

DEPARTMENT OF COMPUTER SCIENCE ENGINEERING**I- SEMESTER**

T101 - Mathematics - I		Yr/Sem: I/I
CO 1	Apply knowledge of mathematics to solve functions of several variables.	
CO 2	Identify, formulate and solve engineering problems like multiple integrals and their usage.	
CO 3	To solve differential equations that model physical processes using effective mathematical tools	
CO 4	Able to find equation of straight line of shortest distance, equation of plane, angle between straight lines.	
CO 5	Gain the knowledge to solve first order differential equation arising in engineering.	

T102 - Physics		Yr/Sem: I/I
CO 1	Apply knowledge of science and engineering to understand physics and its significant contribution in the advancement of technology and invention of new products that dramatically transform modern day society.	
CO 2	Identify different areas of physics which have direct relevance and applications to different engineering disciplines	
CO 3	Apply fundamental knowledge to understand applications of ultrasonics, optics and some optical devices, lasers and fiber optics, nuclear energy sources and wave mechanics.	
CO 4	Understand the basic operating principles of laser, its applications, optical fiber, and its types, transmission characteristics, applications of optical fibers.	
CO 5	Understand the basic operating principles of laser, its applications, optical fiber, and its types, transmission characteristics, applications of optical fibers.	

T103 - Chemistry		Yr/Sem: I/I
CO 1	Apply knowledge of science and engineering to understand the importance of chemistry in engineering domain.	
CO 2	Identify different electrochemical cells and their usage for industrial process.	
CO 3	Apply fundamental knowledge of chemistry and build an interface of theoretical concepts with industrial applications/engineering applications.	
CO 4	Guide the students to gain the knowledge about the cooling curves , phase diagrams, alloys and their practical importance.	
CO 5	Strengthen the fundamentals of chemistry and then build an interface of theoretical concepts with their industrial/engineering applications.	

T110 - Basic Civil and Mechanical Engineering		Yr/Sem: I/I
CO 1	Understand the building classification as per National building code.	
CO 2	Get the idea about construction procedure for various components of the building.	
CO 3	Students understand the principles of surveying, construction procedure for roads, bridges and dams.	
CO 4	Student will be able know about the working of Internal and external combustion systems	
CO 5	Student will be able know about Non-Conventional Energy Systems	
CO 6	Student will be able to know about manufacturing process.	

T111- Engineering Mechanics		Yr/Sem: I/I
CO 1	Understand the basic laws of mechanics and resolution of forces using different methods.	
CO 2	Learn and apply the knowledge on analysis of forces acting on the trusses and effect of friction force on bodies.	
CO 3	Learn about the centroid and moment of inertia for plane and solid figures.	
CO 4	Understand the three laws of motion, principles of dynamics for particles.	
CO 5	The student will able to analyse the laws of motion for rigid bodies.	

T112- Communicative English		Yr/Sem: I/I
CO 1	Learnt about the definition of communication, importance, concept. Sender, Ideation, the levels in communication, channels, oral and written way of communication, body language and non verbal communication, Accuracy, Brevity and Clarity, different barriers for Communication, techniques in making effective communication, listening importance and types of listening.	
CO 2	Students learnt about the types of letters, report writing, notices and memo and also developed their skill in writing.	
CO 3	Understands the comprehension, identifies the difference between Skimming and scanning, guess the meaning of the words, Identify to make notes.	
CO 4	Students learnt the writing skills, how to write a paragraph in a proper manner, four modes of writing and how to make bibliographical entries.	
CO 5	Students were able to develop their spoken skills by making them to involve in many activities related to it.	

P 104 – Physics Lab		Yr/Sem: I/I
CO 1	Able to understand how to find the thickness of the specimen and also to find the radius of curvature of glass using the phenomenon of interference of light	
CO 2	Able to understand the specific rotatory power of an optical active solution using the principle of polarization.	
CO 3	To understand about the thermal conductivity of bad conductor and rubber tube.	
CO 4	Ability to understand about the optical properties like dispersive power, Resolving power by applying the knowledge of optics	
CO 5	To acquire knowledge about the magnetometer due to current coil and jolly method of determining the pressure coefficient of air at constant volume.	
CO 6	Ability to understand the basic knowledge of inference ,polarization ,Magnetic materials ,thermal conductivity that correlates the theory and practical	

P 105 – Chemistry Lab		Yr/Sem: I/I
CO 1	Students will become well acquainted to test amount of hardness present in sample of water for their engineering needs.	
CO 2	Students will be efficient in estimating acidity/alkalinity in given samples.	
CO 3	Students will have knowledge about estimating amount of dissolved oxygen in water.	
CO 4	Students will become well acquainted to estimate copper in brass.	
CO 5	Students will have knowledge about determination of viscosity of sucrose using Ostwald's viscometer.	
CO 6	To develop an understanding of basic titration setup and methodologies for determining strength, hardness and alkalinity of various unknown solutions	

P 106 – Workshop Practice		Yr/Sem: I/I
CO 1	Understand and comply with workshop safety regulations.	
CO 2	Student will be able to make various joints in the given object with the available work material.	
CO 3	Student will be able to know how much a joint will take for the assessment of time.	
CO 4	Students can able to Identify the hand tools and instruments.	
CO 5	Students can able to gain knowledge about various operations carried out in sheet metal.	
CO 6	Students can able to gain skills about various tools used in welding to make simple joints.	

II– SEMESTER

T 107 – Mathematics - II		Yr/Sem: I/II
CO 1	Apply knowledge of mathematics to solve matrix algebra technique for practical applications and Curl, divergence and integration of vectors in vector calculus.	
CO 2	Identify, formulate and solve engineering problems like Laplace transform and to solve differential and integral equations.	
CO 3	Apply formulae and analyze problems of Fourier transform techniques.	
CO 4	Determine the Fourier transform , Fourier cosine and sine transform of elementary functions, properties of transforms and its application in engineering	
CO 5	Acquire knowledge of matrix algebra technique, vector calculus, Laplace and Fourier Transform.	

T108 – Material Science		Yr/Sem: I/II
CO 1	Apply core concepts in material science to solve engineering problems.	
CO 2	Knowledgeable of contemporary issues relevant to material science and engineering	
CO 3	Understand about the ferrites and its application to magnetic materials.	
CO 4	Select materials for design and construction.	
CO 5	Understand the importance and properties of materials.	

T109 – Environmental Science		Yr/Sem: I/II
CO 1	Apply fundamental knowledge to understand about the environment.	
CO 2	Identify environmental pollution through science.	
CO 3	Apply basic knowledge to solve various environmental issues and problems.	
CO 4	Ability to consider issues of environment and sustainable development in his personal and professional undertakings.	
CO 5	Provides a comprehensive knowledge in environmental science, environmental issues and the management from an interdisciplinary perspective.	

