

**ANNA UNIVERSITY CHENNAI**  
**KATHIR COLLEGE OF ENGINEERING, COIMBATORE**  
**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**  
**R2013 REGULATION**

**PROGRAMME OUTCOMES (POs)**

Students graduating from Computer Science & Engineering should be able to:

**PO1.Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2.Problem analysis:** Identity, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3.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.

**PO4.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.

**PO5.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.

**PO6. 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.

**PO7. 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.

**PO8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11. 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.

**PO12. Life-long learning:** Recognize the need for, and have the preparation and ability to engage in self, and lifelong learning in the broadest context of technological change

### **PROGRAMME SPECIFIC OUTCOME (PSOs)**

**PSO1:** Able to apply the knowledge gained during the course of the program to formulate and solve real life, complex software engineering problems faced in IT industries.

**PSO2:** To learn more techniques and update new skill sets as per the latest trend in software technology

**PSO3:** Able to apply the knowledge of ethical and management principles required to work in a team as well as to lead a team

**PSO4:** The Able to comprehend and write effective project reports in multidisciplinary environment in the context of changing technologies

## COURSE OUTCOMES

I - SEMESTER	
Course code	C101
Subject code	HS6151
Subject name	Technical English - I
COURSE OUTCOMES	
CO1	Organize the ideas clearly using appropriate communicative strategies.
CO2	Employ Listening skills to develop a wide vocabulary range.
CO3	Distinguish between language applications to avoid grammatical errors.
CO4	Interpret graphical representation by comparing and contrasting the information given.
CO5	Develop listening skills for academic and professional purpose

Course code	C102
Subject code	MA6151
Subject name	Engineering Mathematics - I
COURSE OUTCOMES	
CO1	Translate quadratic form into its canonical form through linear and orthogonal transformation.
CO2	Classify the various convergence test of the series.
CO3	Explain the radius, centre and circle of curvature of curves.
CO4	Interpret evolutes and envelopes of any given curves.
CO5	Solve the differential calculus for multivariable functions and interpret area and volume using integrals.

Course code	C103
Subject code	PH6151
Subject name	Engineering Physics
COURSE OUTCOMES	
CO1	Classify the nature of SCC, BCC, FCC and HCP crystals.
CO2	Describe the properties of matter and modes of heat transfer.
CO3	Discuss about matter waves, wave equation and the uses of electron microscopes.
CO4	Explain the acoustic factors and its remedies.
CO5	Explain the production, application of ultrasound in industry and medicine.

<b>Course code</b>	<b>C104</b>
<b>Subject code</b>	<b>CY6151</b>
<b>Subject name</b>	<b>Engineering Chemistry</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Outline the synthesis and properties of different polymers employed in the field of engineering.
<b>CO2</b>	Interpret the laws of thermodynamics and interrelationship between the thermodynamic functions
<b>CO3</b>	Explain the concepts of photo physical, chemical process and spectral analytical techniques
<b>CO4</b>	Compare phase diagram of one and two components systems
<b>CO5</b>	Summarize the characteristics and suitability of alloys under working conditions

<b>Course code</b>	<b>C105</b>
<b>Subject code</b>	<b>GE6151</b>
<b>Subject name</b>	<b>Computer Programming</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Outline the organization of digital computers, number system and formulation of logical analysis
<b>CO2</b>	Explain the fundamentals of C programming
<b>CO3</b>	Describe the concepts of various control structures
<b>CO4</b>	Apply arrays and strings concept in sorting and searching techniques and illustrate the working of functions and pointers
<b>CO5</b>	Apply the concepts of structures, union in C programs

<b>Course code</b>	<b>C106</b>
<b>Subject code</b>	<b>GE6162</b>
<b>Subject name</b>	<b>ENGINEERING GRAPHICS</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Draw the geometrical constructions of conics, cycloids and Involutives
<b>CO2</b>	Draw the orthographic projection and isometric views of objects.
<b>CO3</b>	Draw the projections of points, lines, and plane surfaces.
<b>CO4</b>	Draw the projections of simple regular polyhedral, truncated solids and section of solids.
<b>CO5</b>	Draw the development of lateral surfaces and perspective projection of simple solids.

