Course Outcomes: Students should be able to

First Year (FE) Computer Engineering (Curriculum 2015 Pattern)

Semester-I

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

Subject	**Engineering Physics**
Subject Code	**CMP102 (107002)**
Course Outcome (COs)	
CMP102.1	Students are enabled to derive the diffraction grating formula.
CMP102.2	Students are capable to Calculate the reverberation time of a room and suggest how to design a room with optimal reverberation time
CMP102.3	Students will be able to explain working principle of lasers.
CMP102.4	Ability to estimate the charge carrier mobility and density in intrinsic & extrinsic Semiconductor, PN Junction diode
CMP102.5	Students are capable to calculate the wavelength of a particle as a function of its momentum.
CMP102.6	Ability to explain different methods of growth and synthesis of nana particles and its application in Engineering.

Subject	**Engineering Graphics I**
Subject Code	**CMP 103(102006)**
Course Outcome (COs)	
CMP 103.1	Students will be able to develop the manual drawing skill, drawing interpretation skill.
CMP 103.2	Students will be able to develop the physical realization of the dimension & views of the objects.

CMP 103.3	Student will be able to develop imagination of Physical Objects to be represented on paper for Engineering Communication.

Subject	**Basic Electrical Engineering**
Subject Code	**CMP 104(103004)**
Course Outcome (COs)	
CMP104.1	Relation between Voltage and Current
CMP104.2	Energy conversions
CMP104.3	Direction of Induced emf
CMP104.4	Transform of energy
CMP104.5	Understanding of a pure parameter
CMP104.6	Concept of three phase supply
CMP104.7	Response of element is identical with various sources

Subject	**Basic Civil & Environmental Engineering**
Subject Code	**CMP 105(101005)**
Course Outcome (COs)	
CMP105.1	Understand the scientific terminologies related to civil engineering
CMP105.2	Familiarize with different components, equipment and technical of civil engineering materials of construction
CMP105.3	Describe the structure and function of an ecosystem.
CMP105.4	Explains the concept of built environment and its importance
CMP105.5	Explain the causes, effects and control measures of various types of pollutions.

Subject	**Fundamental of programming language -I**
Subject Code	**CMP 106(110003)**
Course Outcome (COs)	
CMP106.1	To learn & acquire art of computer programming.
CMP106.2	To know about some popular programming language and how to choose a programming language for solving a problem using a computer.
CMP106.3	To learn basics of Programming in C

Semester-II

Subject	**Workshop Practice**
Subject Code	**CMP 107(102006)**
Course Outcome (COs)	

CMP107.1	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.

Subject	**Engineering Mathematics II**
Subject Code	**CMP 108(107008)**
Course Outcome (COs)	
CMP108.1	Solve the differential equations by choosing proper method of solution.
CMP108.2	Solve the problems on orthogonal trajectories, simple electrical circuits, and heat flow by applying the mehods of Ordinary differential Equations.
CMP108.3	Apply the properties of special functions to evaluate integral.
CMP108.4	Apply the properties of special functions to evaluate integral. Sketch the curve with full justification.
CMP108.5	Demonstrate knowledge and understanding of plane and solid geometry & use geometrical skills to solve simple real-world problems
CMP108.6	Evaluate double integral and change the order of the integration. Evaluate area bounded between two curves, mass of Lamina, moment of inertia.

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

Subject	**Basic Mechanical Engineering**
Subject Code	**CMP 110(102013)**
Course Outcome (COs)	
CMP110.1	This Course will help the students to acquire knowledge of mechanical engineering.
CMP110.2	Describe the scope of mechanical engineering with multidisciplinary industries.

CMP110.3	Understand & identify common machine element with their functions & power transmission deviCMPs.
CMP110.4	Learn conventional machine tools & understand the concept of design in mechanical engineering.
CMP 110.5	Impart knowledge of basic concept of thermodynamics applied to industrial applications.
CMP 110.6	Understand lying principles of energy conversion system & power plant.

Subject	**Engineering Mechanics**
Subject Code	**CMP 111(101011)**
Course Outcome (COs)	
CMP111.1	Apply fundamental knowledge of mathematics, science, and engineering.
CMP111.2	Design and conduct mechanics experiments.
CMP111.3	Analyze and interpret experimental and computational mechanics data
CMP111.4	Design a system, component or process to meet desired needs by synergistically combining mechanics of materials, fluid mechanics, and dynamics, when necessary.
CMP111.5	Identify, formulate, and solve engineering problems involving mechanics of rigid bodies.
CMP111.6	Effectively function as a member of multi-disciplinary technical team and engage in life-long learning.

