

<b>Subject</b>	<b>Computer Aided Machine Drawing</b>
<b>Subject Code</b>	CE 205(202042)
<b>Course Outcome (COs)</b>	
CE 205.1	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os
CE 205.2	Analyze the principles of computer architecture using examples drawn from commercially available computers
CE 205.3	Evaluate various design alternatives in processor organization

<b>Subject</b>	<b>Object Oriented Programming</b>
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<b>Subject</b>	<b>Object Oriented Programming</b>
<b>Subject Code</b>	<b>CE 206(210245)</b>
<b>Course Outcome (COs)</b>	
CE 206.1	Analyze the strengths of object oriented programming
CE 206.2	Design and apply OOP principles for effective programming
CE 206.3	Develop programming application using object oriented programming language C++
CE 206.4	Percept the utility and applicability of OOP

<b>Subject</b>	<b>Audit Course 1 AC1-IV: Smart Cities</b>
<b>Subject Code</b>	<b>CE 207(210250)</b>
<b>Course Outcome (COs)</b>	
CE 207.1	Better understanding of the dynamic behavior of the urban system by going beyond the physical appearance and by focusing on representations, properties and impact factors
CE 207.2	Exploration of the city as the most complex human-made organism with a metabolism that can be modeled in terms of stocks and flows
CE 207.3	Knowledge about data-informed approaches for the development of the future city, based on crowd sourcing and sensing
CE 207.4	Knowledge about the latest research results in for the development and management of future cities
CE 207.5	Understanding how citizens can benefit from data-informed design to develop smart and responsive cities

<b>Semester-II</b>
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<b>Subject</b>	<b>Engineering Mathematics III</b>
<b>Subject Code</b>	<b>CE 208(207003)</b>
<b>Course Outcome (COs)</b>	
CE 208.1	Solve higher order linear differential equation using appropriate techniques for modeling and analyzing electrical circuits.
CE 208.2	Solve problems related to Fourier transform, Z-Transform and applications to Signal and Image processing



CE 208.3	Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence.
CE 208.4	Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals. Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital filters and Computer graphics.

<b>Subject</b>	<b>Computer Graphics</b>
<b>Subject Code</b>	<b>CE 209(210251)</b>
<b>Course Outcome (COs)</b>	
CE 209.1	Apply mathematics and logic to develop Computer programs for elementary graphic operations
CE 209.2	Develop scientific and strategic approach to solve complex problems in the domain of Computer Graphics
	Develop the competency to understand the concepts related to Computer Vision and Virtual reality
CE 209.3	Apply the logic to develop animation and gaming programs

<b>Subject</b>	<b>Advanced Data Structures</b>
<b>Subject Code</b>	<b>CE 210(210252)</b>
<b>Course Outcome (COs)</b>	
CE 210.1	To apply appropriate advanced data structure and efficient algorithms to approach the problems of various domain
CE 210.2	To design the algorithms to solve the programming problems.
CE 210.3	To use effective and efficient data structures in solving various Computer Engineering domain problems
CE 210.4	To analyze the algorithmic solutions for resource requirements and optimization
CE 210.5	To use appropriate modern tools to understand and analyze the functionalities confined to the data structure usage.

<b>Subject</b>	<b>Microprocessor</b>
<b>Subject Code</b>	<b>CE 211(210253)</b>

<b>Course Outcome (COs)</b>	
CE 211.1	To apply the assembly language programming to develop small real life embedded application.
CE 211.2	To understand the architecture of the advanced processor thoroughly to use the resources for programming
CE 211.3	To understand the higher processor architectures descended from 80386 architecture

<b>Subject</b>	<b>Principles of Programming Languages</b>
<b>Subject Code</b>	<b>CE 212(210254)</b>
<b>Course Outcome (COs)</b>	
CE 212.1	To analyze the strengths and weaknesses of programming languages for effective and efficient program development.
CE 212.2	To inculcate the principles underlying the programming languages enabling to learn new programming languages
CE 212.3	To grasp different programming paradigms
CE 212.4	To use the programming paradigms effectively in application development.