T104 – Basic Electrical and Electronics Engineering		Yr/Sem: I/II
CO 1	Will learn the fundamentals of rotational and stationary machine operation, single-phase and three-phase power measurement, magnetic and electrical circuits, and these topics.	
CO 2	Will learn the fundamentals of measuring devices, communication systems, and network models.	
CO 3	Knowledge about non-conventional energy systems will be available to students.	
CO 4	The varieties of metal joining will be known by the students.	
CO 5	Students will learn about numerous engines, energies, and joints as well as construction and building components offered with diverse principles.	

T105 – Engineering Thermodynamics		Yr/Sem: I/II
CO 1	Apply knowledge of mathematics, science and engineering to understand the basics of thermodynamics.	
CO 2	Understand the importance of laws of thermodynamics applied to energy systems.	
CO 3	Understanding refrigeration, heat pump and their physical mechanism.	
CO 4	Understand the laws of motion for rigid bodies.	
CO 5	Understand the effects of forces acting on the bodies in practical situation.	

T106 – Computer Programming		Yr/Sem: I/II
CO 1	Know concepts in problem solving.	
CO 2	To do programming in C language.	
CO 3	To write diversified solutions using the C language.	
CO 4	To know about structures, pointers and its manipulation.	
CO 5	To know about the evaluation of computers, components and its applications. Basic knowledge on the internet, information technology, word processing and worksheets.	

P101 - Computer Programming Laboratory		Yr/Sem: I/II
CO 1	Students can work with command line interface OS's, like MS-DOS.	
CO 2	Students can solve most of the real time problems with C program.	
CO 3	Students can interact with computer using C program, through various input and output functions.	
CO 4	Students can make a use of various keywords, constants, variables, data types, operators, type conversion in C program.	
CO 5	Students will have knowledge about arrays, functions, structures and pointers in C program.	

P102 – Engineering Graphics		Yr/Sem: I/II
CO 1	Perform freehand sketching of basic geometrical constructions and multiple views of objects.	
CO 2	Project orthographic projections of lines and plane surfaces.	
CO 3	Draw projections and solids and development of surfaces.	
CO 4	visualize and to project isometric and perspective sections of simple solids.	
CO 5	Students will be able to draw orthographic projections and isometric projections.	

P103 - Basic Electrical and Electronics Laboratory		Yr/Sem: I/II
CO 1	Know about basic electrical tools, applications and precautions	
CO 2	Perform different types of wiring used in domestic and industrial applications.	
CO 3	Measurements of voltage and phase using CRO, basic operation and applications of devices such as PN junction diode and transistors.	
CO 4	Understand the function and applications of basic logic gates and flip flops.	
CO 5	Gain knowledge in domestic wiring and application of electronics device in the field of electrical engineering.	
P107 – NSS/NCC		Yr/Sem: I/II
CO 1	to create awareness in social and environmental issues.	
CO 2	to participate in relief and rehabilitation work during natural calamities.	
CO 3	to develop some proposals for local slum area development and waste disposal.	
CO 4	to create team works among students and produce efficient results.	
CO 5	to operate scientific instruments or advanced software.	

III– SEMESTER

MA T31 – Mathematics – III		Yr/Sem: II/III
CO 1	Identify complex variable function, Apply CR equations for testing of analyticity of the complex function.	
CO 2	Construct conformal mappings between regions. Solve problems on bilinear transformation and find the Taylor's and Laurent's series.	
CO 3	Analyze the complex functions with reference to their analyticity, integration using Cauchy's integral theorem and Cauchy's Residue theorem.	
CO 4	Express any periodic function as Fourier series, Fourier sine and Cosine series.	
CO 5	Finding Fourier series for numerical values of any function. Interpret and use the basic concepts of analytic function, Taylor and Laurent series, singularities, residues, conformal mapping, Fourier series and harmonic analysis.	
CS T32 - Electronic Devices and Circuits		Yr/Sem: II/III
CO 1	Classify semiconductor materials and discuss the construction and operation of PN junction diodes, Zener diodes. Need and use of Clippers, Clampers, Series and Shunt regulators.	
CO 2	Discuss the construction, operation, and characteristics of transistors. Analyze the transistor biasing circuits using the stability factor. Discuss the creation and operation of Field Effect Transistor devices, MOSFET, BJT, as well as their V-I Characteristics curves. Analyze the important parameters of FET, JFET, MOSFET.	
CO 3	Examine the circuit and operation of RC Coupled Amplifier, Class A, Class B, Class C and D amplifiers. Examine the Positive and Negative Feedback, Barkhausen Criterion, Wien Bridge, Hartley, Colpitts and Crystal Oscillator.	
CO 4	Confer and examine op-amp characteristics, parameters and applications. Consider and review summer, subtractor, differentiator, integrator, comparator, multiplier, filters.	
CO 5	Discuss the operation and principles of special purpose diodes, seven segment displays, OPTO – isolator. Examine characteristics and equivalent circuit of UJT, SCR, DIAC and TRIAC.	

CS T33 – Object Oriented Programming and Design		Yr/Sem: II/III
CO 1	Confer and discuss the concepts, advantages of OOP. Examine the structure of C++ program, control structures. Consider and explain classes and objects, OOPs Concepts (Encapsulation), friend function, member function, overloading member function. Discuss the LValues, RValues, return references and function overloading.	
CO 2	Review on the need of constructors, destructors, copy constructors, recursive constructor. Discuss about the overloading functions, classes and inheritance, pointers, and overloading member functions.	
CO 3	Examine pointers and arrays to classes and objects, void pointers. Confer the memory models and dynamic objects. Discuss about polymorphism, virtual functions, string attributes.	
CO 4	Discourse about file stream classes, binary and ASCII files, error handling functions. Converse generic programming, class templates and inheritance, operator overloading, class templates and exception handling.	
CO 5	Discuss OO concepts, UML diagrams, OO design methodology.	
CS T34 – Digital System Design		Yr/Sem: II/III
CO 1	Discuss Binary number systems, BCD codes, Excess-3 codes, Gray codes, Alphanumeric codes, Error detecting and correction codes. Confer DeMorgan's theorems, canonical form. Examine karnaugh maps, Quine-McCluskey method, universal gates.	
CO 2	Confer combinational logic (adders, subtractors, multipliers), Encoders, Decoders, Multiplexers, Demultiplexers, comparators and parity checker.	
CO 3	Discourse about flip flops, counters, types and applications of shift registers. Discuss the design of clocked sequential circuits, Mealy and Moore models, state reduction techniques.	
CO 4	Discuss about organization of ROM and RAM, PLDs, PLAs, PAL devices, FPGAs and implementation using PROMs, PLAs, PALs.	
CO 5	Discourse Verilog HDL, 4 bit ripple carry counter, Gate level Modeling, Dataflow Modeling. Discuss on counters, full adders and behavioral modeling.	
CS T35 – Data Structures		Yr/Sem: II/III
CO 1	Confer and discuss on algorithmic notation, programming principles, arrays and its types, pointer arrays. Discourse the searching techniques and internal and external sorting techniques.	
CO 2	Exchange views on definition, operation and applications of stack, queues and types of queues. Discuss linked list, types and applications of linked list along with dynamic storage management.	
CO 3	Discuss about Binary tree, Binary search tree, AVL tree, B+ Tree, Trie Tree	
CO 4	Discourse on graph, representation, traversals, topological sort, Operations, representation and applications on sets.	
CO 5	Confer on tables, its types, static and dynamic tree tables, hash tables. Discuss on files and sorting with tapes and disks.	
CS T36 – Computer Organization and Architecture		Yr/Sem: II/III
CO 1	Discuss on multiprocessors and multicomputer, instructions and instruction sequencing, addressing modes, basic input/output operations, stacks and queues, subroutines, shift and rotate instructions.	