<b>Course code</b>	<b>C107</b>
<b>Subject code</b>	<b>GE6151</b>
<b>Subject name</b>	<b>Computer Practice Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Perform various features of office packages.
<b>CO2</b>	Develop simple C programs with Statements and expressions
<b>CO3</b>	Apply array and strings using control structures in C Programming.
<b>CO4</b>	Implement Various functions in C Programming.
<b>CO5</b>	Develop C programs with structure and union.

<b>Course code</b>	<b>C108</b>
<b>Subject code</b>	<b>GE6162</b>
<b>Subject name</b>	<b>Engineering Practice Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Make simple plumbing works, carpentry joints, welding and sheet metal
<b>CO2</b>	Perform basic machining operations.
<b>CO3</b>	Show the components for smithy, foundry, fitting, centrifugal pump and air conditioner.
<b>CO4</b>	Demonstrate residential, staircase and fluorescent lamp wiring.
<b>CO5</b>	Perform power measurement, earth resistance measurement and energy meter calibration.

<b>Course code</b>	<b>C109</b>
<b>Subject code</b>	<b>GE6163</b>
<b>Subject name</b>	<b>Physics and Chemistry Laboratory-I</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Make use of the laser source and spectrometer to calculate the wavelength of various colours.
<b>CO2</b>	Experiment with ultrasonic interferometer to determine the velocity of sound.
<b>CO3</b>	Identify the value of Young's modulus of given bar and thermal conductivity of bad conductor.
<b>CO4</b>	Relate water quality related parameters by chemical analysis.
<b>CO5</b>	Classify the acid - base reactions using conductometric titrations.

**II - SEMESTER**

<b>Course code</b>	<b>C110</b>
<b>Subject code</b>	<b>HS6251</b>
<b>Subject name</b>	<b>Technical English- II</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Develop listening skills for retrieving information.
<b>CO2</b>	Organize the contexts with effective writing.
<b>CO3</b>	Infer different types of writing in different contexts effectively and persuasively.
<b>CO4</b>	Explain business situations and formal letters and reports.
<b>CO5</b>	Relate their knowledge with effective listening, speaking, reading and writing skills.

<b>Course code</b>	<b>C111</b>
<b>Subject code</b>	<b>MA6251</b>
<b>Subject name</b>	<b>Mathematics - II</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Interpret the line, surface and volume integral by Green's, Stoke's and Gauss Divergence theorem.
<b>CO2</b>	Explain the solution of higher order linear ordinary differential equations with constant and variable coefficients.
<b>CO3</b>	Outline the laplace transform of continuous functions with its basic properties.
<b>CO4</b>	Apply the concept of laplace transform to the solution of linear ordinary differential equations with constant coefficients
<b>CO5</b>	Make use of conformal mapping for different kinds of domains and milne Thomson method to find analytic functions

<b>Course code</b>	<b>C112</b>
<b>Subject code</b>	<b>PH6251</b>
<b>Subject name</b>	<b>Engineering Physics - II</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Summarize the concepts of conducting materials by classical and quantum theories.
<b>CO2</b>	Classify the semiconducting materials and their applications.
<b>CO3</b>	Outline the magnetic materials.
<b>CO4</b>	Explain the properties and applications of superconductors
<b>CO5</b>	Illustrate the polarization mechanisms in dielectric materials.

<b>Course code</b>	<b>C113</b>
<b>Subject code</b>	<b>CY6251</b>
<b>Subject name</b>	<b>Engineering Chemistry - II</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Outline the disadvantages of using hard water in boilers and various softening methods.
<b>CO2</b>	Relate electrochemical nature of metals to the corrosion propensity.
<b>CO3</b>	Illustrate the corrosion control methods.
<b>CO4</b>	Summarize the principle, working and applications of various energy conversion devices.
<b>CO5</b>	Explain the manufacture and properties of engineering materials.