<b>Subject</b>	<b>Audit Course 2 AC2-II: Intellectual Property Rights and Patents</b>
<b>Subject Code</b>	<b>CE 2013(210258)</b>
<b>Course Outcome (COs)</b>	
CE 213.1	Understand the fundamental legal principles related to confidential information, copyright, patents, designs, trademarks and unfair competition
CE 213.2	Identify, apply and assess principles of law relating to each of these areas of intellectual property
CE 213.3	Apply the appropriate ownership rules to intellectual property you have been involved in creating

**Course Outcomes: Students should be able to**

**Third Year Computer Engineering (TE) (Curriculum 2015 Pattern)**

## Semester-I

<b>Subject</b>	<b>Theory of Computation</b>
<b>Subject Code</b>	<b>CE 301(310241)</b>
<b>Course Outcome (COs)</b>	
CE 301.1	Design deterministic Turing machine for all inputs and all outputs
CE 301.2	Subdivide problem space based on input subdivision using constraints
CE 301.3	Apply linguistic theory

<b>Subject</b>	<b>Database Management Systems</b>
<b>Subject Code</b>	<b>CE 302(310242)</b>
<b>Course Outcome (COs)</b>	
CE 302.1	Design E-R Model for given requirements and convert the same into database tables.
CE 302.2	Use database techniques such as SQL & PL/SQL.
CE 302.3	Use modern database techniques such as NOSQL.
CE 302.4	Explain transaction Management in relational database System.
CE 302.5	Describe different database architecture and analyses the use of appropriate architecture in real time environment.
CE 302.6	Use advanced database Programming concepts

<b>Subject</b>	<b>Software Engineering and Project Management</b>
<b>Subject Code</b>	<b>CE 303(310243)</b>
<b>Course Outcome (COs)</b>	
CE 303.1	Decide on a process model for a developing a software project .
CE 303.2	Classify software applications and Identify unique features of various domains
CE 303.3	Design test cases of a software system.
CE 303.4	Understand basics of IT Project management
CE 303.5	Plan, schedule and execute a project considering the risk management.

CE 303.6 Apply quality attributes in software development life cycle.

<b>Subject</b>	<b>Information Systems and Engineering Economics</b>
<b>Subject Code</b>	<b>CE 303(310244)</b>
<b>Course Outcome (COs)</b>	
CE 303.1	Understand the need, usage and importance of an Information System to an organization.
CE 303.2	Understand the activities that are undertaken while managing, designing, planning, implementation, and deployment of computerized information system in an organization
CE 303.3	Further the student would be aware of various Information System solutions like ERP, CRM, Data warehouses and the issues in successful implementation of these technology solutions in any organizations
CE 303.4	Outline the past history, present position and expected performance of a company engaged in engineering practice or in the computer industry.
CE 303.5	Perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.
CE 303.6	Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.

<b>Subject</b>	<b>Computer Networks</b>
<b>Subject Code</b>	<b>CE 304(310245)</b>
<b>Course Outcome (COs)</b>	
CE 304.1	Analyze the requirements for a given organizational structure to select the most appropriate networking architecture, topologies, transmission mediums, and technologies .
CE 304.2	Demonstrate design issues, flow control and error control
CE 304.3	Analyze data flow between TCP/IP model using Application, Transport and Network Layer Protocols.
CE 304.4	Illustrate applications of Computer Network capabilities, selection and usage for various sectors of user community.
CE 304.5	Illustrate Client-Server architectures and prototypes by the means of correct standards and technology
CE 304.6	Demonstrate different routing and switching algorithms

<b>Subject</b>	<b>Skill Development Lab</b>
<b>Subject Code</b>	<b>CE 305(310246)</b>
<b>Course Outcome (COs)</b>	
CE 305.1	Evaluate problems and analyze data using current technologies in a wide variety of business and organizational contexts.
CE 305.2	Create data-driven web applications
CE 305.3	Incorporate best practices for building applications
CE 305.4	Employ Integrated Development Environment(IDE) for implementing and testing of software solution
CE 305.5	Construct software solutions by evaluating alternate architectural patterns