CO 2	Confer and discuss on registers and addressing, flow control, logic and i/o operations, subroutines, other instructions, program examples.
CO 3	Discourse about interrupts, controlling device reques, pentium interrupt structure, direct memory access, busses, interface circuits, and standard i/o interfaces.
CO 4	Exchange views on semiconductor ram memories, read-only memories, virtual memories, memory management requirements and secondary storage.
CO 5	Confer , multiple-bus organization, hardwired control, microprogrammed control, pipelining superscalar operations, performance considerations

CS P31 – Electronics Devices and Circuits Laboratory

Yr/Sem: II/III

CO 1	Demonstrate the V-I Characteristics of PN Junction diode, Zener diode , Clipper circuits, input & output Characteristics of BJT, JFET, MOSFET and UJT transistor configuration. Application of clippers, clampers.
CO 2	Application of OPAMP, Determination of ripple factor for of rectifiers with and without filters and Draw the Voltage regulation characteristics of shunt using IC

CS P32 – Data Structures Laboratory

Yr/Sem: II/III

CO 1	Understanding the concept of data abstraction and the problem of building implementations of abstract data types are emphasized with both Linear and Non linear data structures.
CO 2	Understanding the Selection of relevant data structures and combinations of relevant data structures for the given problems in terms of memory and run time efficiency and improve the problem solving ability.

CS P33 – Digital System Design Laboratory

Yr/Sem: II/III

CO 1	Comprehension:Discuss:--Discuss the combinational circuit as Adder,Subtractor, Magnitude comparator, Multiplexers, Encoders, Decoders and Demultiplexers using basic logic gates.
CO 2	Comprehension:Discuss:--Discuss the sequential circuitas Shift register, Ripple Counters, Synchronous Counterswith the help of digital basic logic gate. Simulation of combinational and sequential logic using HDL.

IV– SEMESTER

MA T41 – Mathematics – IV

Yr/Sem: II/IV

CO 1	Formulate and solve partial differential equation.
CO 2	Derive and obtain the solution of wave equation and boundary value problems.
CO 3	Derive and obtain the solution of heat equation and boundary value problems.
CO 4	Apply least square method to fit various curves for the given data investigate the validity of hypothesis by Z-distribution techniques.
CO 5	Calculation of analysis of variance and explain the use of the Chi-squared test and its calculation.

CS T42 – Microprocessors and Microcontrollers

Yr/Sem: II/IV

CO 1	Comprehension: Describe:- Describe the architecture of 8085 and development of assembly language program by using instruction sets, stack and subroutines, looping statements and discuss about addressing modes of a typical microprocessor.
CO 2	Comprehension: Describe:- Describe the function of different peripheral IC's 8253,8259,8237 to interface with external peripheral device.

CO 3	Application: Demonstrate:- Demonstrate the architecture of 8279, 8255 and also develop the assembly language program with the help of special function registers, timers and counters and demonstrate 8251 USART.
CO 4	Comprehension: Describe:- Describe the architecture of 8086 and also develop the ASM program with the help of instruction set and addressing modes.
CO 5	Confer and demonstrate Intel 8051 Microcontroller, Pins and signals, Timing and control, interrupts and Instruction set.
CS T43 – Automata Languages and Computations Yr/Sem: II/IV	
CO 1	Confer and discuss about regular expressions, finite automata, NFA, DFA, Moore Mooley and Mealey machines.
CO 2	Exchange views on regular sets, CFG, Chomsky Normal Forms, ambiguous and unambiguous grammar.
CO 3	Analyse and explore pushdown automata, CFG, CFL and its applications.
CO 4	Discuss TM, variations of TMs – Recursive and Recursive. Enumerable languages, Recursive Function, Partial and Total Recursive Function, Primitive Recursive Function.
CO 5	Confer NP hardness and NP Completeness.
CS T44 – Design and Analysis of Algorithms Yr/Sem: II/IV	
CO 1	Confer asymptotic notations –Heap, shell, radix, insertion, selection and bubble sort; sequential, binary and Fibonacci search. Discuss about recurrence equations, analyzing control structures.
CO 2	Exchange views on Divide and Conquer Method, Strassen’s Matrix multiplication, knapsack problem – minimum spanning tree algorithms scheduling, optimal storage on tapes, optimal merge patterns.
CO 3	Discuss on Dynamic Programming, all pair shortest path algorithm – 0/1 Knapsack and Traveling salesman problem – chained matrix multiplication. Techniques for binary trees and graphs – AND/OR graphs – biconnected components – topological sorting.
CO 4	Discourse – 8-queens problem – sum of subsets – graph coloring – Hamiltonian cycle – Knapsack problem.
CO 5	Discuss Least Cost (LC) search – the 15-puzzle problem – control abstractions for LC-Search – Bounding – FIFO Branch-and-Bound - 0/1 Knapsack problem – Traveling Salesman Problem, NP-Hard and NP-Completeness.
CS T45 – Object Oriented Programming Yr/Sem: II/IV	
CO 1	Confer about Java features, Java Platform, Java Fundamentals, Classes and Objects, Constructors, Destructors, Packages and Interfaces
CO 2	Discuss about Overloading - Inheritance – Files and Stream – Multithreading – Exception Handling

CO 3	Discuss on AWT package, Containers, Applets – Applet Application - Swing Fundamentals - SwingClasses.
CO 4	Confer on JDBC, Java security, I/O packages.
CO 5	Discourse on java beans, TCP/IP server, URL connection, RMI, Jar files.
CS T46 – Graphics and Image Processing Yr/Sem: II/IV	
CO 1	Extend the Fundamental Concepts of audio, video in analog and Digital formats using the components of multimedia software tools, Graphics and Image Data Representations, Data types and Storage requirements for multimedia applications and also explain the Need for Compression and Taxonomy of compression techniques
CO 2	Discuss about Geometric Display Primitives and Attributes, 2D Transformations and Viewing, Window to view port transformations.
CO 3	Confer about Image processing, Image storage and file formats - Image processing operations , Fourier Transforms and its properties, Hadamard, Discrete Cosine, Haar, Slant, SVD, KL and HotellingTransforms.
CO 4	Exchange views on Image Quality and need for Enhancements – Point operations - Histogram Techniques – Spatial filtering– Image Smoothing – Image Sharpening - Image degradation and Noise Models.
CO 5	Discuss about Image Compression, Image Segmentation, Color Image Processing, Morphological operations.
CS P41 – Microprocessors and Microcontrollers Laboratory Yr/Sem: II/IV	
CO 1	Experiment using 8085 microprocessor and implement arithmetic operations, block operations, code conversions, real time examples
CO 2	Experiment and implement using 8086 microprocessor and 8051 microcontroller
CS P42 – Design and Analysis of Algorithms Laboratory Yr/Sem: II/IV	
CO 1	Implement the divide and conquer techniques, greedy techniques, dynamic programming techniques.
CO 2	Implement the traversals, backtracking and branch and bound techniques.
CS P43 – Object Oriented Programming Lab Yr/Sem: II/IV	
CO 1	Implement and understand the object oriented programming concept in C++.
CO 2	Implement the JAVA connectivity and concepts.
SP P44 – Physical Education Yr/Sem: II/IV	
CO 1	Understanding the opportunities of students’ physical, cognitive, social and emotional development.
CO 2	Understanding of individual and group motivation and behavior.
CO 3	To create teamwork among students and produce efficient results.
CO 4	The students were taught to operate advanced playing kits.
CO 5	to motivate the students to prepare the professional and scientific reports