<b>Course code</b>	<b>C114</b>
<b>Subject code</b>	<b>CS6201</b>
<b>Subject name</b>	<b>Digital Principals and System Design</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Exercise the implementation of Boolean Function using logic gates
<b>CO2</b>	Interpret the design procedure for various fundamental combinational circuits
<b>CO3</b>	Construct synchronous circuits by using flip-flops
<b>CO4</b>	Describe asynchronous circuits by using state reduction techniques
<b>CO5</b>	Infer knowledge of semiconductor memories to design programmable logic devices

<b>Course code</b>	<b>C115</b>
<b>Subject code</b>	<b>CS6202</b>
<b>Subject name</b>	<b>Programming and Data Structures - I</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Use various control structures in arrays and functions
<b>CO2</b>	Outline the concepts of structures, union and file handling mechanism.
<b>CO3</b>	Explain abstract data types for linked list and its applications
<b>CO4</b>	Interpret the concepts of stack, queue and its applications
<b>CO5</b>	Use various sorting and searching techniques in data structures.

<b>Course code</b>	<b>C116</b>
<b>Subject code</b>	<b>GE6262</b>
<b>Subject name</b>	<b>Physics and Chemistry Laboratory - II</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Apply the modulus of elasticity to calculate the young's modulus and rigidity modulus for a given material
<b>CO2</b>	Make use of Poiseuille's method and air wedge method to calculate the viscosity of the liquid and thickness of thin wire
<b>CO3</b>	Identify the types of semiconducting material by finding its band gap value.
<b>CO4</b>	Identify water quality related parameters by chemical analysis.
<b>CO5</b>	Interpret the chemical solution using conductometric measurements.

<b>Course code</b>	<b>C117</b>
<b>Subject code</b>	<b>GE6211</b>
<b>Subject name</b>	<b>Digital Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Visualize the Boolean theorems using logic gates.
<b>CO2</b>	Practice the construction of combinational circuits for performing addition, subtraction and code conversion using basic gates.
<b>CO3</b>	Exercise the implementation of combinational circuits for performing basic operation using MSI devices.
<b>CO4</b>	Construct sequential circuits like shift registers, synchronous and asynchronous counters.
<b>CO5</b>	Practice HDL coding for the design of combinational and semantics circuits.

<b>Course code</b>	<b>C118</b>
<b>Subject code</b>	<b>CS6212</b>
<b>Subject name</b>	<b>Programming and Data Structures Laboratory - I</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Develop C program for control structures.
<b>CO2</b>	Implement C program using functions, Arrays and pointers.
<b>CO3</b>	Implement Stack and Queue using array and Linked List ADT.
<b>CO4</b>	Execute file access methods using C Programming
<b>CO5</b>	Implement the applications of stack and queue using C programming.

<b>III - SEMESTER</b>	
<b>Course code</b>	<b>C201</b>
<b>Subject code</b>	<b>MA6351</b>
<b>Subject name</b>	<b>TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Explain first & higher order partial differential equations.
<b>CO2</b>	Interpret periodic functions as a Fourier series trigonometrically and numerically.
<b>CO3</b>	Solve the problems related with displacement of string and heat transformation of rod and plate
<b>CO4</b>	Translate the function from one domain to another domain using Fourier Transform and Z- Transform.
<b>CO5</b>	Apply Z-Transform for solving the difference equation

<b>Course code</b>	<b>C202</b>
<b>Subject code</b>	<b>CS6301</b>
<b>Subject name</b>	<b>Programming and Data Structures - II</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Use the control structures of C appropriately for problems.
<b>CO2</b>	Employ File handling concepts for simple programs.
<b>CO3</b>	Explain the concept of list and its application.
<b>CO4</b>	Apply the linear data structure stack for undo\redo operation in word processors, Expression evaluation and syntax parsing and queue for process scheduling
<b>CO5</b>	Critically analyze the various sorting and searching algorithms, hashing techniques

<b>Course code</b>	<b>C203</b>
<b>Subject code</b>	<b>CS6302</b>
<b>Subject name</b>	<b>Database Management Systems</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Classify the modern and futuristic database applications based on size and complexity
<b>CO2</b>	Map ER model to Relational model to perform database design effectively
<b>CO3</b>	Explain & use design principles for logical design of databases and normalization approach.
<b>CO4</b>	Compare and contrast various indexing strategies in different database systems

