



## REGULATION 2013

**SUB CODE / SUBJECT NAME : HS6151/ TECHNICAL ENGLISH - I**

**YEAR / SEM: : I/I**

COURSE CODE	COURSE OUTCOMES
C101.1 (C01)	Define the fundamentals of engineering after learning the rules of English Grammar.
C101.2 (C02)	Observe and interpret the contextual knowledge by speaking, listening and reading the social issues such as public health, safety, legal and culturally related considerations.
C101.3 (C03)	Apply the creative, appropriate techniques, resources to analyze complex engineering problems by interactive exercises such as interviews and dialogue-writing.
C101.4 (C04)	Design the multidisciplinary settings to manage projects as an individual, as a member or leader after taking the exercises like role-play, group discussion and making presentations
C101.5 (C05)	Model the life-long learning methods suitable for all the environments committed to professional ethics and responsibilities after inculcating the habit of reading and writing
C101.6 (C06)	Analyze and identify the root for an effective managerial skills through different spoken discourse and excerpts

**SUB CODE / SUBJECT NAME : MA6151/ ENGINEERING MATHS - I**

**YEAR / SEM: : I/I**

COURSE CODE	COURSE OUTCOMES
C102.1 (C01)	Define Eigen values and Eigen vectors and explain how to analyze the stability of a system using these concepts and many other real time application in engineering.
C102.2 (C02)	Explain the physical interpretation of divergence, curl and gradient of a vector field and also how to apply these concepts in solving engineering problems.
C102.3 (C03)	Define the convergence of a sequence and series and make the student knowledgeable in the area of infinite series and their convergence so that he/ she will be familiar with limitations of using infinite series approximations for solutions arising in mathematical modeling
C102.4 (C04)	Introduce the concept of multivariable functions of real variables arise inevitably in engineering and physics due to any one physical quantity will generally depend on a number of other quantities and help to solve real time problems.
C102.5 (C05)	Extend the concept of single integral to multiple integral and explain how to evaluate it. Also explain the idea of change of order of integration and explain how to find Area and volume of solids
C102.6 (C06)	Understand various mathematical tools and apply it to solve the engineering problems most effectively



## SUB CODE / SUBJECT NAME : PH6151/ ENGINEERING PHYSICS - I

YEAR / SEM: : I/I

COURSE CODE	COURSE OUTCOMES
C103.1 (C01)	To understand the possible crystal structures and to analyze various growth techniques in the view of increasing demand of crystals for various Engineering and Technological applications.
C103.2 (C02)	To understand the basic concepts of elastic behavior of materials and evaluate the structural stability of beams. Remembering functional ideas of thermal physics and compare the thermal conductivity of different materials to meet the specific needs
C103.3 (C03)	Describe and analyzing the quantum nature of radiation and matter to solve the real time societal and technological problems.
C103.4 (C04)	The significance of frequency dependent sound waves is discussed and to solve the Medical and Engineering problems using ultrasonic's.
C103.5 (C05)	To discuss the propagation of light in optical fibers, compare various types of fibers and its applications in Medical and Engineering fields
C103.6 (C06)	To make the students understand the fundamentals of Physics to solve complex engineering problems for benefit of the society

## SUB CODE / SUBJECT NAME : CY6151/ ENGINEERING CHEMISTRY - I YEAR / SEM: I/I

COURSE CODE	COURSE OUTCOMES
C104.1 (C01)	To apply and implement the knowledge of synthesis and uses of polymers in industries and environment
C104.2 (C02)	To analyze and understand the concepts of thermodynamic laws in various industrial applications
C104.3 (C03)	To understand and remember the concepts of photo physical, photochemical process and spectroscopy for getting knowledge in light emitting properties of compounds and identifying the functional groups of molecules
C104.4 (C04)	Knowledge of alloys gives an idea about the manufacturing process in various industries
C104.5 (C05)	To create the knowledge of nonmaterial's and their applications in fields like medicinal, electrical, electronic, chemical,etc
C104.6 (C06)	The knowledge gained on polymer chemistry, Thermodynamics, Spectroscopy, phase rule and nano materials will provide a strong platform to understand the concept on various fields like mechanical, electrical, civil engineering for further learning



**SUB CODE / SUBJECT NAME : GE6151/ COMPUTER PROGRAMMING**  
**YEAR / SEM: I/I**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C105.1 (C01)</b>	Understand the organization of a digital computer.
<b>C105.2 (C02)</b>	Be exposed to the number systems
<b>C105.3 (C03)</b>	Ability to think logically and write pseudo code or draw flow charts for problems.
<b>C105.4 (C04)</b>	Ability to use arrays, strings, functions, pointers, structures and unions in C.
<b>C105.5 (C05)</b>	Design C Programs for problems
<b>C105.6 (C06)</b>	Write and execute C programs for simple applications

**SUB CODE / SUBJECT NAME : GE6152/ ENGINEERING GRAPHICS**  
**YEAR / SEM: I/I**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C106.1 (C01)</b>	How to draw different engineering curves, draw different orthographic projections.
<b>C106.2 (C02)</b>	Illustrate different views of points, lines and planes inclined to both HP and VP in first quadrant.
<b>C106.3 (C03)</b>	Develop the projections of simple solids inclined to any one plane
<b>C106.4 (C04)</b>	Categorize Section and develop various solids
<b>C106.5 (C05)</b>	Evaluate to Draw 3D projections of simple solids by Perspective by visual ray method and Isometric projections
<b>C106.6 (C06)</b>	Build an engineering component using Paper drawing as well as in CAD



**SUB CODE / SUBJECT NAME : GE6161/ COMPUTER PRACTICES LABORATORY      YEAR / SEM: I/I**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C107.1 (C01)</b>	Be familiar with the use of Office software.
<b>C107.2 (C02)</b>	Be exposed to presentation and visualization tools.
<b>C107.3 (C03)</b>	Be exposed to problem solving techniques and flow charts.
<b>C107.4 (C04)</b>	Apply good programming design methods for program development.
<b>C107.5 (C05)</b>	Design and implement C programs for simple applications.
<b>C107.6 (C06)</b>	Develop recursive programs.

**SUB CODE / SUBJECT NAME : GE6162/ ENGINEERING PRACTICES LABORATORY  
YEAR / SEM: I/I**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C108.1 (C01)</b>	Hands on experience on welding, sheet metal and lathe works
<b>C108.2 (C02)</b>	Experience the plumbing and carpentry work
<b>C108.3 (C03)</b>	Demonstration on centrifugal pump and air conditioning working principles
<b>C108.4 (C04)</b>	Measurement of Electrical quantities, earthing procedures, wiring methods etc
<b>C108.5 (C05)</b>	Study of Electronic components and equipments – Resistor, colour coding measurement of AC signal parameter, Gates , Circuits etc
<b>C108.6 (C06)</b>	Provide exposure to the students with hands on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.



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## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**SUB CODE / SUBJECT NAME : GE6163/ PHYSICS AND CHEMISTRY LAB - I YEAR / SEM: I/I**

COURSE CODE	COURSE OUTCOMES
<b>C109.1 (C01)</b>	To apply the physics principles of Thermal physics and Properties of Matter to evaluate properties of materials
<b>C109.2 (C02)</b>	To understand measurement technique and usage of new instrument in Optics for real time application in Engineering .
<b>C109.3 (C03)</b>	Apply the concept of Ultrasonic to determine the physical parameters
<b>C109.4 (C04)</b>	Able to analyze the quality of water for domestic and industrial purpose
<b>C109.5 (C05)</b>	Used to find out the emf for different metallic solutions from which electrode potential is determined
<b>C109.6 (C06)</b>	To acquire knowledge about the conductivity of acids and bases

## SEMESTER II

**SUB CODE / SUBJECT NAME : HS6251/ TECHNICAL ENGLISH-II YEAR / SEM: I/II**

COURSE CODE	COURSE OUTCOMES
<b>C110.1 (C01)</b>	Define the impact of the professional engineering solution in societal and environmental contexts with the help of the basic grammar taught to communicate effectively and confidently
<b>C110.2 (C02)</b>	Observe the usage of modern engineering and IT tools in designing and developing solutions after developing their reading skills with different types of reading strategies.
<b>C110.3 (C03)</b>	Apply the creative, appropriate techniques, resources to analyze complex engineering problems by interactive exercises like sample interviews and dialogue – writing.
<b>C110.4 (C04)</b>	Analyze the engineering and Project management principles in consequence of the listening and speaking skills acquired during the classroom activities.
<b>C110.5 (C05)</b>	Model the time varying natural and engineering sciences after learning to write an imaginary reports, essays, process description, and visualizing materials
<b>C110.6 (C06)</b>	Understand the responsibilities relevant to the professional engineering practice after reading the different genres of texts.