### Semester-II

<b>Subject</b>	<b>Design and Analysis of Algorithms</b>
<b>Subject Code</b>	<b>CE 306(310250)</b>
<b>Course Outcome (COs)</b>	
CE 306.1	Formulate the problem
CE 306.2	<i>Analyze the asymptotic performance of algorithms</i>
CE 306.3	<i>Decide and apply algorithmic strategies to solve given problem</i>
CE 306.4	Find optimal solution by applying various methods

<b>Subject</b>	<b>Systems Programming and Operating System</b>
<b>Subject Code</b>	<b>CE 307(310251)</b>
<b>Course Outcome (COs)</b>	
CE 307.1	Analyze and synthesize system software
CE 307.2	Use tools like LEX & YACC
CE 307.3	Implement operating system functions.

<b>Subject</b>	<b>Embedded Systems and Internet of Things</b>
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<b>Subject Code</b>	<b>CE 308(310252)</b>
<b>Course Outcome (COs)</b>	
CE 308.1	Implement an architectural design for IoT for specified requirement
CE 308.2	Solve the given societal challenge using IoT
CE 308.3	Choose between available technologies and devices for stated IoT challenge

<b>Subject</b>	<b>Software Modeling and Design</b>
<b>Subject Code</b>	<b>CE 309(310253)</b>
<b>Course Outcome (COs)</b>	
CE 309.1	Analyze the problem statement (SRS) and choose proper design technique for designing webbased/ desktop application
CE 309.2	Design and analyze an application using UML modeling as fundamental tool
CE 309.3	Apply design patterns to understand reusability in OO design
CE 309.4	Decide and apply appropriate modern tool for designing and modeling
CE 309.5	Decide and apply appropriate modern testing tool for testing web-based/desktop application

<b>Subject</b>	<b>Web Technology</b>
<b>Subject Code</b>	<b>CE 310(310254)</b>
<b>Course Outcome (COs)</b>	
CE 310.1	Analyze given assignment to select sustainable web development and design methodology
CE 310.2	Develop web based application using suitable client side and server side web technologies
CE 310.3	Develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management

<b>Subject</b>	<b>Seminar and Technical Communication</b>
<b>Subject Code</b>	<b>CE 311(310255)</b>
<b>Course Outcome (COs)</b>	

CE 311.1	Be able to be familiar with basic technical writing concepts and terms, such as audience analysis, jargon, format, visuals, and presentation.
CE 311.2	Be able to improve skills to read, understand, and interpret material on technology.
CE 311.3	Improve communication and writing skills

<b>Subject</b>	<b>Audit Course 4</b>
<b>Subject Code</b>	<b>CE 312(310259)</b>
<b>Course Outcome (COs)</b>	
CE 312.1	Understand the concept of green IT and relate it to sustainable development.
CE 312.2	Apply the green computing practices to save energy.
CE 312.3	Discuss how the choice of hardware and software can facilitate a more sustainable operation
CE 312.4	Use methods and tools to measure energy consumption

<b>Subject</b>	<b>Audit Course 3</b>
<b>Subject Code</b>	<b>CE 313(310249)</b>
<b>Course Outcome (COs)</b>	
CE 313.1	Compare the interrelationships among security roles and responsibilities in a modern
CE 313.2	Information-driven enterprise—to include interrelationships across security domains (IT, physical, classification, personnel, and so on)
CE 313.3	Assess the role of strategy and policy in determining the success of information security
CE 313.4	Estimate the possible consequences of misaligning enterprise strategy, security policy, and security plans;
CE 313.5	Analysis and comprehension of proof-of-concept and related data.
CE 313.6	Effective presentation and improve soft skills.
CE 313.7	Make use of new and recent technology (e.g. Latex) for creating technical reports