<b>CO5</b>	Appraise how advanced databases differ from traditional databases.
<b>Course code</b>	<b>C204</b>
<b>Subject code</b>	<b>CS6303</b>
<b>Subject name</b>	<b>Computer Architecture</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Classify various instructions and addressing modes of the computer architecture
<b>CO2</b>	Illustrate the fixed-point and floating-point operations of arithmetic and logic unit
<b>CO3</b>	Explain the concept of MIPS implementation, pipelining and handling hazards
<b>CO4</b>	Outline the Instruction Level Parallelism and Flynn's Classification
<b>CO5</b>	Describe the principles and performance of physical and virtual memory

<b>Course code</b>	<b>C205</b>
<b>Subject code</b>	<b>CS6304</b>
<b>Subject name</b>	<b>Analog and Digital Communication</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Define sampling, quantization and encoding techniques.
<b>CO2</b>	Define DPCM, DM, ADPCM and ADM techniques
<b>CO3</b>	Analyze the line coding and techniques for eliminating ISI in digital communication system.
<b>CO4</b>	Design and implement base band transmission and reception schemes and implement band pass signaling schemes
<b>CO5</b>	Apply error control coding techniques in digital communication system.

<b>Course code</b>	<b>C206</b>
<b>Subject code</b>	<b>GE6351</b>
<b>Subject name</b>	<b>Environmental Science and Engineering</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Public awareness of environmental is at infant stage.
<b>CO2</b>	Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection.
<b>CO3</b>	Ignorance and incomplete knowledge have led to misconceptions
<b>CO4</b>	Understand what are professional ethics and how do ethics affect the outcomes of environmental laws and regulations
<b>CO5</b>	Understand what is life time learning and how does it contribute to the advancement of career.

<b>Course code</b>	<b>C207</b>
<b>Subject code</b>	<b>CS6311</b>
<b>Subject name</b>	<b>Programming and Data Structures Laboratory - II</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Be able to design and analyze the time and space efficiency of the data structure
<b>CO2</b>	Be capable to identify the appropriate data structure for given problem
<b>CO3</b>	Ability to analyze algorithms and a algorithm correctness.
<b>CO4</b>	Ability to summarize searching and sorting techniques
<b>CO5</b>	Ability to describe stack, queue and linked list operation.

<b>Course code</b>	<b>C208</b>
<b>Subject code</b>	<b>6312</b>
<b>Subject name</b>	<b>Database Management Systems Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Use typical data definitions and manipulation commands.
<b>CO2</b>	Design applications to test Nested and Join Queries
<b>CO3</b>	Implement simple applications that use Views
<b>CO4</b>	Implement applications that require a Front-end Tool
<b>CO5</b>	Critically analyze the use of Tables, Views, Functions and Procedures

**IV - SEMESTER**

<b>Course code</b>	<b>C209</b>
<b>Subject code</b>	<b>MA6453</b>
<b>Subject name</b>	<b>Probability and Queuing Theory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
<b>CO2</b>	Understand the basic concepts of one- and two-dimensional random variables and apply in engineering applications
<b>CO3</b>	Apply the concept of random processes in engineering disciplines.
<b>CO4</b>	Acquire skills in analyzing queueing models.
<b>CO5</b>	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner

<b>Course code</b>	<b>C210</b>
<b>Subject code</b>	<b>CS6551</b>
<b>Subject name</b>	<b>Computer Networks</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Independently understand basic computer network technology
<b>CO2</b>	Understand and explain Data Communications System and its components.
<b>CO3</b>	Identify the different types of network topologies and protocols
<b>CO4</b>	Enumerate the layers of the OSI model and TCP/IP. Explain the function(s) of each layer.
<b>CO5</b>	Identify the different types of network devices and their functions within a network

<b>Course code</b>	<b>C211</b>
<b>Subject code</b>	<b>CS6401</b>
<b>Subject name</b>	<b>Operating Systems</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Analyze the structure of OS and basic architectural components involved in OS design
<b>CO2</b>	Analyze various scheduling algorithms
<b>CO3</b>	Understand deadlock prevention and avoidance algorithms
<b>CO4</b>	Identify, use and evaluate the storage management policies with respect to different storage management techniques
<b>CO5</b>	Understand the functionality of file systems.