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

Subject	**Fundamental of programming language -II**
Subject Code	**CMP 113(110010)**
Course Outcome (COs)	
CMP113.1	To learn & acquire art of computer programming.
CMP113.2	To know aboutsome popular programming language and how to choose a programming language for solving a problem using a computer.
CMP113.3	To learn basics of Programming in C , Advanced Programming.

Subject	**Engineering Graphics II**
Subject Code	**CMP 114(102006)**
Course Outcome (COs)	
CMP114.1	Students will be able to develop the computerized drawing skill, drawing interpretation skill.
CMP114.2	Students will be able to develop the physical realization of the dicension & views of the objects.

Subject	**Computer Graphics**
Subject Code: CMP212	
Course Outcome (COs)	
CMP212.1	Apply mathematics and logic to develop Computer programs for elementary graphic operations
CMP212.1	Develop scientific and strategic approach to solve complex problems in the domain of Computer Graphics Computer Vision and Virtual reality
CMP212.1	Develop the competency to understand the concepts related to
CMP212.1	Apply the logic to develop animation and gaming programs
CMP212.1	Be capable of using OpenGL to create interactive computer graphics.

Subject	**Discrete Mathematics(SE)**
Subject Code: CMP212	
Course Outcome (COs)	
CMP201.1	Solve real world problems logically using appropriate set, function,and relation models
CMP201.2	Interpret the associated operations and terminologies in context
CMP201.3	Analyze and synthesize the real world problems using discrete mathematics
CMP201.4	Demonstrate different traversal methods for trees and graphs
CMP201.5	Model problems in Computer Science using graphs and trees.
Subject	Advanced Data Structures
Subject Code:	CMP213
Course Outcome (COs)	
CMP213.1	To apply appropriate advanced data structure and efficient algorithms to approach the problems of various domain.
CMP213.2	To design the algorithms to solve the programming problems
CMP213.3	To use effective and efficient data structures in solving various Computer Engineering domain problems
CMP213.4	To analyze the algorithmic solutions for resource requirements and optimization
CMP213.5	To use appropriate modern tools to understand and analyze the functionalities confined to the data structure usage.

Subject	**OOP**
Subject Code:	**CMP205**
Course Outcome (COs)	
CMP205.1	Ability to understand the principles of Object Oriented Programming
CMP205.2	Ability to understand object-oriented concepts such as data abstraction, encapsulation, inheritance, dynamic binding, and polymorphism
CMP205.3	Ability to understand virtual functions
CMP205.4	Ability to understand the basics of templates & exception handling
CMP205.5	Ability to understand file handling concept
CMP205.6	Ability to understand the standard template library

Subject	**PPL**
Subject Code:	**CMP215**
Course Outcome (COs)	
CMP215.1	To analyze the strengths and weaknesses of programming languages for effective and efficient program development.
CMP215.2	To inculcate the principles underlying the programming languages enabling to learn new programming languages
CMP215.3	To grasp different programming paradigms
CMP215.4	To use the programming paradigms effectively in application development.

Subject	**Computer Organization & Architecture (COA)**
Subject Code:	**CMP204**
Course Outcome (COs)	
CMP204.1	Demonstrate computer architecture concepts related to design of modern processors, memories and I/Os.
CMP204.2	Analyze the principles of computer architecture using examples drawn from commercially available computers.
CMP204.3	Evaluate various design alternatives in processor organization.
CMP204.4	Realize different machine instructions for machine computing.
CMP204.5	Design approach towards modern computer organization.

Subject	**Digital Electronics and Logic Design (DELD)**

Subject Code:	**CMP202**
Course Outcome (COs)	
CMP202.1	Realize and simplify Boolean Algebraic assignments for designing digital circuits using KMaps.
CMP202.2	Design and implement Sequential and Combinational digital circuits as per the specifications.
CMP202.3	Apply the knowledge to appropriate IC as per the design specifications.
CMP202.4	Design simple digital systems using VHDL.
CMP202.5	Develop simple embedded system for simple real world application.

Subject	**Microprocessor (MP)**
Subject Code:	CMP214
Course Outcome (COs)	
CMP214.1	To apply the assembly language programming to develop small real life embedded application.
CMP214.2	To understand the architecture of the advanced processor thoroughly to use the resources for programming.
CMP214.3	To understand the higher processor architectures descended from 80386 architecture.
CMP214.4	Understand co-processor mechanism and Implement Trigonometric and Transcendental operations using coprocessor instructions.
CMP214.5	To understand internal processing of Microprocessor.

Subject	**Data Structures and Algorithms (DSA)**
Subject Code:	CMP203
Course Outcome (COs)	
CMP203.1	To discriminate the usage of various structures in approaching the problem solution.
CMP203.2	To design the algorithms to solve the programming problems.
CMP203.3	To use effective and efficient data structures in solving various Computer Engineering domain problems.
CMP203.4	To analyze the problems to apply suitable algorithm and data structure
CMP203.5	To use appropriate algorithmic strategy for better efficiency

Subject	Engineering Mathematics-III
Subject Code:	CMP 211
Course Outcome (COs)	
CMP 211.1	Solve higher order linear differential equations and apply to modeling and analyzing electrical circuits.
CMP 211.2	Solve problems related to Fourier transform, Z-Transform and applications to Signal and Image processing..