V- SEMESTER

CS T51 – Operating Systems		Yr/Sem: III/V
CO 1	Discuss about mainframe, distributed, multiprocessor, clustered, real time systems, OS services, system calls, system services, Inter process communication.	
CO 2	Discuss about scheduling criterias, threading issues, critical section, synchronization and semaphores.	
CO 3	Confer about deadlock, paging, segmentation.	
CO 4	Discourse file systems, access methods, file sharing.	
CO 5	Exchange views on disk scheduling, kernel and case study on linux system and windows.	
CS T52 – Computer Networks		Yr/Sem: III/V
CO 1	Discuss about the network hardware and software, various layer in the OSI.	
CO 2	Discourse the data link layer in detail, services, design, protocols.	
CO 3	Confer the network layer in detail, services, design, addresses.	
CO 4	Exchange views on the transport layer in detail, services, design, congestion control.	
CO 5	Discourse the application layer in detail, services, design, protocols.	
CS T53 – Database Management Systems		Yr/Sem: III/V
CO 1	Discuss about database architecture, relational algebra, query languages, relational calculus, sql.	
CO 2	Discourse DB design and ER model, Indexing and hashing concepts, static and dynamic hashing, bitmap indices.	
CO 3	Confer relational DB design, normal forms, temporal data.	
CO 4	Discuss about query processing, query optimization, ACID properties, isolation levels, transactions as SQL statements	
CO 5	Exchange views on deadlocks, IBM DB2, My SQL, levels of consistency.	
CS T54 – Language Translators		Yr/Sem: III/V
CO 1	Overview of system software, machine structure, assembler, design, features, types of assembler.	
CO 2	Discuss on loaders and linkers, linkage editors, loader features, bootstrap loaders.	
CO 3	Discourse about lexical analyzer, role of lexical analyzer, tokens, specification and recognition.	
CO 4	Confer about parsing, techniques, code generations.	
CO 5	Exchange views about optimization, invariant code motion, code generation, DAG representation.	
CS T55 – Software Engineering		Yr/Sem: III/V
CO 1	Understanding various approach in Software Development life Cycle.	
CO 2	Discuss about complete strategic approaches towards project management and estimation techniques followed in software development.	
CO 3	Discourse the good software design and the function oriented software design.	
CO 4	Confer the concepts of object oriented design approach.	
CO 5	Understanding the process involved in user interface design and studying various testing methods.	
CS P51 – Operating Systems Laboratory		Yr/Sem: III/V
CO 1	Implement basic UNIX /LINUX commands, programs implementing I/O system calls, implement scheduling algorithms.	

CO 2	Implement synchronization problem, memory management schemes, and develop application using RTOS.
CS P52 – Computer Networks Laboratory	
Yr/Sem: III/V	
CO 1	Implement a socket program to transfer file using TCP, UDP, program for CRC and Hamming code, program for sliding window protocols, TCP module implementation.
CO 2	Implementation of routing protocols, ARP, security compromise on a node using NS2, implementation of traffic sources using NS2.
CS P53 – Database Management System Laboratory	
Yr/Sem: III/V	
CO 1	Study database, SQL, Query types and procedural query language.
CO 2	Design and develop real time applications.
HS P54 – General Proficiency – I	
Yr/Sem: III/V	
CO 1	To understand and practice the art of communication
CO 2	able to practice and showcase soft skills.
CO 3	To understand the importance of writing.
CO 4	To practice speaking skill.
CO 5	To practice verbal, non verbal and numerical aptitude.

VI- SEMESTER

CST61 – Enterprise Solutions	
Yr/Sem: III/VI	
CO 1	Understand in-depth about basic ERP implementation and basic SCM, CRM and BPR
CO 2	Understanding about SAP architecture with SAP modules and ABAP programming environment.
CO 3	Confer in depth about SQL, PL/SQL, Forms and Reports.
CO 4	Gain knowledge about People soft and People Soft Enterprise HRMs and financial management.
CO 5	Gain knowledge about Siebel Business components and business objects.
CS T62 – Embedded Systems	
Yr/Sem: III/VI	
CO 1	Confer various embedded processor features and ARM family details.
CO 2	Exchange views on registers and data processing instructions based on ARM instructions.
CO 3	Exchange views on registers and data processing instructions based on THUMB instructions.
CO 4	Understand the execution of ARM based C program implementation.
CO 5	Understand the various real time OS and their needs that support for scheduling various tasks.
CS T63 – Web Technology	
Yr/Sem: III/VI	
CO 1	Confer major components and protocols of internet applications and design web page.
CO 2	Discuss about client side and server side programming languages for web.
CO 3	Enable to design and develop web page using xml language by schema techniques and formatting objects.
CO 4	Confer the importance of multimedia in web designing and usage of web application development.
CO 5	Understand web services and modules involved in building in service. Confer and develop programs using ajax concepts.

CS E61 – Object Oriented Analysis and Design		Yr/Sem: III/VI
CO 1	Confer about life cycle model and different object methodologies.	
CO 2	Discuss about UML for specifying, constructing, visualizing and documenting the software system.	
CO 3	Analyse a complete, unambiguous, and consistent picture of the requirements.	
CO 4	Formalize the design process in establishing a scientific foundation for OO design process.	
CO 5	Understand problems occurring during software development and avoid error.	
CS E63 – E-Business		Yr/Sem: III/VI
CO 1	Confer an understanding of the foundation and importance of E-commerce.	
CO 2	Exchange views on secure electronic transaction and its mechanism to protect their transaction and payment through online.	
CO 3	Discourse the importance of encryption mechanism to protect personal information using various security threats.	
CO 4	Confer and acquire knowledge on flow of secure electronic transaction using master/visa card and secure Email technologies.	
CO 5	Discuss on internet and website establishment, internet charges and internet access and architecture.	
CS P61– Enterprise Solutions Laboratory		Yr/Sem: III/VI
CO 1	Understand and create simple application using ERP packages. Study SQL and PL/SQL. Understand and use various components of Oracle and SAP.	
CO 2	Confer Peoplesoft and SIEBEL concepts and develop simple applications using the same.	
CS P62 – Embedded Systems Laboratory		Yr/Sem: III/VI
CO 1	Understand and implement programs on ARM based processors	
CO 2	Implement programs using ARM Tool chain and library.	
CS P63 – Web Technology Laboratory		Yr/Sem: III/VI
CO 1	Understand and work with client side scripting, ActiveX, web servers and Java Server Pages.	
CO 2	Work and develop applications using XML, Server Side scripting, Ajax programming, Web services and mini project on E-commerce application.	
CS P64 – Industrial Visits/ Training		Yr/Sem: III/VI
CO 1	Ability to demonstrate the use, interpretation and application of an appropriate international engineering standard in a specific situation.	
CO 2	Ability to analyze a given engineering problem, identify an appropriate problem solving methodology and propose a meaningful solution.	