**Course Outcomes: Students should be able to**  
**Final Year Computer Engineering (BE) (Curriculum 2012 Pattern)**

**Semester-I**

<b>Subject</b>	<b>Design and Analysis of Algorithms</b>
<b>Subject Code</b>	<b>CE 401(410441)</b>
<b>Course Outcome (COs)</b>	
CE 401.1	To survey algorithmic strategies give presentations using open source documentation tools like Latex and soft skill methodologies.
CE 401.2	To write mathematical modeling of algorithms for problem solving.
CE 401.3	To develop SRS in the UG projects;
CE 401.4	To solve problems for multi-core or distributed or concurrent/Parallel/Embedded environments;

<b>Subject</b>	<b>Principles of Modern Compiler Design</b>
<b>Subject Code</b>	<b>CE 402(410442)</b>
<b>Course Outcome (COs)</b>	
CE 402.2	To write symbol tables, different types of grammars to solve problem of parsing.
CE 402.3	To design and write simple compiler using FOSS tools.
CE 402.4	To practice compiler tools in basic, concurrent, distributed and embedded environments.
CE 402.5	To survey and use latest trends and advances in compilers

<b>Subject</b>	<b>Smart System Design and Applications</b>
<b>Subject Code</b>	<b>CE 403(410443)</b>
<b>Course Outcome (COs)</b>	
CE 403.1	To write and survey solution for multidisciplinary case-study using mathematical modeling give presentations using soft skills methodologies;



CE 403.2	To write and survey embedded systems applications using machine learning;
CE 403.3	To solve problems for multi-core or distributed, concurrent and embedded environments;

<b>Subject</b>	<b>Data Mining Techniques and Applications (Elective-I)</b>
<b>Subject Code</b>	<b>CE 404(410444D)</b>
<b>Course Outcome (COs)</b>	
<b>CE 404.1</b>	To present survey on different learning, classification and data mining foundations.
<b>CE 404.2</b>	To write programs and methods for data Mining applications.
<b>CE 404.3</b>	To solve problems for multi-core or distributed, concurrent/Parallel environments

<b>Subject</b>	<b>Pervasive Computing (Elective – II)</b>
<b>Subject Code</b>	<b>CE 405(410445B)</b>
<b>Course Outcome (COs)</b>	
CE 405.1	To present a survey on pervasive computing building blocks.
CE 405.2	To create presentations using pervasive computing techniques and devices.
CE 405.3	To solve problems for multi-core or distributed, concurrent/Parallel environments.

<b>Subject</b>	<b>Project</b>
<b>Subject Code</b>	<b>CE 406(410448)</b>
<b>Course Outcome (COs)</b>	
CE 406.1	To write problem solutions in projects using mathematical modeling, using FOSS programming tools and devices or commercial tools;
CE 406.2	To write SRS and other software engineering documents in the project report using mathematical models developed and NP-Hard analysis;
CE 406.3	To write test cases using multi-core, distributed, embedded, concurrent/Parallel environments;
CE 406.4	To write a conference paper;

CE 406.5	To practice presentation, communication and team-work skills.
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<b>Semester-II</b>
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<b>Subject</b>	<b>Software Design Methodologies and Testing</b>
<b>Subject Code</b>	<b>CE 407(410449)</b>
<b>Course Outcome (COs)</b>	
CE 407.1	To present a survey on design techniques for software system
CE 407.2	To present a design and model using UML for a given software system
CE 407.3	To present a design of test cases and implement automated testing for client server, Distributed, mobile applications

<b>Subject</b>	<b>High Performance Computing</b>
<b>Subject Code</b>	<b>CE 408(410450)</b>
<b>Course Outcome (COs)</b>	
CE 408.1	To transform algorithms in the computational area to efficient programming code for modern computer architectures
CE 408.2	To write, organize and handle programs for scientific computations
CE 408.3	To create presentation of using tools for performance optimization and debugging
CE 408.4	To present analysis of code with respect to performance and suggest and implement performance improvements
CE 408.5	To present test cases to solve problems for multi-core or distributed, concurrent/Parallel environments

<b>Subject</b>	<b>Cloud Computing (Elective- III)</b>
<b>Subject Code</b>	<b>CE 409(410451C)</b>

<b>Course Outcome (COs)</b>	
CE 409.1	To install cloud computing environments.
CE 409.2	To present a survey on cloud building blocks and technologies.
CE 409.3	To perform cloud computing admin and programming using open source tools.