**SUB CODE / SUBJECT NAME : MA6251/ MATHEMATICS-II**  
**YEAR / SEM: I/II**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C111.1 (CO1)</b>	Apply the knowledge of techniques in solving ordinary differential equations that model engineering problems.
<b>C111.2 (C02)</b>	Define and understand the concepts of vector calculus, needed for problems in all engineering disciplines.
<b>C111.3 (C03)</b>	Develop an understanding of the standard techniques of complex variable theory so as to enable the student to apply them with confidence, in application areas such as heat conduction, elasticity, fluid dynamics and flow the of electric current.
<b>C111.4 (C04)</b>	Evaluate real integrals by applying concept of complex integration
<b>C111.5 (C05)</b>	Understand and apply the knowledge of Laplace Transforms in solving system of linear differential equations.
<b>C111.6 (C06)</b>	Introduces fundamental knowledge in mathematics that is applicable in the Engineering aspects.

**SUB CODE / SUBJECT NAME : PH6251/ ENGINEERING PHYSICS-II**  
**YEAR / SEM: I/II**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C112.1 (CO1)</b>	To understand the basic principles of the electrical and thermal conductivity of metals and to analyze the electron behavior by classical and quantum theories.
<b>C112.2 (C02)</b>	To discuss the electron behavior in conduction and valence band in semiconducting materials, comparing the mobility and carrier concentration of N and P type semiconductors by theoretical method and applying Hall effect experimental method for biasing application.
<b>C112.3 (C03)</b>	To identify the different types of magnetic materials based on the atomic magnetic dipoles and utilize them for different technological applications. To explain the superconducting behaviors of materials and to solve real time medical and engineering applications.
<b>C112.4 (C04)</b>	To describe different polarization mechanism in dielectric materials and to meet the specific need in energy sector.
<b>C112.5 (C05)</b>	State and explain modern engineering materials such as metallic glasses, shape memory alloys, Nonmaterial's and NLO materials to design new engineering devices
<b>C112.6 (C06)</b>	To emphasize the role of conventional and modern engineering materials in Technological applications for the sustainable development of the society



**SUB CODE / SUBJECT NAME :CY6251/ENGINEERING CHEMISTRY-II**  
**YEAR / SEM: I/II**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C113.1 (CO1)</b>	To gain knowledge about water quality parameters to analyze and provide them with latest equipment and technologies by using external and internal treatments
<b>C113.2 (CO2)</b>	To impart knowledge in principles of electrochemical reactions, redox reactions in corrosion of materials and methods for corrosion prevention and protection of materials
<b>C113.3 (CO3)</b>	To understand the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells
<b>C113.4 (CO4)</b>	To get adequate knowledge in preparation, properties and applications of engineering materials
<b>C113.5 (CO5)</b>	Analyze issues related to fuels and their synthesis and able to understand working of IC and diesel engines
<b>C113.6 (CO6)</b>	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning

**SUB CODE / SUBJECT NAME : CS6201/DIGITAL PRINCIPLES AND SYSTEM DESIGN**  
**YEAR / SEM: I/II**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C114.1 (CO1)</b>	Define the fundamental concepts of digital logic circuits.
<b>C114.2 (CO2)</b>	Understand and Correlate between Boolean Expression, simplification methods to optimize it for desired characteristics.
<b>C114.3 (CO3)</b>	Apply the concept of digital logic circuits and Design various combinational building blocks and sequential logic to represent logic function in multiple forms
<b>C114.4 (CO4)</b>	Analyze a memory cell and apply for organizing larger memory.
<b>C114.5 (CO5)</b>	Understand and compare the concepts of Programmable logic Devices.
<b>C114.6 (CO6)</b>	Develop a HDL Programs for combinational and Sequential Circuits



**SUB CODE / SUBJECT NAME : CS6202/PROGRAMMING AND DATA STRUCTURE-I  
YEAR / SEM: I/II**

COURSE CODE	COURSE OUTCOMES
C115.1 (CO1)	To Define the problem solutions using C-Programming concepts
C115.2 (CO2)	To Apply the Control Structures in solving the problems
C115.3 (CO3)	To Apply the different linear data structures to problem solutions
C115.4 (CO4)	To Analyze the various linear data structure concepts
C115.5 (CO5)	To Create model for linear data structures using C Programming concepts
C115.6 (CO6)	To Demonstrate linear data structure concepts using C Programming concepts

**SUB CODE / SUBJECT NAME : GE6262/PHYSICS AND CHEMISTRY LAB-II YEAR /  
SEM: I/II**

COURSE CODE	COURSE OUTCOMES
C116.1 (CO1)	Apply the knowledge of semiconducting material to evaluate the band gap of the material useful for engineering solutions.
C116.2 (CO2)	Apply the concept of elasticity to analyze the properties related to multidisciplinary field
C116.3 (CO3)	To demonstrate an experiment using spectrometer to determine the refractive index of various color and dispersive power of the material of the given prism and to develop instrument handling skill.
C116.4 (CO4)	Able to analyze the quality of water for domestic and industrial purpose
C116.5 (CO5)	Used to find out the Emf for different metallic solutions from which electrode potential is determined
C116.6 (CO6)	To acquire knowledge about the conductivity of acids and bases





**SUB CODE / SUBJECT NAME : CS6211/ DIGITAL LABORATORY**  
**YEAR / SEM: I/II**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C117.1 (CO1)</b>	Examine Boolean Theorems using basic gates.
<b>C117.2 (CO2)</b>	Apply the concept of digital logic circuits and implement combinational circuits using basic gates for arbitrary functions, code converters.
<b>C117.3 (CO3)</b>	Design and implementation of combinational circuits using MSI devices: 4 – bit binary adder / subtraction Parity generator / checker Magnitude Comparator Application using multiplexers
<b>C117.4 (CO4)</b>	Analyze and implementation of sequential circuits: Shift –registers Synchronous and asynchronous counters
<b>C117.5 (CO5)</b>	Simulate Verilog models for digital logic circuits.
<b>C117.6 (CO6)</b>	Design and implementation of a simple digital system

**SUB CODE / SUBJECT NAME : CS6212/ PROGRAMMING AND DATA STRUCTURE LAB - I**  
**YEAR / SEM: I/II**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C118.1 (CO1)</b>	Develop simple C programs using pointers and functions.
<b>C118.2 (CO2)</b>	Develop C program for linear data structure operations and its applications.
<b>C118.3 (CO3)</b>	Experiment with file manipulation concepts.
<b>C118.4 (CO4)</b>	Develop programs using various sorting algorithms.
<b>C118.5 (CO5)</b>	Develop programs using different searching methods.
<b>C118.6 (CO6)</b>	Develop C program for stack and Queue.



## SEMESTER – III

### MA6351 - TRANSFORM AND PARTIAL DIFFERENTIAL EQUATIONS

Course Code	Course Outcomes
C201.1 (CO1)	Evaluating the various model of homogeneous and non homogeneous partial differential equations which helps to solve engineering problems.
C201.2 (CO2)	Determine the Fourier coefficients in the Fourier series expansion of a given function and which play a vital role in analyzing various complex problems in engineering.
C201.3 (CO3)	Analyzing the one dimensional, two dimensional heat equation and one dimensional wave equation by using the concept of Fourier series, which describes the distribution in a given region over time
C201.4 (CO4)	Determine Fourier transform for a given function and use them to evaluate the definite integrals which helps in analyzing the differential equation and also applied in quantum mechanics
C201.5 (CO5)	Determine Z transforms and standard function and use them to solve the difference equation, which helps to investigate the discrete time signals.
C201.6 (CO6)	Understanding of the mathematical principles on transforms and partial differential equation would provide them the ability to formulate and solve the physical problems of engineering

### CS6301 - Programming and Data Structure II

Course Code	Course Outcomes
C202.1 (CO1)	To Develop the problem solutions using Object Oriented Techniques
C202.2 (CO2)	To Apply the concepts of Object Oriented Techniques for problem solving
C202.3 (CO3)	To Analyze and use the control structures of C++ appropriately.
C202.4 (CO4)	To Design and critically analyse the various non-linear data structure concepts
C202.5 (CO5)	To Apply the different data structures to problem solutions and Create model for concepts
C202.6 (CO6)	To demonstrate the data structure concepts through OOPs concepts



## CS6302 - Database Management Systems

Course Code	Course Outcomes
C203.1 (CO1)	Compare and contrast different data models
C203.2 (CO2)	Analyse various query optimization techniques and data types.
C203.3 (CO3)	Apply concurrency control & recovery mechanism for database problems
C203.4 (CO4)	Outline the file organization of records in files.
C203.5 (CO5)	Illustrate various database security techniques.
C203.6 (CO6)	Comprehence the various physical storage media in database.