HS P65 – General Proficiency – II		Yr/Sem: III/VI
CO 1	Understand the composition analysis.	
CO 2	Developing letter and resume writing skills.	

CO 3	Understand and practice oral skills through group discussions and negotiation activities.
CO 4	Practice corporate etiquette, grooming and dressing.
CO 5	Practice verbal, non-verbal and numerical aptitude.

VII– SEMESTER

CS T71 – Artificial Intelligence		Yr/Sem: IV/VII
CO 1	Confer history of AI, exchange views on Heuristic Search Techniques, Means Ends Analysis, Intelligent agents.	
CO 2	Discuss about propositional logic, predicate logic, forward and backward reasoning, filler structure, Based agents.	
CO 3	Discourse about non-monotonic reasoning, certainty factors, Bayesian networks, Fuzzy logic.	
CO 4	Confer and analyze the planning techniques, forms of learning.	
CO 5	Discuss about minimax search procedure, expert system representation, expert system shells, robotics.	
CS T72 – Computer Hardware and Network Trouble Shooting		Yr/Sem: IV/VII
CO 1	Understand basic internal structures and evaluation of computers.	
CO 2	Identify and understand various components of motherboard, bus standards, SMPS and BIOS.	
CO 3	Understand memory hierarchy and needs of primary and secondary storage troubleshooting the memory problems.	
CO 4	Understand about various kinds of input and output devices and troubleshoot I/O related problems.	
CO 5	Interface external I/O devices with network topologies and troubleshoot network related problems.	
CS T73 – Platform Technology		Yr/Sem: IV/VII
CO 1	Confer knowledge of .NET framework, CLR, Class library, MSIL, components of CLR namespace, input and output, serialization, enterprise services, interoperability, GUIs.	
CO 2	Ability to write C# .NET programs and knowledge on object oriented concepts.	
CO 3	Ability to write VB .NET programs and knowledge on object oriented concepts.	
CO 4	Direct access to data, accessing data with datasets and gain knowledge on the same	
CO 5	Gain knowledge of J2EE: Enterprise edition.	
CS E71 – Software Testing and Quality Assurance		Yr/Sem: IV/VII
CO 1	Understand how to detect, classify, prevent and remove defects	
CO 2	Understand how to conduct formal inspections, record and evaluate results of inspections	
CO 3	Understand the effectively strategies of testing, the methods and technologies of software testing	
CO 4	Choose appropriate testing strategies and develop test cases	
CO 5	Understand about software quality and software quality standards	

CS P71 – Artificial Intelligence Laboratory		Yr/Sem: IV/VII
CO 1	Understanding concepts of prolog and implementing recursive algorithms.	
CO 2	Understand and apply the search and traversal concepts and knowledge representation using propositional and predicate logic.	
CS P72 – Troubleshooting Laboratory		Yr/Sem: IV/VII
CO 1	Assemble personal computer, OS installation, circuit tracing, USB port programming and interfacing.	
CO 2	Troubleshooting printer port, serial port, USB port, PCI bus, networking devices using Bluetooth interface.	
CS P73 – Platform Technology Laboratory		Yr/Sem: IV/VII
CO 1	Analyze and program using C# .NET, ADO.NET	
CO 2	Real time application using .NET framework.	
CS PW7 – Project Phase – I		Yr/Sem: IV/VII
CO 1	Motivate students to select application related projects.	
CO 2	Students study the reference papers from various domain and select domain of their wish.	
CO 3	Students have detailed survey on selected domain and identify base paper and give presentation.	
CO 4	Students identified problem formulation of their existing work.	
CO 5	Students performed survey, identified the base paper, problem formulation and gave presentation.	

VIII– SEMESTER

CS T81 – Professional Ethics		Yr/Sem: IV/VIII
CO 1	Discuss engineering ethics, moral issues, ethical theories and their uses in engineering.	
CO 2	Realize code of ethics, engineer’s responsibility for safety, rights and responsibilities.	
CS T82 – Engineering Economics and Management		Yr/Sem: IV/VIII
CO 1	Confer the micro and macro, its applications, demand and supply concepts, break even analysis.	
CO 2	Discuss production and marketing management, concept of productivity, channels of distribution.	
CO 3	Discourse financial management, balance sheet, interest formulae.	
CO 4	Discuss methods of depreciation, declining method of depreciation.	
CO 5	Confer present and future worth method, annual equivalent method, rate of return method and examples.	
CS T83 – Information Security		Yr/Sem: IV/VIII
CO 1	Confer knowledge about security SDLC, providing security to components and make balance between security and access.	
CO 2	Ability to apply basic knowledge to handle threats, attacks, and legal professional issues while implementing security.	
CO 3	Analyze and access the impact of risk and they can make remedial measures to control risk on any organization.	

CO 4	Understand process involved in information security cycle and study security standard procedures.
CO 5	Understand study of security technology and implement cryptography algorithms.
CS E85 – Grid Computing Yr/Sem: IV/VIII	
CO 1	Create a Grid Middleware architecture
CO 2	Explain the services offered by grid
CO 3	To utilize grid for various applications
CO 4	Use of distribution techniques for grid and cloud environments.
CO 5	Deployment and exploitation of the developed software in clusters, grids and clouds.
CS E811 – Cloud Computing Yr/Sem: IV/VIII	
CO 1	Confer roots of cloud computing, layers and types of cloud, features, challenges and risks.
CO 2	Discuss cloud architecture, services, applications.
CO 3	Discourse abstraction and virtualization, Virtual machines, provisioning in the cloud context.
CO 4	Understand how to manage and secure data in cloud.
CO 5	Understand the services provided by various clouds.
CS P81 – Seminar Yr/Sem: IV/VII	
CO 1	Students must be able to make critical review of literature.
CO 2	Preparation of report on the topic.
CS P82 – Comprehensive Viva-Voce Yr/Sem: IV/VIII	
CO 1	Remember all areas of Computer Science and engineering.
CS PW8 – Project Phase II Yr/Sem: IV/VIII	
CO 1	Student installed and learnt the software simulation tool.
CO 2	System architecture is designed and implementation of modules were done.
CO 3	Review was conducted.
CO 4	Demonstration of project and performance analysis is done.
CO 5	Presentation is done and report is submitted.