<b>Subject</b>	<b>Cyber Security (Elective- III)</b>
<b>Subject Code</b>	CE 410(410451D)
<b>Course Outcome (COs)</b>	
CE 410.1	To write a survey on cyber security concepts.
CE 410.2	To create a case study report on practice administrating using Cyber Security open source tools.
CE 410.3	To write problem solutions for multi-core or distributed, concurrent/Parallel environments.

<b>Subject</b>	<b>Business Analytic and Intelligence (Elective- IV)</b>
<b>Subject Code</b>	CE 411(410452A)
<b>Course Outcome (COs)</b>	
CE 411.1	To write case studies in Business Analytic and Intelligence using mathematical models.
CE 411.2	To present a survey on applications for Business Analytic and Intelligence.
CE 411.3	To write problem solutions for multi-core or distributed, concurrent/Parallel environments
CE 411.4	To write problem solutions using multi-core or distributed, concurrent/Parallel environments

<b>Subject</b>	<b>Computer Laboratory-III</b>
<b>Subject Code</b>	CE 412(410453)
<b>Course Outcome (COs)</b>	
CE 412.1	To write problem solutions using mathematical modeling.
CE 412.2	To write reports of application of software design methods and testing.
CE 412.3	To write programs using FOSS tools.
CE 412.4	Design Pump, Blower, fan or compressor for a given application

<b>Subject</b>	<b>Computer Laboratory-IV</b>
<b>Subject Code</b>	<b>CE 413(410454)</b>
<b>Course Outcome (COs)</b>	
CE 413.1	To write programs to develop applications using BIA Technologies using mathematical modeling.
CE 413.2	To write programs using OR and Mobile Programming Technologies using mathematical modeling.
CE 413.3	To write programs using FOSS tools and devices.
CE 413.4	To write problem solutions using multi-core or distributed, concurrent/Parallel environments

<b>Subject</b>	<b>Project</b>
<b>Subject Code</b>	<b>CE 414(410454)</b>
<b>Course Outcome (COs)</b>	
CE 414.1	To write review SRS, reliability testing reports, and other software engineering documents in the project report;
CE 414.2	To write problem solution using multi-core, distributed, embedded, concurrent/Parallel environments;
CE 414.3	To write the test cases to demonstrate the results of the project;
CE 414.4	To write conference paper;
CE 414.5	To write code using FOSS tools and technologies or propitiatory Tools as per requirements;
CE 414.6	To practice presentation, communication and team-work skills.

**Course Outcomes: Students should be able to  
(ME) ME Computer Engineering (Curriculum 2015 Pattern)**

**Semester-I**

<b>Subject</b>	<b>Research Methodology</b>
<b>Subject Code</b>	<b>MCE 101 (510101)</b>

<b>Course Outcome (COs)</b>	
MCE 101.1	To understand the philosophy of research in general
MCE 101.2	To understand basic concepts of research and its methodologies
MCE 101.3	To learn the methodology to conduct the Literature Survey
MCE 101.4	To acquaint with the tools, techniques, and processes of doing research
MCE 101.5	To learn the effective report writing skills and allied documentations
MCE 101.6	To become aware of the ethics in research, academic integrity and plagiarism