## CS6303 - Computer Architecture

Course Code	Course Outcomes
C204.1 (CO1)	Explain the computer organization components, instructions and addressing modes
C204.2 (CO2)	Demonstrate arithmetic operations
C204.3 (CO3)	Design and analyse pipelined control units
C204.4 (CO4)	Outline the concept of parallelism and multi-core processor
C204.5 (CO5)	Classify the memory technologies and I/O systems
C204.6 (CO6)	Compare and contrast the arithmetic operations used in various processors



## CS6304 - Analog and Digital Communication

Course Code	Course Outcomes
C205.1 (CO1)	Understanding the basics of analog modulation technique
C205.2 (CO2)	Explain various digital communication schemes
C205.3 (CO3)	Design and analyze various pulse modulation techniques
C205.4 (CO4)	Discuss data communication circuits and modems
C205.5 (CO5)	Discuss the concept of spread spectrum and multiple access techniques
C205.6 (CO6)	Describe various error coding techniques

## GE6351 - Environmental Science and Engineering

Course Code	Course Outcomes
C206.1 (CO1)	To interpret the relationship between living organisms and the environment and to identify the threats to global biodiversity
C206.2 (CO2)	To identify and prevent the problems related to the pollution of air, water, soil, marine, etc
C206.3 (CO3)	To understand the importance of natural resources and to conserve it for future generation
C206.4 (CO4)	To analyse the social issues of the environment to be a part of sustainable development
C206.5 (CO5)	To create awareness and sustainable population growth and know the contribution of information technology in environmental management
C206.6 (CO6)	To study the integrated themes and biodiversity, natural resources, pollution control, waste management for protecting environment from degradation



## CS6311 - Programming and Data Structure Laboratory II

Course Code	Course Outcomes
C207.1 (CO1)	Select good programming design methods for program development.
C207.2 (CO2)	Develop C++ programs for object oriented concepts.
C207.3 (CO3)	Develop C++ programs for handling exceptions
C207.4 (CO4)	Develop C++ programs for practical problems using non-linear data structures.
C207.5 (CO5)	Develop recursive programs using trees and graphs.
C207.6 (CO6)	Develop C++ programs for shortest path algorithms.

## CS6312 - Database Management Systems Laboratory

Course Code	Course Outcomes
C208.1 (CO1)	Infer database language commands to create simple database
C208.2 (CO2)	Analyze the database using queries to retrieve records
C208.3 (CO3)	Applying PL/SQL for processing database
C208.4 (CO4)	Analyze front end tools to design forms, reports and menus
C208.5 (CO5)	Develop solutions using database concepts for real time requirements
C208.6 (CO6)	Design mini project for different problems



## SEMESTER - IV

### MA6453 - Probability and Queuing Theory

Course Code	Course Outcomes
C209.1 (CO1)	Define the concept of random variable and its properties. Construct probabilistic models for observed phenomena through distributions which play an important role in many engineering applications
C209.2 (CO2)	Identify random variables by designing joint distributions and correlate the random variables.
C209.3 (CO3)	Define the concept of random processes and its classification, in particular about Markov chains, which plays an important role in finding solution of many engineering problems.
C209.4 (CO4)	Identify the queuing model in the given system and find the performance measures to analyse the result in real time situation.
C209.5 (CO5)	Introduce non markovian queuing model which helps in analyzing various queuing networks. Applications emphasize communication networks and computer operations, but may include examples from transportation, manufacturing, and the service industry
C209.6 (CO6)	Helps to develop probabilistic models under several areas of science and engineering

### CS6551 - Computer Networks

Course Code	Course Outcomes
C210.1 (CO1)	To Understand the components required to build different types of networks
C210.2 (CO2)	To Classify the required functionality at each layer for given application and Internet working
C210.3 (CO3)	To Analyze and demonstrate the solution of each functionality and routing techniques for each layer
C210.4 (CO4)	To Design the flow of information from one node to another node in the network
C210.5 (CO5)	To experiment the different application and Learn the flow control and congestion control algorithms
C210.6 (CO6)	To illustrate how application layer protocol works



### CS6401 - Operating Systems

Course Code	Course Outcomes
C211.1 (CO1)	Understand the basic concepts of OS ,Operating System Structure and functions of operating systems.
C211.2 (CO2)	Apply the scheduling algorithms for scheduling and avoid deadlock
C211.3 (CO3)	Analysze Processes, Threads ,concurrency and deadlocks
C211.4 (CO4)	Evaluate various memory management schemes and understand I/O management and File systems
C211.5 (CO5)	Model the Linux system and perform administrative tasks on Linux Servers
C211.6 (CO6)	Explain I/O management and file systems

### CS6402 - Design and Analysis of Algorithms

Course Code	Course Outcomes
C212.1 (CO1)	Analyze the time and space complexity of various algorithms
C212.2 (CO2)	Analyze different algorithm design techniques for problem solving
C212.3 (CO3)	Applying techniques for various computing problems
C212.4 (CO4)	knowledge about problem solving using iterative method
C212.5 (CO5)	Design limitations of algorithms in problem solving
C212.6 (CO6)	knowledge about algorithm analysis techniques



## EC6504 - Microprocessor and Microcontroller

Course Code	Course Outcomes
C213.1 (CO1)	Understand architecture and operations of a microprocessor & Microcontroller system in depth
C213.2 (CO2)	Demonstrate programming proficiency using the various addressing modes and data transfer instructions of the microprocessor
C213.3 (CO3)	Analyze, specify, design, write and test assembly language programs of moderate complexity
C213.4 (CO4)	Perform the detailed hardware design of a microprocessor & microcontroller system, and program the microprocessor using suitable techniques and software tools
C213.5 (CO5)	Design electrical circuitry to the Microprocessor & Microcontroller I/O ports in order to interface the processor to external devices
C213.6 (CO6)	Design and Implementation of electronic system using appropriate microprocessor/Microcontroller, programming, Interfacing and troubleshooting techniques

## CS6403 - Software Engineering

Course Code	Course Outcomes
C214.1 (CO1)	Outline the fundamentals of software engineering concepts and software process standards
C214.2 (CO2)	Analyse requirements of software system and explore all requirements gathering approaches
C214.3 (CO3)	Creating an architectural design using design engineering process
C214.4 (CO4)	Apply software strategies and software testing tactics for testing real time projects effectively
C214.5 (CO5)	Compare and contrast the various project management and maintenance.
C214.6 (CO6)	Implement the software product according to software systematic approaches





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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

## CS6411 - Networks Laboratory

Course Code	Course Outcomes
C215.1 (CO1)	Demonstrate the socket program using TCP & UDP
C215.2 (CO2)	Develop simple applications using TCP & UDP
C215.3 (CO3)	Develop the code for Data link layer protocol simulation
C215.4 (CO4)	Examine the performances of Routing protocol
C215.5 (CO5)	Experiment with congestion control algorithm using network simulator
C215.6 (CO6)	Understand the concept of data and signal, data transmission and data conversion

## CS6412 - Microprocessor and Microcontroller Laboratory

Course Code	Course Outcomes
C216.1 (CO1)	Apply programming concept for various applications using microprocessors and microcontrollers
C216.2 (CO2)	An in-depth knowledge of applying the concepts on real- time applications
C216.3 (CO3)	Solid foundation on interfacing the external devices to the processor and controllers according to the user requirements to create novel products and solutions for the real time problems
C216.4 (CO4)	Understanding of industrial environment aware of excellence guidelines and lifelong learning needed for a successful professional career in embedded and real time system design
C216.5 (CO5)	Exposing the students to design work where there is no single correct solution, rather competing objectives; and to encourage cooperative team work and develop communication skills.
C216.6 (CO6)	Apply software tools for better programming.