End of CO



CHRIST

COLLEGE OF ENGINEERING AND TECHNOLOGY

(Approved by AICTE, New Delhi and Affiliated to Pondicherry University)

Pitchaveeranpet, Moolakulam, Pondicherry - 605010.

(A Unit of Sam Paul Educational Trust)

DEPARTMENT OF INFORMATION TECHNOLOGY
SUBJECTWISE COURSE OUTCOMES (2018– 2023)

I-SEMESTER

T101- MATHEMATICS-I		Yr/Sem:I/I
CO1	Apply knowledge of mathematics to solve functions of several variables.	
CO2	Identify, formulate and solve engineering problems like multiple integrals and their usage.	
CO3	To solve differential equations that model physical processes using effective Mathematical tools	
CO4	Able to find equation of straight line of shortest distance ,equation of plane , angle Between straight lines.	
CO5	Gain the knowledge to solve first order differential equation arising in engineering.	
T102 -PHYSICS		Yr/Sem:I/I
CO1	Apply knowledge of science and engineering to understand physics and its significant Contribution in the advancement of technology and invention of new products that dramatically transform modern day society.	
CO2	Identify different areas of physics which have direct relevance and applications to Different engineering disciplines.	
CO3	Apply fundamental knowledge to understand applications of ultrasonics , optics and some optical devices, lasers and fiber optics, nuclear energy sources and wave mechanics.	
CO4	Understand the basic operating principles of laser ,its applications , opticalfiber , and Its types, transmission characteristics, applications of optical fibers.	
T103- CHEMISTRY		Yr/Sem:I/I
CO1	Apply knowledge of science and engineering to understand the importance of Chemistry in engineering domain.	
CO2	Identify different electrochemical cells and their usage for industrial process.	
CO3	Apply fundamental knowledge of chemistry and build an interface of theoretical Concepts with industrial applications/engineering applications.	
CO4	Guide the students to gain the knowledge about the cooling curves, phase diagrams, Alloys and their practical importance.	

CO5	Strengthen the fundamentals of chemistry and then build an interface of theoretical. Concepts with their industrial/engineering applications.
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T104–BASIC ELECTRICAL AND ELECTRONICS ENGINEERING		Yr/Sem:I/I
CO1	Will learn the fundamentals of rotational and stationary machine operation, single-phase and three-phase power measurement, magnetic and electrical circuits, and these topics.	
CO2	Will learn the fundamentals of measuring devices, communication systems, and Network models.	
CO3	Knowledge about non-conventional energy systems will be available to students.	
CO4	The varieties of metal joining will be known by the students.	
CO5	Students will learn about numerous engines, energies, and joints as well as Construction and building components offered with diverse principles.	
T105–ENGINEERING THERMODYNAMICS		Yr/Sem:I/I
CO1	Apply knowledge of mathematics, science and engineering to understand the basics of thermodynamics.	
CO2	Understand the importance of laws of thermodynamics applied to energy systems.	
CO3	Understanding refrigeration, heatpump and their physical mechanism.	
CO4	Understand the laws of motion for rigid bodies.	
CO5	Understand the effects of forces acting on the bodies in practical situation.	

P101- COMPUTER PROGRAMMING LABORATORY		Yr/Sem:I/I
CO1	Students can work with command line interface OS's, like MS-DOS.	
CO2	Students can solve most of the real time problems with C program.	
CO3	Students can interact with computer using C program, through various input and Output functions.	
CO4	Students can make a use of various keywords, constants, variables, datatypes, operators, type conversion in C program.	
CO5	Students will have knowledge about arrays, functions, structures and pointers in C program.	

P102– ENGINEERING GRAPHICS		Yr/Sem:I/I
CO1	Perform free hand sketching of basic geometrical constructions and multiple views of objects.	
CO2	Project orthographic projections of lines and plane surfaces.	
CO3	Draw projections and solids and development of surfaces.	

CO4	Visualize and to project isometric and perspective sections of simple solids.
CO5	Students will be able to draw orthographic projections and isometric projections.

II-SEMESTER

T107 – MATHEMATICS-II		Yr/Sem:I/II
CO1	Apply knowledge of mathematics to solve matrix algebra technique for practical Applications and Curl, divergence and integration of vectors in vector calculus.	
CO2	Identify, formulate and solve engineering problems like Laplace transform and to Solve differential and integral equations.	
CO3	Apply formulae and analyze problems of Fourier transform techniques.	

P103-BASIC ELECTRICAL AND ELECTRONICS LABORATORY		Yr/Sem:I/I
CO1	Know about basic electrical tools, applications and precautions	
CO2	Perform different types of wiring used in domestic and industrial applications.	
CO3	Measurements of voltage and phase using CRO, basic operation and applications of Device such as PN junction diode and transistors.	
CO4	Understand the function and applications of basic logic gates and flipflops.	
CO5	Gain knowledge in domestic wiring and application of electronics device in the field of electrical engineering.	

CO4	Determine the Fourier transform, Fourier cosine and sine transform of elementary functions, properties of transforms and its application in engineering.	
CO5	Acquire knowledge of matrix algebra technique, vector calculus, Laplace and Fourier Transform.	

T108–MATERIAL SCIENCE		Yr/Sem:I/II
CO1	Apply core concepts in material science to solve engineering problems.	
CO2	Knowledge able of contemporary issues relevant to material science and engineering	
CO3	Understand about the ferrites and its application to magnetic materials.	
CO4	Select materials for design and construction.	
CO5	Understand the importance and properties of materials.	

T109–ENVIRONMENTAL SCIENCE		Yr/Sem:I/II
CO1	Apply fundamental knowledge to understand about the environment.	

CO2	Identify environmental pollution through science.
CO3	Apply basic knowledge to solve various environmental issues and problems.
CO4	Ability to consider issues of environment and sustainable development in his personal and professional undertakings.
CO5	Provides a comprehensive knowledge in environmental science, environmental issues And the management from an interdisciplinary perspective.

T111- ENGINEERING MECHANICS	Yr/Sem:I/II
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CO1	Understand the basic laws of mechanics and resolution of forces using different methods.
CO2	Learn and apply the knowledge on analysis of forces acting on the trusses and Effect of friction force on bodies.
CO3	Learn about the centroid and moment of inertia for plane and solid figures.

T110-BASIC CIVIL AND MECHANICAL ENGINEERING	Yr/Sem:I/II
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CO1	Understand the building classification as per National building code.
CO2	Get the idea about construction procedure for various components of the building.
CO3	Students understand the principles of surveying, construction procedure for roads, Bridges and dams.
CO4	Student will be able know about the working of Internal and external combustion systems
CO5	Student will be able know about Non-Conventional Energy Systems
CO6	Student will be able to know about manufacturing process.
CO4	Understand the three laws of motion, principles of dynamics for particles.
CO5	The student will be able to analyse the laws of motion for rigid bodies.