<b>Course code</b>	<b>C212</b>
<b>Subject code</b>	<b>CS6402</b>
<b>Subject name</b>	<b>Design and Analysis of Algorithm</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Analyze the time and space complexity of algorithms.
<b>CO2</b>	Modify existing algorithms to improve efficiency.
<b>CO3</b>	Illustrate the problems using dynamic programming
<b>CO4</b>	Explain and analyze problems related to iterative improvement.
<b>CO5</b>	Critically analyze the different algorithm design techniques for a given problem

<b>Course code</b>	<b>C213</b>
<b>Subject code</b>	<b>CS6403</b>
<b>Subject name</b>	<b>Software Engineering</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Identify the key activities in managing a software project.
<b>CO2</b>	Compare different process models.
<b>CO3</b>	Concepts of requirements engineering and Analysis Modeling.
<b>CO4</b>	Apply systematic procedure for software design and deployment
<b>CO5</b>	Compare and contrast the various testing and maintenance.

<b>Course code</b>	<b>C214</b>
<b>Subject code</b>	<b>CS6411</b>
<b>Subject name</b>	<b>Networks Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Understand fundamental underlying principles of computer networking
<b>CO2</b>	Understand details and functionality of layered network architecture.
<b>CO3</b>	Apply mathematical foundations to solve computational problems in computer networking
<b>CO4</b>	Analyze performance of various communication protocols.
<b>CO5</b>	Compare routing algorithms

<b>Course code</b>	<b>C215</b>
<b>Subject code</b>	<b>CS6412</b>
<b>Subject name</b>	<b>Micro Processor and Micro Controller Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Implement the ALP Programs for fixed point arithmetic circuits.
<b>CO2</b>	design and implement programs on 8086 microprocessors by understanding its architecture, instruction set and interrupt process.
<b>CO3</b>	Compile the ALP for generating waveforms such as square wave and triangular wave using microprocessors.
<b>CO4</b>	Design a communication interface by understanding the system bus structure of 8086 microprocessor
<b>CO5</b>	Implement the programs in 8051 microcontrollers for ADC, DAC, stepper motor

<b>Course code</b>	<b>C216</b>
<b>Subject code</b>	<b>CS6413</b>
<b>Subject name</b>	<b>Operating Systems Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Compare the performance of various CPU Scheduling Algorithms
<b>CO2</b>	Implement Deadlock avoidance and Detection Algorithms
<b>CO3</b>	Implement Semaphores
<b>CO4</b>	Create processes and implement IPC
<b>CO5</b>	Analyze the performance of the various Page Replacement Algorithms.

**V - SEMESTER**

<b>Course code</b>	<b>C301</b>
<b>Subject code</b>	<b>MA6566</b>
<b>Subject name</b>	<b>Discrete Mathematics</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Have knowledge of the concepts needed to test the logic of a program.
<b>CO2</b>	Have an understanding in identifying structures on many levels
<b>CO3</b>	Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
<b>CO4</b>	Be aware of the counting principles.
<b>CO5</b>	Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.

<b>Course code</b>	<b>C302</b>
<b>Subject code</b>	<b>CS6501</b>
<b>Subject name</b>	<b>Internet Programming</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Implement Java programs.
<b>CO2</b>	Create a basic website using HTML and Cascading Style Sheets
<b>CO3</b>	Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms.
<b>CO4</b>	Design and implement server side programs using Servlets and JSP
<b>CO5</b>	Design and implement simple web page in PHP, and to present data in XML format.

<b>Course code</b>	<b>C303</b>
<b>Subject code</b>	<b>CS6502</b>
<b>Subject name</b>	<b>Object Oriented Analysis and Design</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Analyze and Design UML diagrams
<b>CO2</b>	Design and implement projects using OO concepts
<b>CO3</b>	Identify various scenarios based on software requirements
<b>CO4</b>	Transform UML based software design into pattern-based design using design patterns
<b>CO5</b>	Understand the various testing methodologies for Object Oriented software

<b>Course code</b>	<b>C304</b>
<b>Subject code</b>	<b>CS6503</b>
<b>Subject name</b>	<b>Theory of Computation</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Explain automata theory as the basis of all computer science languages design.
<b>CO2</b>	Build grammars for a given language and vice versa.
<b>CO3</b>	Develop Finite Automata, Push Down Automata and Turing machines.
<b>CO4</b>	Propose computation solutions using Turing machines.
<b>CO5</b>	Determine the decidability and intractability of computational problems