CMP 211.3	Apply statistical methods like correlation, regression analysis and probability theory for analysis and prediction of a given data as applied to machine intelligence.
CMP 211.4	Perform vector differentiation and integration to analyze the vector fields and apply to compute line, surface and volume integrals.
CMP 211.5	Analyze conformal mappings, transformations and perform contour integration of complex functions required in Image processing, Digital filters and Computer graphics.

Third Year Computer Engineering (Curriculum 2015 Pattern)

Subject	**Embedded Systems & Internet of Things ES IoT**
Subject Code:	CMP312
Course Outcome (COs)	
CMP312.1	Implement an architectural design for IoT for specified requirement
CMP312.2	Solve the given societal challenge using IoT
CMP312.3	Choose between available technologies and devices for stated IoT challenge
Subject	**Design & Analysis of Algorithms (TE)**
Subject Code:	**CMP310**
Course Outcome (COs)	
CMP310.1	Formulate the problem
CMP310.2	Analyze the asymptotic performance of algorithms
CMP310.3	Decide and apply algorithmic strategies to solve given problem
CMP310.4	Find optimal solution by applying various methods

Subject	**Information Systems & Engineering Economics (ISEE)**
Subject Code:	CMP304
Course Outcome (COs)	
CMP304.1	Understand the need, usage and importance of an Information System to an organization.
CMP304.2	Understand the activities that are undertaken while managing, designing, planning, implementation, and deployment of computerized information system in an organization.
CMP304.3	Outline the past history, present position and expected performance of a company engaged in engineering practice or in the computer industry.
CMP304.4	Perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives
CMP304.5	Be able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives.

Subject	**Theory of Computation (TE)**
Subject Code:	**CMP301**

Course Outcome (COs)	
CMP301.1	Design deterministic Turing machine for all inputs and all outputs
CMP301.2	Subdivide problem space based on input subdivision using constraints
CMP301.3	Apply linguistic theory
CMP301.4	Understand given problem falls under NP hard, NP- Complete

Subject	**Systems Programming & Operating System (SP&OS)**
Subject Code:	**CMP311**
Course Outcome (COs)	
CMP311.1	Analyze and synthesize system software
CMP311.2	Use tools like LEX & YACC.
CMP311.3	Understand and analyze assembler, compiler, linker, loader and macro terminology.
CMP311.4	Implement operating system functions.
CMP311.5	Operating System Design Approach

Subject	Computer Networks
Subject Code:	CMP305
Course Outcome (COs)	
CMP305.1	Analyze the requirements for a given organizational structure to select the most appropriate networking architecture, topologies, transmission mediums and technologies.
CMP305.2	Demonstrate design issues, flow control and error control.
CMP305.3	Analyze data flow between TCP/IP model using Application, Transport and Network Layer Protocols.
CMP305.4	Illustrate applications of Computer Network capabilities, selection and usage for various sectors of user community.
CMP305.5	Illustrate Client-Server architectures and prototypes by the means of correct standards and technology.

Subject	Web Technology
Subject Code:	CMP314
Course Outcome (COs)	
CMP314.1	Analyze given assignment to select sustainable web development and design methodology
CMP314.2	Develop web based application using suitable client side and server side web technologies
CMP314.3	Develop solution to complex problems using appropriate method, technologies, frameworks, web services and content management
CMP314.4	Develop awareness about different architectures
CMP314.5	Student are able to develop web applications

Subject	Software Engineering & Project Management
Subject Code:	CMP303
Course Outcome (COs)	
CMP303.1	Decide on a process model for a developing a software project
CMP303.2	Classify software applications and Identify unique features of various domains
CMP303.3	Design test cases of a software system
CMP303.4	Understand basics of IT Project management.
CMP303.5	Plan, schedule and execute a project considering the risk management
CMP303.6	Apply quality attributes in software development life cycle.