T112-COMMUNICATIVE ENGLISH	Yr/Sem:I/II
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CO1	Learnt about the definition of communication, importance, concept. Sender, Ideation, the levels in communication, channels, oral and written way of communication, body language and nonverbal communication, Accuracy, Brevity and Clarity, different barriers for Communication, techniques in making effective communication, listening importance and types of listening.
CO2	Students learnt about the types of letters, report writing, notices and memo and Also developed their skill in writing.
CO3	Understands the comprehension, identifies the difference between Skimming and scanning, guess the meaning of the words, Identify to make notes.

CO4	Students learnt the writing skills, how to write a paragraph in a proper manner, Four modes of writing and how to make bibliographical entries.
CO5	Students were able to develop their spoken skills by making them to involve in Many activities related to it.

P 104 –PHYSICS LAB		Yr/Sem:I/II
CO1	Able to understand how to find the thickness of the specimen and also to find the Radius of curvature of glass using the phenomenon of interference of light	
CO2	Able to understand the specific rotator power of an optical active solution using the Principle of polarization.	
CO3	To understand about the thermal conductivity of bad conductor and rubber tube.	
CO4	Ability to understand about the optical properties like dispersive power, Resolving power by applying the knowledge of optics	
CO5	To acquire knowledge about the magnetometer due to current coil and jolly method of Determining the pressure coefficient to fair at constant volume.	
CO6	Ability to understand the basic knowledge of inference, polarization, Magnetic materials, thermal conductivity that correlates the theory and practical.	

P 105 – CHEMISTRYLAB		Yr/Sem:I/II
CO1	Students will become well acquainted to test amount of hardness present in sample of Water for their engineering needs.	
CO2	Students will be efficient in estimating acidity/alkalinity in given samples.	
CO3	Students will have knowledge about estimating amount of dissolved oxygen in water.	
CO4	Students will become well acquainted to estimate copper in brass.	
CO5	Students will have knowledge about determination of viscosity of sucrose using Ostwald's viscometer.	
CO6	To develop an understanding of basic titration setup and methodologies for Determining strength, hardness and alkalinity of various unknown solutions.	

P 106 –WORKSHOPPRACTICE		Yr/Sem:I/II
CO1	Understand and comply with workshop safety regulations.	
CO2	Student will be able to make various joints in the given object with the available work material.	
CO3	Student will be able to know how much a joint will take for the assessment of time.	
CO4	Students can able to Identify the hand tools and instruments.	

CO5	Students can able to gain knowledge about various operations carried out in sheet metal.
CO6	Students can able to gain skills about various tools used in welding to make simple joints.
P107– NSS/NCC	
Yr/Sem:I/II	
CO1	To create awareness in social and environmental issues.
CO2	To participate in relief and rehabilitation work during natural calamities.
CO3	To develop some proposals for local slum area development and waste disposal.
CO4	To create team works among students and produce efficient results.
CO5	To operate scientific instruments or advanced software.

III–SEMESTER

MAT31 –MATHEMATICS–III	
Yr/Sem: II/III	
CO1	To provide the concepts of functions of a complex variable, conformal mapping, complex integration, series expansion of complex functions, Harmonic analysis and Fourier series
CO2	To make the students understand and work out problems of constructing analytic functions, conformal mapping, bilinear transformation, contour integration and expanding functions into Fourier series including Harmonic analysis
CO3	To Understand the concepts of function of a complex variable and complex integration and apply these ideas to solve problems occurring in the area of engineering and technology
CO4	To Express any periodic function as Fourier series, Fourier sine and Cosine series.
CO5	To Finding Fourier series for numerical values of any function. Interpret and use the basic concepts of analytic function, Taylor and Laurent series, singularities, residues, conformal mapping, Fourier series and harmonic analysis.
IT-T32 ELECTRONIC DEVICES AND CIRCUITS	
Yr/Sem: II/III	
CO1	To introduce the applications of PN junction diode and Zener diode. To Analyse the behaviour of PN junction diode, Zener diode and other special devices.
CO2	To familiarize the students with an in-depth knowledge of special devices .To Understand the application areas of diodes.
CO3	To introduce the construction and operation of oscillators. To impart knowledge on biasing of BJT and FET. To Gain knowledge in biasing of BJT, FET

CO4	To introduce the op-amp fundamentals and to teach the applications of op-amp .To Understand the working of Power amplifiers and oscillators
CO5	To Understand the practical applications of op-amps.

IT-T33 DATA STRUCTURES

Yr/Sem: II/III

CO1	To develop an understanding of the relationship between the primary data structures and the associated operations
CO2	To Understand the basic concepts of applications of data structures with case studies
CO3	To make the student to understand the implementation issues of the data structures introduced
CO4	To impart knowledge on the concepts of data structures in programming
CO5	To provide key concepts to analyze and understand the various ways of implementing the data structures

IT-T34 OBJECT ORIENTED PROGRAMMING

Yr/Sem: II/III

CO1	To make the student to understand the concepts of object-oriented programming and master OOP using C++.
CO2	To Analyze and design a problem using an object-oriented approach.
CO3	To make the student to understand the implementation issues of the data structures introduced
CO4	To impart knowledge on the concepts data structures in programming
CO5	To provide key concepts to analyze and understand the various ways of implementing the data structures

IT-T35 DIGITAL SYSTEM DESIGN		Yr/Sem: II/III
CO1	To learn the required functionality of number systems, codes and Boolean algebra to the analysis and design of digital logic circuits	
CO2	To make the student to understand how to formulate, and solve engineering problems in the area of digital logic circuit design.	
CO3	To use the techniques, skills, and modern engineering tools such as logic works and VHDL, necessary for engineering practice.	
CO4	To design a digital system, components or process to meet desired needs within realistic constraints	
CO5	To provide key concepts to analyze and understand the various ways of implementing HDL for combinational circuits	
IT-T36 COMPUTER ORGANIZATION		Yr/Sem: II/III
CO1	To make the student to understand the basic operation of a computer and to understand the design and organization of a Von-Neumann computer system.	
CO2	To develop an understanding of the importance of hardware-software interface.	
CO3	To Learn various methods of Von Neumann architecture, parallel, pipelined, superscalar, and RISC/CISC architectures.	
CO4	To enable the students to understand the cost -performance issues and design tradeoffs in designing and constructing a computer processor including memory	

CO5	To Understand the basic concepts of basic knowledge the design of digital logic circuits and apply to computer organization.
IT-P31 DATA STRUCTURES LAB Yr/Sem: II/III	
CO1	To train the students to Solve any given problem by identifying appropriate Data Structure.
CO2	To Learn various methods of Solving various problems using techniques introduced in this course .Analyze the algorithm's / program's efficiency in terms of time and space complexity.
CO3	Should be able to understand to Solve any given problem by identifying appropriate Data Structure .Evaluate program's efficiency in terms of time and space complexity.
IT-P32 ELECTRONIC DEVICES AND CIRCUITS LAB Yr/Sem: II/III	
CO1	Conceptually and fully aware of the basic concepts, techniques and applications of electronic circuits.
CO2	To enhance the technical skills through analyzing the waveforms obtained at various stages of the circuit.
CO3	To develop skills to Carry out design of the various electronic circuits suitable for a specific application.
IT-P33 DIGITAL LAB Yr/Sem: II/III	
CO1	To apply knowledge of number systems, codes and Boolean algebra to the analysis and design of digital logic circuits.
CO2	To identify, formulate, and solve engineering problems in the area of digital logic circuit design.
CO3	To use the techniques, skills, and modern engineering tools such as logic works and VHDL, necessary for engineering practice and to design a digital system, components or process to meet desired needs within realistic constraints