<b>Course code</b>	<b>C305</b>
<b>Subject code</b>	<b>CS6504</b>
<b>Subject name</b>	<b>Computer Graphics</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Implement the illumination and color model techniques
<b>CO2</b>	Prepare a two dimensional graphics and transformation concepts
<b>CO3</b>	Prepare a three dimensional graphics and transformation concepts
<b>CO4</b>	Design multimedia file format for graphics
<b>CO5</b>	Evaluate the 3D scenes using blender

<b>Course code</b>	<b>C306</b>
<b>Subject code</b>	<b>CS6511</b>
<b>Subject name</b>	<b>Case Tools Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Perform OO analysis and design for a given problem specification
<b>CO2</b>	Identify and map basic software requirements in UML mapping.
<b>CO3</b>	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns
<b>CO4</b>	Test the compliance of the software with the SRS.
<b>CO5</b>	To design with static UML diagrams

<b>Course code</b>	<b>C307</b>
<b>Subject code</b>	<b>CS6512</b>
<b>Subject name</b>	<b>Internet Programming Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Develop Web pages using HTML, XML and style sheets
<b>CO2</b>	Build user interfaces, sockets using Java frames and applets
<b>CO3</b>	Implement dynamic web pages using JSP and Servlets
<b>CO4</b>	Apply JSP Struts, Hibernate, spring frameworks to optimize web applications
<b>CO5</b>	Develop the web applications with AJAX

<b>Course code</b>	<b>C308</b>
<b>Subject code</b>	<b>CS6513</b>
<b>Subject name</b>	<b>Computer Graphics Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Implement the illumination and color model techniques
<b>CO2</b>	Prepare a two dimensional graphics and transformation concepts
<b>CO3</b>	Prepare a three dimensional graphics and transformation concepts
<b>CO4</b>	Design multimedia file format for graphics
<b>CO5</b>	Evaluate the 3D scenes using blender

**VI - SEMESTER**

<b>Course code</b>	<b>C309</b>
<b>Subject code</b>	<b>CS6601</b>
<b>Subject name</b>	<b>Distributed Systems</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Elucidate the foundations and issues of distributed systems
<b>CO2</b>	Identify the various synchronization issues and global state for distributed systems.
<b>CO3</b>	Recognize the Mutual Exclusion and Deadlock detection algorithms in distributed systems
<b>CO4</b>	Describe the agreement protocols and fault tolerance mechanisms in distributed systems.
<b>CO5</b>	Describe the features of peer-to-peer and distributed shared memory systems

<b>Course code</b>	<b>C310</b>
<b>Subject code</b>	<b>IT6601</b>
<b>Subject name</b>	<b>Mobile Computing</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Explain the basics of mobile telecommunication systems
<b>CO2</b>	Illustrate the generations of telecommunication systems in wireless networks
<b>CO3</b>	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
<b>CO4</b>	Explain the functionality of Transport and Application layers
<b>CO5</b>	Develop a mobile application using android/blackberry/ios/Windows SDK

<b>Course code</b>	<b>C311</b>
<b>Subject code</b>	<b>CS6660</b>
<b>Subject name</b>	<b>Compiler Design</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Understand the different phases of compiler.
<b>CO2</b>	Design a lexical analyzer for a sample language.
<b>CO3</b>	Apply different parsing algorithms to develop the parsers for a given grammar.
<b>CO4</b>	Understand syntax-directed translation and run-time environment.
<b>CO5</b>	Learn to implement code optimization techniques and a simple code generator.

<b>Course code</b>	<b>C312</b>
<b>Subject code</b>	<b>IT6502</b>
<b>Subject name</b>	<b>Digital Signal Processing</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Explain the Discrete Time Signals, System & Sampling theorem
<b>CO2</b>	Apply the Z-Transform, Convolution and Correlation for discrete time LTI System
<b>CO3</b>	Apply DFT,FFT & DCT algorithm for discrete time analysis
<b>CO4</b>	Acquire knowledge on various methods of designing IIR filter both in analog and digital domain for the given specification
<b>CO5</b>	Acquire knowledge on various techniques of designing FIR filter for the given specification
<b>Course code</b>	<b>C313</b>
<b>Subject code</b>	<b>CS6659</b>
<b>Subject name</b>	<b>Artificial Intelligence</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Identify problems that are amenable to solution by AI methods.
<b>CO2</b>	Identify appropriate AI methods to solve a given problem
<b>CO3</b>	Formalise a given problem in the language/framework of different AI methods
<b>CO4</b>	Implement basic AI algorithms.
<b>CO5</b>	Design and carry out an empirical evaluation of different algorithms on a problem formalisation, and state the conclusions that the evaluation supports.