## CS6413 - Operating Systems Laboratory

Course Code	Course Outcomes
C217.1 (CO1)	Experiment with Unix commands and shell programming
C217.2 (CO2)	Build 'C' program for process and file system management using system calls
C217.3 (CO3)	Choose the best CPU scheduling algorithm for a given problem instance
C217.4 (CO4)	Identify the performance of various page replacement algorithms
C217.5 (CO5)	Develop algorithm for deadlock avoidance, detection and file allocation strategies
C217.6 (CO6)	Implement semaphores, memory management

## SEMESTER - V

### MA6566 - Discrete Mathematics

Course Code	Course Outcomes
C301.1 (CO1)	Apply the knowledge of the concepts needed to test the logic of a program.
C301.2 (CO2)	Introduce the core ideas of combinatorial mathematics and apply these ideas to practical problems.
C301.3 (CO3)	Explain basic concepts in Graph theory and Define how graphs serve as models for many standard problems
C301.4 (CO4)	Create awareness of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science and Analyze the concepts and properties of algebraic structures such as groups, rings and fields.
C301.5 (CO5)	Define the basic ideas of posets and develop the concepts of lattices which has application in finite state machines.
C301.6 (CO6)	Introduce the concepts of discrete objects and relationships that bind them and create an ability to deal with abstraction, combinatorics, algorithms and graphs.



## CS6501 - Internet Programming

Course Code	Course Outcomes
C302.1 (CO1)	Explain the concepts of Control Statements, I/O Applet and Threading
C302.2 (CO2)	Develop a basic website using HTML and Cascading Style Sheets
C302.3 (CO3)	Compare and contrast the Java Script programming for client and server along with its event handling mechanisms
C302.4 (CO4)	Build a simple web page in PHP with XML data format
C302.5 (CO5)	Explain web services and SOAP
C302.6 (CO6)	Illustrate Client Presentation using AJAX

## CS6502 - Object Oriented Analysis and Design

Course Code	Course Outcomes
C303.1 (CO1)	Design and explain object oriented methodologies and relationships between objects and classes in UML
C303.2 (CO2)	Apply UML notations to develop various UML diagrams for the given scenario and will be able to evaluate the complexity in software design.
C303.3 (CO3)	Identify the objects and its responsibilities using traditional techniques and develop object-based models in real world projects
C303.4 (CO4)	Find the static and dynamic behaviour of objects about document creation for the given scenario able to analyze information systems in real-world settings.
C303.5 (CO5)	Apply the domain & specification model for the given scenario Synthesize and develop realtime application based on object oriented methodologies able to represent a real-world system using UML diagrams.
C303.6 (CO6)	Compare and Contrast Different Testing Techniques



### CS6503 - Theory of Computation

Course Code	Course Outcomes
C304.1 (CO1)	Outline the concept of Finite Automata and Regular Expression
C304.2 (CO2)	Illustrate the design of Context Free Grammar for any language set
C304.3 (CO3)	Demonstrate the push down automaton model for the given language
C304.4 (CO4)	Make use of Turing machine concept to solve the simple problems
C304.5 (CO5)	Explain decidability or undecidability of various problems
C304.6 (CO6)	Design Various Computing models and know the decidability and undecidability of various problems

### CS6504 - Computer Graphics

Course Code	Course Outcomes
C305.1 (CO1)	Gain knowledge about graphics hardware devices and software used.
C305.2 (CO2)	Design and Understand the two dimensional graphics and their transformations.
C305.3 (CO3)	Understand the three dimensional graphics, object representation and their transformations.
C305.4 (CO4)	Understand and familiar with illumination and color models.
C305.5 (CO5)	Be familiar with understand clipping techniques.
C305.6 (CO6)	Gain knowledge about the design and animation sequence



## CS6511 - Case Tools Laboratory

Course Code	Course Outcomes
C306.1 (CO1)	Design and implement projects using OO concepts.
C306.2 (CO2)	Be exposed to the UML design diagrams.
C306.3 (CO3)	Learn to map design to code.
C306.4 (CO4)	Be familiar with the various testing techniques
C306.5 (CO5)	Apply appropriate design patterns.
C306.6 (CO6)	Compare and contrast various testing techniques

## CS6512 - Internet Programming Laboratory

Course Code	Course Outcomes
C307.1 (CO1)	Illustrate web pages using HTML/XML and style sheets
C307.2 (CO2)	Analyze Java programs using socket for chat application and file transfer using HTTP,SMTP,FTP,POP3
C307.3 (CO3)	Compare and contrast dynamic web pages using server side scripting servlets,JSP,JDBC
C307.4 (CO4)	Develop a Client Server application and use the frameworks JSP Strut, Spring
C307.5 (CO5)	Build the applications using AJAX
C307.6 (CO6)	Develop Web Services



## CS6513 - Computer Graphics Laboratory

Course Code	Course Outcomes
C308.1 (CO1)	Understand and implement algorithms for graphical drawing primitives
C308.2 (CO2)	Design 2D graphical transformation
C308.3 (CO3)	Analyze and design clipping algorithms and viewing techniques
C308.4 (CO4)	Design 3D graphical transformation
C308.5 (CO5)	Use image editing tool for image manipulation and enhancement
C308.6 (CO6)	Design graphical scenes using open graphics library suits

## SEMESTER - VI

### CS6601 - Distributed Systems

Course Code	Course Outcomes
C309.1 (CO1)	Understand foundations of Distributed Systems
C309.2 (CO2)	Introduce the idea of peer to peer services and file system
C309.3 (CO3)	Understand in detail the system level and support required for distributed system
C309.4 (CO4)	Apply remote method invocation and objects
C309.5 (CO5)	Understand the issues involved in studying process and resource management
C309.6 (CO6)	Evaluate various applications using distributed techniques.



## IT6601 - Mobile Computing

Course Code	Course Outcomes
C310.1 (CO1)	Introduction to Mobile Computing, Applications, MAC Protocols and issues.
C310.2 (CO2)	Description about Mobile Internet protocol and Transport Layer
C310.3 (CO3)	Description about Mobile Telecommunication systems Using GSM, GPRS and UMTS
C310.4 (CO4)	Introduction to Ad-Hoc concepts and Routing Protocols for MANET and VANET
C310.5 (CO5)	Description about various mobile platform and applications.
C310.6 (CO6)	Data synchronization in mobile computing systems

## CS6660- Compiler Design

Course Code	Course Outcomes
C311.1 (CO1)	Gain knowledge about different phases of a Compiler
C311.2 (CO2)	Illustrate the translation of regular expression
C311.3 (CO3)	Use the different compiler construction tools to develop a simple compiler
C311.4 (CO4)	Construct the intermediate representation considering the type systems
C311.5 (CO5)	Construct the optimization techniques for the generated code
C311.6 (CO6)	Design and implement a prototype compiler.



## IT6502 - Digital Signal Processing

Course Code	Course Outcomes
C312.1 (CO1)	Define basics of signals and systems, explain sampling theorem to convert analog to discrete signals and show how z transform and its properties are used as a mathematical tool in learning signals and systems
C312.2 (CO2)	Apply Discrete Fourier Transform and its properties to discrete time signals and systems
C312.3 (CO3)	Analyze digital IIR filters and model them using realization structures
C312.4 (CO4)	Prove that FIR digital filters are advantageous over IIR digital filters and model them using realization structures
C312.5 (CO5)	Discuss the behavior of digital filters on the effect of finite word length
C312.6 (CO6)	Design digital IIR and FIR filters and solve digital signal processing problems using transforms

## CS6659 - Artificial Intelligence

Course Code	Course Outcomes
C313.1 (CO1)	Identify problems that are amenable to solution by AI methods.
C313.2 (CO2)	Recognize appropriate AI methods to solve a given problem.
C313.3 (CO3)	Discuss a given problem in the language/framework of different AI methods.
C313.4 (CO4)	Implement basic AI algorithms.
C313.5 (CO5)	Design and carry out an empirical evaluation of different algorithms on a problem formalization, and state the conclusions that the evaluation supports.
C313.6 (CO6)	Gain knowledge on architecture of expert systems and its shells.