<b>Subject</b>	<b>Bio-Inspired Optimization Algorithms</b>
<b>Subject Code</b>	<b>MCE 102 (510102)</b>
<b>Course Outcome (COs)</b>	
MCE 102.1	Describe the natural phenomena that motivate the algorithms
MCE 102.2	Apply nature-inspired algorithms to optimization
MCE 102.3	Select the appropriate strategy or optimal solution based on bio-inspired algorithms

<b>Subject</b>	<b>Software Development and Version Control</b>
<b>Subject Code</b>	<b>MCE 103(510103)</b>
<b>Course Outcome (COs)</b>	
MCE 103.1	Select and apply the design patterns to software development
MCE 103.2	Design software for real engineering Problems.
MCE 103.3	Demonstrate team work for development of software in collaborative environment
MCE 103.4	Use of open source version control tool.

<b>Subject</b>	<b>Embedded and Real Time Operating Systems</b>
<b>Subject Code</b>	<b>MCE 104( 510104 )</b>
<b>Course Outcome (COs)</b>	
MCE 104.1	Recognize and classify embedded and real-time systems
MCE 104.2	Explain communication bus protocols used for embedded and real-time systems

MCE 104.3	Classify and exemplify scheduling algorithms
MCE 104.4	Apply software development process to a given RTOS application
MCE 104.5	Design a given RTOS based application

<b>Subject</b>	<b>Elective 1 Data Mining</b>
<b>Subject Code</b>	<b>MCE 105(510105B)</b>
<b>Course Outcome (COs)</b>	
MCE 105.1	Apply basic, intermediate and advanced techniques to mine the data
MCE 105.2	Analyze the output generated by the process of data mining
MCE 105.3	Explore the hidden patterns in the data
MCE 105.4	Optimize the mining process by choosing best data mining technique

## Semester-II

<b>Subject</b>	<b>Operations Research</b>
<b>Subject Code</b>	<b>MCE 106(510108)</b>
<b>Course Outcome (COs)</b>	
MCE 106.1	Identify the characteristics of different types of decision-making environments □
MCE 106.2	Use appropriate decision making approaches and tools
MCE 106.3	Build various dynamic and adaptive models □
MCE 106.4	Develop critical thinking and objective analysis of decision problems
MCE 106.5	Apply the OR techniques for efficacy

<b>Subject</b>	<b>System Simulation and Modeling</b>
<b>Subject Code</b>	<b>MCE 107(107009)</b>
<b>Course Outcome (COs)</b>	
MCE 107.1	To apply modeling to understand system behavior
MCE 107.2	To design the simulation scheme for particular system

MCE 107.3	To analyze the modeled and simulated systems
MCE 108.4	To compare the results of simulations confined to real world application

<b>Subject</b>	<b>Machine Learning</b>
<b>Subject Code</b>	<b>MCE 109(510110)</b>
<b>Course Outcome (COs)</b>	
MCE 109.1	Acquire fundamental knowledge of learning theory
MCE 109.2	Design and evaluate various machine learning algorithms
MCE 109.3	Use machine learning methods for multivariate data analysis in various scientific fields
MCE 109.4	Choose and apply appropriate Machine Learning Techniques for analysis, forecasting, categorization and clustering of the data

<b>Subject</b>	<b>Elective II Network Security</b>
<b>Subject Code</b>	<b>MCE 110(510111D)</b>
<b>Course Outcome (COs)</b>	
MCE 110.1	Design and choose appropriate security model
MCE 110.2	Apply security means to various applications
MCE 110.3	Apply security algorithms in various environments for network security
MCE 110.4	Design network security solutions
MCE 110.5	Select appropriate tools to thwart network attacks

<b>Subject</b>	<b>Seminar I</b>
<b>Subject Code</b>	<b>MCE 111(510112)</b>
<b>Course Outcome (COs)</b>	
MCE 111.1	To use multiple thinking strategies to examine real-world issues and explore creative avenues of expression,.
MCE 111.2	To acquire, articulate, create and convey intended meaning using verbal and nonverbal method of communication

MCE 111.3	To learn and integrate, through independent learning in science and technologies, with disciplinary specialization and the ability to integrate information across The
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<b>Subject</b>	<b>Fundamental of programming language -II</b>
<b>Subject Code</b>	<b>MCE 112(110010)</b>
<b>Course Outcome (COs)</b>	
MCE 112.1	To learn & acquire art of computer programming.
MCE 112.2	To know about some popular programming language and how to choose a programming language for solving a problem using a computer.
MCE 112.3	To learn basics of Programming in C , Advanced Programming.