<b>Course code</b>	<b>C314</b>
<b>Subject code</b>	<b>IT6004</b>
<b>Subject name</b>	<b>Software Testing</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Understand the different phases of compiler.
<b>CO2</b>	Design a lexical analyzer for a sample language.
<b>CO3</b>	Apply different parsing algorithms to develop the parsers for a given grammar.
<b>CO4</b>	Understand syntax-directed translation and run-time environment.
<b>CO5</b>	Learn to implement code optimization techniques and a simple code generator.

<b>Course code</b>	<b>C315</b>
<b>Subject code</b>	<b>CS6611</b>
<b>Subject name</b>	<b>Mobile Application Development Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Develop mobile applications using GUI and Layouts.
<b>CO2</b>	Develop mobile applications using Event Listener.
<b>CO3</b>	Develop mobile applications using Databases.
<b>CO4</b>	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi-threading and GPS.
<b>CO5</b>	Analyze and discover own mobile app for simple needs.

<b>Course code</b>	<b>C316</b>
<b>Subject code</b>	<b>CS6612</b>
<b>Subject name</b>	<b>Compiler Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Implement the different Phases of compiler using tools
<b>CO2</b>	Design a lexical analyzer for a sample language.
<b>CO3</b>	Analyze the control flow and data flow of a typical program
<b>CO4</b>	Optimize a given program
<b>CO5</b>	Generate an assembly language program equivalent to a source language program

<b>Course code</b>	<b>C317</b>
<b>Subject code</b>	<b>GE6674</b>
<b>Subject name</b>	<b>Communication and Soft Skills Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Demonstrate effective listening and speaking skills in formal and informal situations.
<b>CO2</b>	Interpret information by relating different genres of texts.
<b>CO3</b>	Develop skills in taking up international examinations like IELTS and TOEFL.
<b>CO4</b>	Infer ideas and suggestion into writing in both formal and informal contexts.
<b>CO5</b>	Apply critical thinking and self-awareness for life planning.

**VII - SEMESTER**

<b>Course code</b>	<b>C401</b>
<b>Subject code</b>	<b>CS6701</b>
<b>Subject name</b>	<b>Cryptography and Network Security</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Compare various Cryptographic Techniques
<b>CO2</b>	Design Secure applications
<b>CO3</b>	Inject secure coding in the developed applications
<b>CO4</b>	Identify appropriate mechanism for providing system security
<b>CO5</b>	Construct Cryptographic algorithm from hard problems in mathematics

<b>Course code</b>	<b>C402</b>
<b>Subject code</b>	<b>CS6702</b>
<b>Subject name</b>	<b>Graph Theory and Its Applications</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Apply principles and concepts of graph theory in practical situations
<b>CO2</b>	Identify the mathematical definitions and construct examples
<b>CO3</b>	Illustrate fundamental of circuits, cutsets, network flows and graph
<b>CO4</b>	Apply theoretical knowledge of combination and independent mathematical thinking in creative
<b>CO5</b>	Validate and critically assess a mathematical proof

<b>Course code</b>	<b>C403</b>
<b>Subject code</b>	<b>CS6703</b>
<b>Subject name</b>	<b>Grid and Cloud Computing</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Use the grid and cloud tool kits.
<b>CO2</b>	Design and implement applications on the Grid.
<b>CO3</b>	Design and implement applications on the Grid Platform of OGSA.
<b>CO4</b>	Design and implement applications on the Grid Platform of OGSI.
<b>CO5</b>	Design and Implement applications on the Cloud.