## IT6702 - Data Warehousing and Data Mining

Course Code	Course Outcomes
C314.1 (CO1)	Identify the differences between relational database systems and data warehouses, the need for data warehousing to formulate the decision support system an engineering specialization for the prediction and modeling to complex engineering activities.
C314.2 (CO2)	Summarize the dominant data warehousing architectures and analyze their implementation details to develop multidimensional data models to analyze complex engineering problems.
C314.3 (CO3)	Understand the different functionalities of data mining system and analyze the various data preprocessing techniques to design data warehouses that meet the specified needs of the society with appropriate environmental considerations.
C314.4 (CO4)	Analyze the various clustering and classification algorithm functionalities and evaluate their merits and demerits to acquire research based knowledge for the synthesis of the information to provide valid conclusions.
C314.5 (CO5)	Explain the advanced data mining concepts and outline their scope of providing IT solutions for different domains which helps in the betterment of life.
C314.6 (CO6)	Develop optimization algorithms with Data mining

## CS6611 - Mobile Application Development Laboratory

Course Code	Course Outcomes
C315.1 (CO1)	Build a native application using GUI components and Mobile application development framework
C315.2 (CO2)	Develop an application using basic graphical primitives and databases
C315.3 (CO3)	Construct an application using multi threading and RSS feed
C315.4 (CO4)	Make use of location identification using GPS in an application
C315.5 (CO5)	Model new applications to hand held devices
C315.6 (CO6)	Design and Implement various mobile applications using emulators.



## CS6612 - Compiler Laboratory

Course Code	Course Outcomes
C316.1 (CO1)	Apply different compiler writing tools to implement the different Phases
C316.2 (CO2)	Analyze the data flow and control flow
C316.3 (CO3)	Construct the intermediate representation and DAG
C316.4 (CO4)	Design the back end of a compiler for 8086 assembler
C316.5 (CO5)	Compare various code optimization techniques
C316.6 (CO6)	Implement The Code Generation Techniques

## GE6674 - Communication and Soft Skills - Laboratory

Course Code	Course Outcomes
C317.1 (CO1)	Define appropriate techniques with suitable language and speech pattern
C317.2 (CO2)	Discuss the social issues in the group discussion
C317.3 (CO3)	Apply the acquired skills confidently in interviews
C317.4 (CO4)	Take part in debates and public speaking
C317.5 (CO5)	Prioritize the ideas relevantly and coherently in writing and speaking
C317.6 (CO6)	Develop the skills for writing technical reports and letters



## SEMESTER - VII

### CS6701 - Cryptography and Network Security

Course Code	Course Outcomes
C401.1 (CO1)	Explain the basics of number theory and compare various encryption techniques
C401.2 (CO2)	Summarize the functionality of public key cryptography.
C401.3 (CO3)	Apply various message authentication functions and secure algorithms.
C401.4 (CO4)	Demonstrate different types of security systems and applications.
C401.5 (CO5)	Discuss different levels of security and services.
C401.6 (CO6)	To create secure coding in the developed applications.

### CS6702 - Graph Theory and Applications

Course Code	Course Outcomes
C402.1 (CO1)	Define and explain the fundamentals concepts of discrete mathematics and accurate mathematical definitions of objects in graph theory
C402.2 (CO2)	Explain the concept of tree which manipulate hierarchical data and Make information easy to search in data structures
C402.3 (CO3)	Analyze computer networks by using the concept of graph theory parameters like chromatic number, domination theory
C402.4 (CO4)	Creative investigation of questions in graph theory can be solved by using combination of theoretical knowledge and independent mathematical thinking
C402.5 (CO5)	Define difference equation and explain how to solve by using various techniques.
C402.6 (CO6)	Design a graph theory model for real time problems and analyse by using various graph theory parameters.



## CS6703 - Grid and Cloud Computing

Course Code	Course Outcomes
C403.1 (CO1)	Understand and apply the concept of Grid and Cloud Architectures.
C403.2 (CO2)	Comprehend the data intensive grid service models and grid computing techniques
C403.3 (CO3)	Analyze the concept of virtualization in cloud.
C403.4 (CO4)	Evaluate the programming model for Hadoop and globus toolkit.
C403.5 (CO5)	Create the security models in the grid and cloud environment.
C403.6 (CO6)	Demonstrate the importance of protocols and standards in management for cloud services

## CS6704 - Resource Management Techniques

Course Code	Course Outcomes
C404.1 (CO1)	Define and explain linear programming model which helps to solve decision problems like resource allocations problems and optimization problems which arise in engineering
C404.2 (CO2)	Introduce the concept of transportation and assignment problems and apply it in finding the shortest route problems in computer networks
C404.3 (CO3)	Apply the concept of integer programming technique to the implementation of graphical user interface
C404.4 (CO4)	Solve real time optimization problem by using classical optimization theory
C404.5 (CO5)	Analyze computer networks by using the concept of Critical path method and PERT
C404.6 (CO6)	Solve optimization problems by using suitable technique like simplex method, transportation method and integer programming .



## CS6004 – Cyber Forensics

Course Code	Course Outcomes
C405.1 (CO1)	Understand the security issues network layer and transport layer
C405.2 (CO2)	Be exposed to security issues of the application layer
C405.3 (CO3)	Analysis the computer forensics
C405.4 (CO4)	Evaluating the forensics tools
C405.5 (CO5)	creating the design to handle forensics tools
C405.6 (CO6)	Illustrate the various forensics tools

## IT6006 – Data Analytics

Course Code	Course Outcomes
C406.1 (CO1)	Understand the concepts of Big data
C406.2 (CO2)	Apply the statistical methods to perform the data analysis
C406.3 (CO3)	Define the data mining concepts in different streams
C406.4 (CO4)	Apply the data mining concepts to solve the real world problems.
C406.5 (CO5)	Understand the different frameworks in big data
C406.6 (CO6)	Illustrate the various visualization techniques in data mining



## CS6711 - Security Laboratory

Course Code	Course Outcomes
C407.1 (CO1)	Be exposed to the different cipher techniques
C407.2 (CO2)	Learn to implement the algorithms DES, RSA,MD5,SHA-1
C407.3 (CO3)	Learn to use Digital signature standard using simulation tools
C407.4 (CO4)	Learn to setup honey pot using KF Sensor
C407.5 (CO5)	Study about the installation of rootkits
C407.6 (CO6)	Understand the WAP and WEP using stumbler

## CS6712 - Grid and Cloud Computing Laboratory

Course Code	Course Outcomes
C408.1 (CO1)	Understanding and Make use of the Grid Toolkit.
C408.2 (CO2)	Comperhence the Design and Implementation of new Grid applications.
C408.3 (CO3)	Analysing the use of Cloud Toolkit.
C408.4 (CO4)	Evaluating the cloud applications on Cloud.
C408.5 (CO5)	Creating the applications according to the services.
C408.6 (CO6)	Identify and analyze security implications in cloud computing



## SEMESTER - VIII

### CS6801 - Multi – Core Architectures and Programming

Course Code	Course Outcomes
C409.1 (CO1)	To design single core and multicore architectures with performance issues.
C409.2 (CO2)	To implement program in parallel processors and discuss the parallel program challenges
C409.3 (CO3)	To develop programs using OpenMP in shared memory programming
C409.4 (CO4)	To develop programs using MPI in distributed memory programming
C409.5 (CO5)	To implement parallel program development using OpenMP
C409.6 (CO6)	To compare and contrast programming for serial processors and programming for parallel processors

### CS6008 – Human Computer Interaction

Course Code	Course Outcomes
C410.1 (CO1)	Understanding the basics of HCI for individuals and person with disabilities
C410.2 (CO2)	Apply various interaction framework models for interaction between user and system
C410.3 (CO3)	Design the technologies for HCI of individuals and disable persons
C410.4 (CO4)	Evaluate the HCI in software process and mobile HCI
C410.5 (CO5)	Implement various user interface for HCI
C410.6 (CO6)	Analyze and discuss HCI issues in groupware, ubiquitous computing, virtual reality, multimedia, and Word Wide Web-related environments.