### Semester III

<b>Subject</b>	<b>Fault Tolerant Systems</b>
<b>Subject Code</b>	<b>MCE 113(610101)</b>
<b>Course Outcome (COs)</b>	
MCE 113.1	Analyze the system for the requirement of fault tolerance
MCE 113.2	Simulate the fault tolerance algorithms
MCE 113.3	Implement diagnosis and recovery of the system
MCE 113.4	Assess the reliability of the system

<b>Subject</b>	<b>Information Retrieval</b>
<b>Subject Code</b>	<b>MCE 114( 610103A )</b>
<b>Course Outcome (COs)</b>	
MCE 114.1	Use various services offered for cloud environment
MCE 114.2	Apply computing security fundamentals confined to cloud environment
MCE 114.3	Analyze the cloud system for vulnerabilities, threats and attacks
MCE 114.4	Propose feasible security solution for cloud security



<b>Subject</b>	<b>Elective III Cloud Security</b>
<b>Subject Code</b>	<b>MCE 115(210242)</b>
<b>Course Outcome (COs)</b>	
MCE 115.1	Realize and simplify Boolean Algebraic assignments for designing digital circuits using KMaps
MCE 115.2	Design and implement Sequential and Combinational digital circuits as per the specifications.
MCE 115.3	Apply the knowledge to select the logic families IC packages as per the design specifications.
MCE 115.4	Design the minimum systems using VHDL.
MCE 115.5	Develop minimum embedded system for simple real world application

<b>Subject</b>	<b>Seminar II</b>
<b>Subject Code</b>	<b>MCE 116(610104)</b>
<b>Course Outcome (COs)</b>	
MCE 116.1	To use multiple thinking strategies to examine real-world issues and explore creative avenues of expression
MCE 116.2	To acquire, articulate, create and convey intended meaning using verbal and nonverbal method of communication.
MCE 116.3	To learn and integrate, through independent learning in sciences and technologies, with disciplinary specialization and the ability to integrate information across

<b>Subject</b>	<b>Dissertation Stage I</b>
<b>Subject Code</b>	<b>MCE 117(610105)</b>
<b>Course Outcome (COs)</b>	
MCE 117.1	Conduct thorough literature survey confined to the domain of choice
MCE 117.2	Develop presentation skills to deliver the technical contents
MCE 117.3	Furnish the report of the technical research domain
MCE 117.4	Analyze the findings and work of various authors confined to the chosen domain

#### Semester IV

<b>Subject</b>	<b>Seminar III</b>
<b>Subject Code</b>	<b>MCE 118(610107)</b>
<b>Course Outcome (COs)</b>	
MCE 118.1	To use multiple thinking strategies to examine real-world issues and explore creative avenues of expression,.
MCE 118.2	To acquire, articulate, create and convey intended meaning using verbal and nonverbal method of communication.
MCE 118.3	To learn and integrate, through independent learning in sciences and technologies, with disciplinary specialization and the ability to integrate information across

<b>Subject</b>	<b>Dissertation Stage II</b>
<b>Subject Code</b>	<b>MCE 119(610108)</b>
<b>Course Outcome (COs)</b>	
MCE 119.1	Show evidence of independent investigation
MCE 119.2	Critically analyze the results and their interpretation ; infer findings
MCE 119.3	Report and present the original results in an orderly way and placing the open questions in the right perspective.
MCE 119.4	Link techniques and results from literature as well as actual research and future research lines with the research
MCE 119.5	Appreciate practical implications and constraints of the specialist subject