<b>Course code</b>	<b>C404</b>
<b>Subject code</b>	<b>CS6704</b>
<b>Subject name</b>	<b>Resource Management Techniques</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Explain the fundamental concept and approach to linear programming problems and its dual
<b>CO2</b>	Solve transportation and assignment problems
<b>CO3</b>	Extend the solution of linear programming problem using Integer programming algorithm
<b>CO4</b>	Solve the Dynamic Programming model
<b>CO5</b>	Construct a project network and apply program evaluation review technique and critical path management

<b>Course code</b>	<b>C405</b>
<b>Subject code</b>	<b>IT6801</b>
<b>Subject name</b>	<b>Service Oriented Architecture</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Explain the fundamentals of XML.
<b>CO2</b>	Develop the application based on XML.
<b>CO3</b>	Identify the characteristics and architectural principles of SOA
<b>CO4</b>	Develop web services using technology elements.
<b>CO5</b>	Develop SOA-based applications for intra-enterprise and inter-enterprise applications.

<b>Course code</b>	<b>C406</b>
<b>Subject code</b>	<b>CS6007</b>
<b>Subject name</b>	<b>Information Retrieval</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	To identify database management system and data warehouses
<b>CO2</b>	Design web search engine
<b>CO3</b>	Evaluate the clustering and searching technologies for different sub systems
<b>CO4</b>	Ability to explain different types of search algorithm like hardware text search system
<b>CO5</b>	Ability to use knowledge of datastructures and indexing methods in IR system

<b>Course code</b>	<b>C407</b>
<b>Subject code</b>	<b>CS6711</b>
<b>Subject name</b>	<b>Security Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Design a classic encryption techniques to solve the problems
<b>CO2</b>	Implement public key encryption algorithm.
<b>CO3</b>	Implement authentication algorithm techniques
<b>CO4</b>	Develop a signature scheme using digital signature standards
<b>CO5</b>	Implement the network security systems.

<b>Course code</b>	<b>C408</b>
<b>Subject code</b>	<b>CS6712</b>
<b>Subject name</b>	<b>Grid and Cloud Computing Laboratory</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Use the grid and cloud tool kits.
<b>CO2</b>	Design and implement applications on the Grid.
<b>CO3</b>	Design and implement applications on the Grid Platform of OGSA.
<b>CO4</b>	Design and implement applications on the Grid Platform of OGSF.
<b>CO5</b>	Design and Implement applications on the Cloud.

**VIII - SEMESTER**

<b>Course code</b>	<b>C409</b>
<b>Subject code</b>	<b>CS6801</b>
<b>Subject name</b>	<b>Multi-Core Architecture and Programming</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Design basic and intermediate RISC pipelines, including the instruction set, data paths, and ways of dealing with pipeline hazards.
<b>CO2</b>	Consider various techniques of instruction-level parallelism, including superscalar execution, branch prediction, and speculation, in design of high-performance processors
<b>CO3</b>	State and understand memory hierarchy design, memory access time formula, performance improvement techniques, and trade-offs.
<b>CO4</b>	State and compare properties of shared memory and distributed multiprocessor systems and cache coherency protocols
<b>CO5</b>	Learn from additional topics in computer architecture, such as multi-core processors, thread-level parallelism, and warehouse computing.

<b>Course code</b>	<b>C410</b>
<b>Subject code</b>	<b>CS6010</b>
<b>Subject name</b>	<b>Social Network Analysis</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Explain the concept of semantic web and related applications
<b>CO2</b>	Outline the Modelling, Aggregating for social network analysis
<b>CO3</b>	Outline the knowledge representation using ontology.
<b>CO4</b>	Illustrate the Extraction And Mining Communities in Web Social Networks
<b>CO5</b>	Use Graph Theory and Hybrid Representation for visualizing the Social Networks.

<b>Course code</b>	<b>C411</b>
<b>Subject code</b>	<b>MG6088</b>
<b>Subject name</b>	<b>Software Project Management</b>
<b>COURSE OUTCOMES</b>	
<b>CO1</b>	Outline the software project planning and management.
<b>CO2</b>	Use life cycle model & effort estimation for project development.
<b>CO3</b>	Use activity planning model and risk management techniques for project development.
<b>CO4</b>	Find cost model to manage the contracts of a software project.
<b>CO5</b>	Describe the quality of personnel in the development of software project.