**MG6088 – Software Project Management**

Course Code	Course Outcomes
C411.1 (CO1)	The student should be able to Plan the project in stepwise manner.
C411.2 (CO2)	Apply cost benefit evaluation techniques to find the cost of the project and to evaluate the risk of project.
C411.3 (CO3)	Know activity plan for a project and to estimate the overall duration of the project.
C411.4 (CO4)	Monitor the progress of projects and to assess the risk of slippage
C411.5 (CO5)	Identify the factors that influence people's behavior in a project environment and selection of appropriate people for the project and to improve group working.
C411.6 (CO6)	Understand how to manage the people in software industries and projects.

**CS6811 – Project Work**

Course Code	Course Outcomes
C412.1 (CO1)	Acquire knowledge for the project
C412.2 (CO2)	Choose efficient tools for designing project modules.
C412.3 (CO3)	Analyze and categorize executable project modules
C412.4 (CO4)	Assemble all the modules through effective team work after efficient testing.
C412.5 (CO5)	Recognize the completed task and compile the project.
C412.6 (CO6)	Demonstrate the project.





## REGULATION 2017

### SEMESTER I

#### HS8151/ COMMUNICATIVE ENGLISH

COURSE CODE	COURSE OUTCOMES
C101.1 (C01)	Define the fundamentals of engineering after learning the rules of English Grammar.
C101.2 (C02)	Read articles of the general kind in magazines and newspapers.
C101.3 (C03)	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English.
C101.4 (C04)	Comprehend conversations and short talks delivered in English.
C101.5 (C05)	Write short essays of the general kind and personal letters and e-mails in English.
C101.6 (C06)	Analyze and identify the root for effective managerial skills through different spoken discourse and excerpts.

#### MA8151/ ENGINEERING MATHEMATICS - I

COURSE CODE	COURSE OUTCOMES
C102.1 (C01)	Use both the limit definition and rules of differentiation to differentiate functions.
C102.2 (C02)	Apply differentiation to solve maxima and minima problems.
C102.3 (C03)	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
C102.4 (C04)	Apply various techniques in solving differential equations.
C102.5 (C05)	To study how differential equation, help to solve real time problems.
C102.6 (C06)	Introduce the concepts of Differentiation and Integration that will create an ability to deal with Differential Equations and Multiple integrals.



## PH8151/ ENGINEERING PHYSICS

COURSE CODE	COURSE OUTCOMES
<b>C103.1 (C01)</b>	To understand the basic concepts of elastic behavior of materials and evaluate the structural stability of beams.
<b>C103.2 (C02)</b>	To understand the behavior of different oscillatory wave motion and the concept of LASER action, also discuss about the propagation of light in optical fibers, comparing various types of fibers and its applications in Medical and Engineering fields.
<b>C103.3 (C03)</b>	Remembering functional ideas of thermal physics and compare the thermal conductivity of different materials to meet the specific needs.
<b>C103.4 (C04)</b>	Describe and analyzing the quantum nature of radiation and matter to solve the real time societal and technological problems.
<b>C103.5 (C05)</b>	To understand the possible crystal structures and to analyze various growth techniques in the view of increasing demand of crystals for various Engineering and Technological applications.
<b>C103.6 (C06)</b>	To make the students understand the fundamentals of Physics to solve complex engineering problems for benefit of the society.

## CY8151/ ENGINEERING CHEMISTRY

COURSE CODE	COURSE OUTCOMES
<b>C104.1 (C01)</b>	Analyze boiler troubles with latest technologies and equipment's using external and internal treatment methods.
<b>C104.2 (C02)</b>	It provides basic knowledge in the field of absorption and catalysis.
<b>C104.3 (C03)</b>	Knowledge of alloys gives an idea about the manufacturing process in various industries.
<b>C104.4 (C04)</b>	Analyze issues related to fuels and their synthesis and able to understand working of IC and diesel engines.
<b>C104.5 (C05)</b>	To understand the principles and generation of energy in batteries, nuclear reactors, solar cells, wind mills and fuel cells.
<b>C104.6 (C06)</b>	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.



## GE8151/ PROBLEM SOLVING AND PYTHON PROGRAMMING

COURSE CODE	COURSE OUTCOMES
C105.1 (C01)	Develop algorithmic solutions to simple computational problems.
C105.2 (C02)	Demonstrate programs using simple Python statements and expressions.
C105.3 (C03)	Explain control flow and functions concept in Python for solving problems.
C105.4 (C04)	Use Python data structures – lists, tuples & dictionaries for representing compound data.
C105.5 (C05)	Explain files, exception, modules and packages in Python for solving problems.
C105.6 (C06)	Develop Python programs to illustrate concise and efficient algorithms.

## GE8152/ ENGINEERING GRAPHICS

COURSE CODE	COURSE OUTCOMES
C106.1 (C01)	How to draw different engineering curves, draw different orthographic projections.
C106.2 (C02)	Illustrate different views of points, lines and planes inclined to both HP and VP in first quadrant.
C106.3 (C03)	Develop the projections of simple solids inclined to any one plane
C106.4 (C04)	Categorize Section and develop various solids
C106.5 (C05)	Evaluate to Draw 3D projections of simple solids by Perspective by visual ray method and Isometric projections
C106.6 (C06)	Build an engineering component using Paper drawing as well as in CAD



## **GE8161/ PROBLEM SOLVING AND PYTHON PROGRAMMING LAB**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C107.1 (C01)</b>	Develop solutions to simple computational problems using Python programs.
<b>C107.2 (C02)</b>	Solve problems using conditionals and loops in Python.
<b>C107.3 (C03)</b>	Develop Python programs by defining functions and calling them.
<b>C107.4 (C04)</b>	Use Python lists, tuples and dictionaries for representing compound data.
<b>C107.5 (C05)</b>	Develop Python programs using files.
<b>C107.6 (C06)</b>	Developing python programming using predefined functions.

## **BS8161/ PHYSICS AND CHEMISTRY LAB**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C108.1 (C01)</b>	To apply the physics principles of Thermal physics and Properties of Matter to evaluate properties of materials
<b>C108.2 (C02)</b>	To understand measurement technique and usage of new instrument in Optics for real time application in Engineering.
<b>C108.3 (C03)</b>	Apply the knowledge of semiconducting material, to evaluate the band gap of material useful for engineering solutions.
<b>C108.4 (C04)</b>	Able to analyze the quality of water for domestic and industrial purpose.
<b>C108.5 (C05)</b>	Used to find out the emf for different metallic solutions from which electrode potential is determined.
<b>C108.6 (C06)</b>	To acquire knowledge about the conductivity of acids and bases.



## HS8251/ TECHNICAL ENGLISH

COURSE CODE	COURSE OUTCOMES
C110.1 (C01)	Define the fundamentals of engineering after learning the rules of English Grammar.
C110.2 (C02)	Read technical text and write area-specific text effortlessly.
C110.3 (C03)	Listen and comprehend lectures and talks in their area of specialization successfully.
C110.4 (C04)	Speak appropriately and effectively in varied formal and informal contexts.
C110.5 (C05)	Write reports and winning job applications
C110.6 (C06)	Analyze and identify the root for effective managerial skills through different spoken discourse and excerpts

## MA8251/ENGINEERING MATHEMATICS-II

COURSE CODE	COURSE OUTCOMES
C111.1 (C01)	Introduce the concepts of Eigen value and Eigenvectors which help to find the stability of the systems in engineering
C111.2 (C02)	Define and understand the concepts of vector calculus, needed for finding solutions in all engineering discipline problems.
C111.3 (C03)	Develop an understanding of the standard techniques of complex variable theory so as to enable the student to apply them with confidence, in application areas such as heat conduction, elasticity, fluid dynamics and flow of the electric current.
C111.4 (C04)	Evaluate real integrals by applying concept of complex integration
C111.5 (C05)	Understand and apply the knowledge of Laplace Transforms in solving system of linear differential equations.
C111.6 (C06)	Introduces fundamental knowledge in mathematics, that is applicable in the Engineering aspects.