Subject	Software Modeling & Design (TE)
Subject Code:	CMP313
Course Outcome (COs)	
CMP313.1	Analyze the problem statement (SRS) and choose proper design
	technique for designing web-based/ desktop application
CMP313.2	Design and analyze an application using UML modeling as
	fundamental tool
CMP313.3	Apply design patterns to understand reusability in OO design
CMP313.4	Decide and apply appropriate modern tool for designing and
	modeling
CMP313.5	Decide and apply appropriate modern testing tool for testing
	web-based/desktop application

Subject	Database Management Systems
Subject Code:	CMP302
Course Outcome (COs)	
CMP302.1	Design E-R Model for given requirements and convert the same into database tables
CMP302.2	se database techniques such as SQL & PL/SQL
CMP302.3	Use modern database techniques such as NOSQL
CMP302.4	Explain transaction Management in relational database System.
CMP302.5	Describe different database architecture and analyses the use of appropriate architecture in real time environment.
CMP302.6	Students will be able to use advanced database Programming concepts Big Data –HADOOP

Department : Computer Engineering
Final Year Computer Engineering (Curriculum 2012 Pattern)

Subject	Business Analytic and Intelligence (BAI)
Subject Code:	CMP421
Course Outcome (COs)	
CMP421.1	Get a basic understanding of what a Business Analytic and Intelligence
CMP421.2	Understand the value of Business Analysis in business
CMP421.3	Understand the difference between Business Analytic and Intelligence & related concepts
CMP421.4	Develop the ability to model business data using basic intelligence tools
CMP421.5	Use the basic intelligence tools for analysis & visualization
CMP421.6	Use the basic intelligence tools to take the business decisions

2. Name of the Course:
Course Code: Software Design Methodologies &Testing (SDMT)

Subject	
Subject Code:	CMP415
Course Outcome (COs)	
CMP415.1	To present a survey on design techniques for software system
CMP415.2	To present a design and model using UML for a given software system
CMP415.3	To present a design of test cases and implement automated testing for client server, Distributed, mobile applications
CMP415.4	Students are able to understand Software Requirement Specification (SRS)
CMP415.5	Students are able to collect all documents and apply suitable technique for software development

Subject	Principles of Modern Compiler Design (PMCD)
Subject Code:	CMP402
Course Outcome (COs)	
CMP402.1	To write symbol tables, different types of grammars to solve problem of parsing.
CMP402.2	To design and write simple compiler using FOSS tools.
CMP402.3	To practice compiler tools in basic, concurrent, distributed and embedded environments.
CMP402.4	To survey and use latest trends and advances in compilers
CMP402.5	Student get know working of compiler.

Subject	**High Performance Computing (HPC)**
Subject Code:	CMP416
Course Outcome (COs)	
CMP416.1	Transform algorithms in the computational area to efficient programming code for modern computer architectures
CMP416.2	Write, organize and handle programs for scientific computations
CMP416.3	Use tools for performance optimization and debugging
CMP416.4	Analyze code with respect to performance and suggest and implement performance improvements
CMP416.5	To solve problems for multi-core or distributed, Concurrent /Parallel environments

Subject	Data Mining Techniques (DMT)
Subject Code:	CMP407
Course Outcome (COs)	
CMP407.1	To present survey on different learning, classification and data mining foundations
CMP407.2	To write programs and methods for data Mining applications.
CMP407.3	To solve problems for multi-core or distributed, concurrent/Parallel environments
CMP407.4	To understand different web mining approaches.

Subject	**Smart System Design and Applications(SSDA)**
Subject Code:	CMP403
Course Outcome (COs)	
CMP403.1	Understand Learning aspects in artificial intelligence.
CMP403.2	Implement problem solving, optimization, search algorithm and game.
CMP403.3	Apply knowledge representation schemes, inference and planning.
CMP403.4	Handle uncertainty and apply knowledge of reasoning in decision theory.
CMP403.5	Understand machine learning and implement it for building smart system.
CMP403.6	Understand and implement applications of natural language processing ,image processing,

Subject	Design & Analysis of Algorithms
Subject Code:	CMP401
Course Outcome (COs)	
CMP401.1	Surveying algorithmic strategies give presentations using open source documentation tools like Latex and soft skill methodologies
CMP401.2	Writing mathematical modeling of algorithms for problem solving
CMP401.3	Developing SRS in the UG projects
CMP401.4	Solving problems for multi-core or distributed or concurrent/Parallel/Embedded environments

Subject	**Pervasive Computing**
Subject Code:	CMP409
Course Outcome (COs)	
CMP409.1	To present a survey on pervasive computing building blocks and their relation with Mobile Computing
CMP409.2	To understand Pervasive computing devices and environments
CMP409.3	To effectively use Human Computer Interaction for different types of systems
CMP409.4	To understand adaptive middleware and their usage for Pervasive systems
CMP409.5	To analyze security measures in Pervasive Systems
CMP409.6	To design multi core or distributed, concurrent/parallel environments for Pervasive systems

Subject	**Cyber Security**
Subject Code:	CMP420
Course Outcome (COs)	
CMP420.1	To develop problem solving abilities using Cyber Security
CMP420.2	To apply algorithmic strategies for cyber security
CMP420.3	To develop time and space efficient algorithms
CMP420.4	To study algorithmic examples in distributed, concurrent and parallel environments