## PH8252/ PHYSICS FOR INFORMATION SCIENCE

COURSE CODE	COURSE OUTCOMES
C112.1 (CO1)	To gain the knowledge on classical and quantum electron theories and energy band structures
C112.2 (CO2)	To understand the essential principles of physics of semiconductor device and electron transport properties for new application
C112.3 (CO3)	To acquire knowledge on magnetic properties of materials and their applications in data storage.
C112.4 (CO4)	To understand the functioning of optical materials for optoelectronics
C112.5 (CO5)	To understand the basics of quantum structures and their applications in carbon electronics
C112.6 (CO6)	To provide theoretical knowledge on electron transport properties of semiconductor, storage devices and nanodevices.

## BE8255/BASIC ELECTRICAL, ELECTRONICS & MEASUREMENT ENGINEERING

COURSE CODE	COURSE OUTCOMES
C113.1 (CO1)	Discuss the essentials of electric circuits and analysis
C113.2 (CO2)	Discuss the basic operation of electric machines and transformers
C113.3 (CO3)	Introduction of renewable sources and common domestic loads
C113.4 (CO4)	To understand the fundamentals of electronic circuit constructions
C113.5 (CO5)	Introduction to measurement methods
C113.6 (CO6)	To understand the function of instruments for electric circuits



## DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

### GE8291/ENVIRONMENTAL SCIENCE & ENGINEERING

COURSE CODE	COURSE OUTCOMES
C114.1 (C01)	To interpret the relationship between living organisms and the environment and to identify the threats to global biodiversity
C114.2 (C02)	To identify and prevent the problems related to the pollution of air, water, soil, marine, etc
C114.3 (C03)	To understand the importance of natural resources and to conserve it for future generation
C114.4 (C04)	To analyze the social issues of the environment to be a part of sustainable development
C114.5 (C05)	To create awareness and sustainable population growth and know the contribution of information technology in environmental management
C114.6 (C06)	To study the integrated themes and biodiversity, natural resources, pollution control, waste management for protecting environment from degradation

### GE8261/ENGINEERING PRACTICES LABORATORY

COURSE CODE	COURSE OUTCOMES
C116.1 (C01)	How to make joints in carpentry
C116.2 (C02)	Make use of joints in plumbing
C116.3 (C03)	Show the operation of the lathe
C116.4 (C04)	Mark the works in sheet metal
C116.5 (C05)	Ability to understand joints in welding
C116.6 (C06)	Formulate the brief idea of engineering application



## CS8261/C PROGRAMMING LABORATORY

COURSE CODE	COURSE OUTCOMES
C117.1 (CO1)	Apply and practice logical formulations to solve some simple problems leading to specific applications.
C117.2 (CO2)	Develop C programs for simple applications making use of basic constructs, arrays and strings.
C117.3 (CO3)	Demonstrate C programming development environment, compiling, debugging, linking and executing a program using the development environment.
C117.4 (CO4)	Develop C programs involving functions, recursion, pointers, and structures.
C117.5 (CO5)	Design applications using sequential and random access file processing
C117.6 (CO6)	Design effectively the required programming components that efficiently solve computing problems in real world.

## MA8351 / DISCRETE MATHEMATICS

COURSE CODE	COURSE OUTCOMES
C201.1 (CO1)	Have the knowledge the concepts needed to test the logic of programs
C201.2 (CO2)	Have an understanding in identifying structures
C201.3 (CO3)	Be aware of class of functions
C201.4 (CO4)	Be aware of counting principles
C201.5 (CO5)	Be exposed the concepts of algebraic structures





## CS8351 / DIGITAL PRINCIPLES AND SYSTEM DESIGN

COURSE CODE	COURSE OUTCOMES
C202.1 (C01)	Define the fundamental concepts of digital logic circuits.
C202.2 (C02)	Understand and Correlate between Boolean Expression, simplification methods to optimize it for desired characteristics.
C202.3 (C03)	Apply the concept of digital logic circuits and Design various combinational building blocks and sequential logic to represent logic function in multiple forms.
C202.4 (C04)	Analyze a memory cell and apply for organizing larger memory.
C202.5 (C05)	Understand and compare the concepts of Programmable logic Devices.

## CS8391 / DATA STRUCTURES

COURSE CODE	COURSE OUTCOMES
C203.1 (C01)	To understand the concept of ADTs
C203.2 (C02)	Implement abstract data types for linear data structures.
C203.3 (C03)	Implement abstract data types for non-linear data structures.
C203.4 (C04)	Apply the different linear and non-linear data structures to problem solutions.
C203.5 (C05)	Critically analyze the various sorting algorithms and understand appropriate hash functions that result in a collision free scenario for data storage and retrieval



## CS8392 / OBJECT ORIENTED PROGRAMMING

COURSE CODE	COURSE OUTCOMES
C2O4.1 (CO1)	Develop Java programs using OOP principles
C2O4.2 (C02)	Develop Java programs with the concepts inheritance and interfaces
C2O4.3 (C03)	Build Java applications using exceptions and I/O streams
C2O4.4 (C04)	Develop Java applications with threads and generics classes
C2O4.5 (C05)	Develop event driven programs using AWT

## EC8395 / Communication Engineering

COURSE CODE	COURSE OUTCOMES
C2O5.1 (CO1)	Ability to understand various analog modulation techniques
C2O5.2 (C02)	Apply various digital communication techniques
C2O5.3 (C03)	Apply data and pulse communication techniques
C2O5.4 (C04)	Analyze Source and Error control coding
C2O5.5 (C05)	Understanding various multiple access and spread spectrum techniques



## CS8381 / DATA STRUCTURES LABORATORY

COURSE CODE	COURSE OUTCOMES
C2O6.1 (CO1)	Develop simple C programs and Write functions to implement linear and non-linear data structure operations
C2O6.2 (C02)	Suggest appropriate linear / non-linear data structure operations for solving a given problem
C2O6.3 (C03)	Appropriately use the linear / non-linear data structure operations for a given problem
C2O6.4 (C04)	Demonstrate the various sorting algorithms in C
C2O6.5 (C05)	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval

## CS8383 / OBJECT ORIENTED PROGRAMMING LABORATORY

COURSE CODE	COURSE OUTCOMES
C2O7.1 (CO1)	Develop Java programs using class and object
C2O7.2 (C02)	Develop Java programs with the concepts inheritance and interfaces
C2O7.3 (C03)	Build Java applications using different types of exceptions and I/O streams
C2O7.4 (C04)	Develop Java applications with threads and generics classes
C2O7.5 (C05)	Develop an application using AWT



## CS8382 / DIGITAL SYSTEMS LABORATORY

COURSE CODE	COURSE OUTCOMES
C208.1 (C01)	To understand the various basic logic gates
C208.2 (C02)	To design and implement the various combinational circuits
C208.3 (C03)	To design and implement combinational circuits using MSI devices.
C208.4 (C04)	To design and implement sequential circuits
C208.5 (C05)	To understand and code with HDL programming

## HS8381 / INTERPERSONAL SKILLS/LISTENING & SPEAKING

COURSE CODE	COURSE OUTCOMES
C209.1 (C01)	Listen and respond appropriately
C209.2 (C02)	Participate in Group Discussions
C209.3 (C03)	Make effective Presentations
C209.4 (C04)	Participate confidently and appropriately in conversations both formal and informal
C209.5 (C05)	Improve general and academic listening skills



**SEMESTER IV**

**MA8402 / PROBABILITY AND QUEUEING THEORY**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C210.1 (C01)</b>	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon
<b>C210.2 (C02)</b>	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications
<b>C210.3 (C03)</b>	Define the concept of random processes and its classification, in particular about Markov chains, which plays an important role in finding solution of many engineering problems.
<b>C210.4 (C04)</b>	Identify the queuing model in the given system and find the performance measures to analyze the result in real time situation.
<b>C210.5 (C05)</b>	Introduce non markovian queuing model which helps in analyzing various queuing networks. Applications emphasize communication networks and computer operations, but may include examples from transportation, manufacturing, and the service industry. Helps to develop probabilistic models under several areas of science and engineering.

**CS8491 / COMPUTER ARCHITECTURE**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C211.1 (C01)</b>	Explain the computer organization components, instructions and addressing modes
<b>C211.2 (C02)</b>	Demonstrate arithmetic operations
<b>C211.3 (C03)</b>	Design and analyze pipelined control units
<b>C211.4 (C04)</b>	Outline the concept of parallelism and multi-core processor
<b>C211.5 (C05)</b>	Classify the memory technologies and I/O systems. Compare and contrast the arithmetic operations used in various processors



## CS8492 / DATABASE MANAGEMENT SYSTEMS

COURSE CODE	COURSE OUTCOMES
C212.1 (CO1)	Classify the modern and futuristic database applications
C212.2 (C02)	Map ER model to Relational model to perform database design effectively
C212.3 (C03)	Normalization criteria and optimization of queries
C212.4 (C04)	Compare and contrast various indexing strategies in different database systems
C212.5 (C05)	Advanced databases differ from traditional databases

## CS8451 / DESIGN AND ANALYSIS OF ALGORITHMS

COURSE CODE	COURSE OUTCOMES
C213.1 (CO1)	Analyze the time and space complexity of algorithms.
C213.2 (C02)	Critically analyze the different algorithm design techniques for a given problem
C213.3 (C03)	Design algorithms for various computing problems.
C213.4 (C04)	Design limitations of algorithms in problem solving.
C213.5 (C05)	Modify existing algorithms to improve efficiency.



## CS8493 / OPERATING SYSTEMS

COURSE CODE	COURSE OUTCOMES
C214.1 (C01)	Understand the basic concepts and functions of operating systems, process and threads.
C214.2 (C02)	Analyze various scheduling algorithms and understand deadlock prevention and avoidance algorithms
C214.3 (C03)	Compare and contrast various memory management schemes
C214.4 (C04)	Understand the functionality of I/O systems and File systems
C214.5 (C05)	Perform administrative tasks on Linux Servers. Compare iOS and Android Operating Systems.

## CS8494 / SOFTWARE ENGINEERING

COURSE CODE	COURSE OUTCOMES
C215.1 (C01)	Identify the key activities in managing a software project and Compare different process models.
C215.2 (C02)	Concepts of requirements engineering and Analysis Modeling.
C215.3 (C03)	Apply systematic procedure for software design and deployment.
C215.4 (C04)	Compare and contrast the various testing and maintenance
C215.5 (C05)	Manage project schedule, estimate project cost and effort required.



**CS8481 / DATABASE MANAGEMENT SYSTEMS LABORATORY**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C216.1 (CO1)</b>	Typical data definitions and manipulation commands
<b>C216.2 (C02)</b>	Design applications to test Nested and Join Queries
<b>C216.3 (C03)</b>	Implement simple applications that use Views
<b>C216.4 (C04)</b>	Implement applications that require a Front-end Tool
<b>C216.5 (C05)</b>	Analyze the use of Tables, Views, Functions and Procedures

**CS8461 / OPERATING SYSTEMS LABORATORY**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C217.1 (CO1)</b>	Experiment with Unix commands and shell programming
<b>C217.2 (C02)</b>	Build 'C' program for process and file system management using system calls
<b>C217.3 (C03)</b>	Compare the performance of various CPU Scheduling Algorithms and Implement Deadlock avoidance and Detection Algorithms
<b>C217.4 (C04)</b>	Implement Semaphores, Create processes and implement IPC
<b>C217.5 (C05)</b>	Analyze the performance of the various Page Replacement Algorithms, Implement File Organization and File Allocation Strategies





**HS8461 / ADVANCED READING AND WRITING**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C218.1 (C01)</b>	Write different types of essays.
<b>C218.2 (C02)</b>	Write winning job applications.
<b>C218.3 (C03)</b>	Read and evaluate texts critically.
<b>C218.4 (C04)</b>	Display critical thinking in various professional contexts.
<b>C218.5 (C05)</b>	Identify the main ideas in the context.

**SEMESTER : V**

**MA8551 / ALGEBRA AND NUMBER THEORY**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C301.1 (C01)</b>	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
<b>C301.2 (C02)</b>	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
<b>C301.3 (C03)</b>	Demonstrate accurate and efficient use of advanced algebraic techniques.
<b>C301.4 (C04)</b>	Demonstrate their mastery by solving non-trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
<b>C301.5 (C05)</b>	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject. Apply the Number Theory concepts they can solve problems in Cryptography and related real time problems in computer science



**CS8591 / COMPUTER NETWORKS**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C302.1 (CO1)</b>	To understand the protocol layering and physical level communication
<b>C302.2 (CO2)</b>	To understand the various components required to build different networks.
<b>C302.3 (CO3)</b>	To learn the functions of network layer and the various routing protocols.
<b>C302.4 (CO4)</b>	To familiarize the functions and protocols of the Transport layer.
<b>C302.5 (CO5)</b>	To illustrate how application layer protocol works

**EC8691 / MICROPROCESSORS AND MICROCONTROLLERS**

<b>COURSE CODE</b>	<b>COURSE OUTCOMES</b>
<b>C303.1 (CO1)</b>	Understand architecture and operations of a microprocessor system in depth.
<b>C303.2 (CO2)</b>	Demonstrate programming proficiency using the various addressing modes and data transfer through system bus of the microprocessor
<b>C303.3 (CO3)</b>	Analyze, specify, design, write and test assembly language programs of interfacing with I/O and memory
<b>C303.4 (CO4)</b>	Perform the detailed hardware design of microcontroller system, and program the micro controller using suitable techniques and software tools.
<b>C303.5 (CO5)</b>	Design electrical circuitry to the Microcontroller I/O ports in order to interface it to external devices and compare the performance of different processors



### CS8501 / THEORY OF COMPUTATION

COURSE CODE	COURSE OUTCOMES
C304.1 (C01)	Construct automata, regular expression for any pattern.
C304.2 (C02)	Write Context free grammar for any construct.
C304.3 (C03)	Design Turing machines for any language.
C304.4 (C04)	Propose computation solutions using Turing machines.
C304.5 (C05)	Derive whether a problem is decidable or not

### CS8592 / OBJECT ORIENTED ANALYSIS AND DESIGN

COURSE CODE	COURSE OUTCOMES
C305.1 (C01)	To understand the fundamentals of object modeling.
C305.2 (C02)	To understand and differentiate Unified Process from other approaches.
C305.3 (C03)	To design with static UML diagrams
C305.4 (C04)	To design with the UML dynamic and implementation diagrams.
C305.5 (C05)	To improve the software design with design patterns. To test the software against its requirements specification.



## OCE551 / AIR POLLUTION AND CONTROL ENGINEERING

COURSE CODE	COURSE OUTCOMES
C306.1 (C01)	An understanding of the nature and characteristics of air pollutants, noise pollution and basic concepts of air quality management
C306.2 (C02)	Ability to identify, formulate and solve air and noise pollution problems
C306.3 (C03)	Ability to design stacks and particulate air pollution control devices to meet applicable standards.
C306.4 (C04)	Ability to select control equipments.
C306.5 (C05)	Ability to ensure quality, control and preventive measures.

## EC8681 / MICROPROCESSORS AND MICROCONTROLLERS LABORATORY

COURSE CODE	COURSE OUTCOMES
C307.1 (C01)	To write program for arithmetic operations and execute Using 8086
C307.2 (C02)	Able to write program for sorting and string manipulation operation
C307.3 (C03)	Able to design and demonstrate Digital Clock and stop watch
C307.4 (C04)	Able to understand and demonstrate Serial and parallel communication between two microprocessors kits using 8251 and 8255 respectively.
C307.5 (C05)	Able to demonstrate interfacing and programming of stepper motor and DC motor speed control



## CS8582 / OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY

COURSE CODE	COURSE OUTCOMES
C308.1 (CO1)	To capture the requirements specification for an intended software system
C308.2 (C02)	To draw the UML diagrams for the given specification
C308.3 (C03)	To map the design properly to code
C308.4 (C04)	To test the software system thoroughly for all scenarios
C308.5 (C05)	To improve the design by applying appropriate design patterns

## CS8581 / NETWORKS LABORATORY

COURSE CODE	COURSE OUTCOMES
C309.1 (CO1)	Demonstrate the socket program using TCP & UDP
C309.2 (C02)	Develop simple applications using TCP & UDP
C309.3 (C03)	Develop the code for Data link layer protocol simulation
C309.4 (C04)	Examine the performances of Routing protocol
C309.5 (C05)	Experiment with congestion control algorithm using network simulator