IV–SEMESTER

MAT41 –MATHEMATICS–IV		Yr/Sem: II/IV
CO1	Formulate and solve partial differential equation.	
CO2	Derive and obtain the solution of wave equation and boundary value problems.	
CO3	Derive and obtain the solution of heat equation and boundary value problems.	
CO4	Apply least square method to fit various curves for the given data investigate the validity of hypothesis by Z-distribution techniques.	
CO5	Calculation of analysis of variance and explain the use of the Chi-squared test and its calculation.	
IT-T42 COMMUNICATION ENGINEERING-I		Yr/Sem: II/IV
CO1	To learn the basics of electronic communication and different analog modulation systems.	
CO2	To make the student to understand the operation of modulator and demodulator for different analog modulation systems and to explore the use of pulse modulation system	
CO3	Students Will be clear with the concepts of different analog modulation systems	
CO4	To develop an understanding of the need for pulse modulation systems	
CO5	Students will have a clear idea on concept and applications of digital modulation systems	
IT-T43 DESIGN AND ANALYSIS OF ALGORITHMS		Yr/Sem: II/IV
CO1	To introduce the fundamental strategies of different algorithm design techniques.	
CO2	Solving various problems using techniques introduced in this course and to analyze the algorithm's / program's efficiency in terms of time and space complexity.	
CO3	To Learn various methods to Analyze / compare the given algorithm.	

CO4	To Compute the time complexity/space complexity of any recursive/non recursive algorithms
CO5	To develop skills to Solve any given problem using the fundamental design techniques

IT-T44 MICROPROCESSORS AND MICROCONTROLLERS		Yr/Sem: II/IV
CO1	Understanding the inner working components of the microprocessor and microcontrollers	
CO2	Understand the basic concepts of Developing assembly language program using 8085 instruction set	
CO3	To train the students to Develop assembly language program using 8086 instruction set	
CO4	Developing assembly language program using 8051 instruction set	
CO5	Learn various methods of Developing various I/O programs for 9085, 8086 and 8051	

IT-T45 JAVA PROGRAMMING		Yr/Sem: II/III
CO1	To Understand the basic concepts of Java	
CO2	To learn the features of Java and advanced concepts in Java.	
CO3	To make the students to understand the Concepts of Exception handling and types of exception	
CO4	To develop skills in Developing Java Program for RMI and JDBC	
CO5	Students will understand the benefits and capabilities of Java	

IT-T46 SYSTEM SOFTWARE		Yr/Sem: II/III
CO1	To Understand the design and implementation of Assemblers, loaders, linkers and compilers.	
CO2	To Understand how source language programs are implemented at the machine level.	
CO3	To Understand compilation as an instance of language translation and to use of formal attributed grammars for specifying the syntax and semantics of programming languages.	

CO4	To make the students to have in depth Working knowledge of the major phases of Loading linking and compiling.
CO5	To design and implement a significant portion of a compiler for a language chosen by the instructor.

IT-P41 ALGORITHMS LAB Yr/Sem: II/III

CO1	To introduce the implementation of various design techniques using C and C++.
CO2	Learn to implement the complex tasks using various design techniques
CO3	To learn advanced data structures and their implementation in different language platforms

IT-P41 ALGORITHMS LAB Yr/Sem: II/III

CO1	To introduce the implementation of various design techniques using C and C++.
CO2	Learn to implement the complex tasks using various design techniques
CO3	To learn advanced data structures and their implementation in different language platforms

IT-P42 MICROPROCESSORS AND MICROCONTROLLERS LABORATORY Yr/Sem:II/III

CO1	To Understand the inner working components of the microprocessor and microcontrollers and Developing assembly language program using 8085 instruction set
CO2	Developing various I/O programs for 9085, 8086 and 8051
CO3	To Develop assembly language program using 8086 instruction set and Developing assembly language program using 8051 instruction set

IT-P43 JAVA LAB		Yr/Sem:II/III
CO1	To understand the basics of java and to write programs in Java covering the object oriented concepts.	
CO2	To write programs covering advanced concepts in java like thread handling, applets, RMI and JDBC	
CO3	Students will learn how to write programs and develop projects in Java.	
PE-P44 PHYSICAL EDUCATION		Yr/Sem:II/III
CO1	Activities will include games and sports/extension lectures. In the above activities, the student participations shall be for a minimum period of 45 Period	
CO2	Student activities will be monitored by the Director of Physical Education.	
CO3	.Pass/Fail will be determined on the basis of participation, attendance, performance and behavior. If a candidate fails, he/she has to repeat the course in the subsequent years	

V-SEMESTER

IT-T51 COMMUNICATION ENGINEERING-II		Yr/Sem: III/V
CO1	To learn the various orbits used for satellite communication systems. And to understand the working principle of various satellite systems and their applications.	
CO2	To understand the concept of spread spectrum technologies, Rake receivers and CDMA And to learn the concept and operation of cellular mobile communication and to introduce various cellular standards	

CO3	Understand the operation of various types of communication systems
CO4	To learn the need for fiber optics communication and the operation of fiber optic communication system.
CO5	.To understand the application of various types of communication systems
IT-T52 SOFTWARE ENGINEERING Yr/Sem: III/V	
CO1	To learn, practice and apply the software engineering industry practices
CO2	To acquire knowledge on the various techniques, tools and models for each of the phases of software development
CO3	Ability to apply basic knowledge and understanding of the analysis, synthesis and design of complex systems
CO4	Develop, maintain and evaluate large-scale software systems
CO5	Produce efficient, reliable, robust and cost-effective software solutions
IT-T53 OPERATING SYSTEMS Yr/Sem: III/V	
CO1	Understand fundamental operating system abstractions such as processes, threads, files, semaphores, IPC abstractions, shared memory regions, etc.,
CO2	Understand how the operating system abstractions can be used in the development of application programs, or to build higher level abstractions.
CO3	Understand how the operating system abstractions can be implemented
CO4	Understand the principles of concurrency and synchronization, and apply them to write correct concurrent programs/software,
CO5	Understand basic resource management techniques (scheduling or time management, space management) and principles and how they can be implemented. These also include issues of performance and fairness objectives, avoiding deadlocks, as well as security and protection
IT-T54 DATABASE MANAGEMENT SYSTEMS Yr/Sem: III/V	
CO1	To introduce the fundamental concepts of Database Management System to the students.

CO2	To understand the usage of Database Management System in the current industry scenario.
CO3	The students can be able to understand the concepts of Database Management System
CO4	To make the students to choose and design the database for the specific requirement of the project.
CO5	Should be able to understand the Storage and File Structures of Database management system.
IT-T55 THEORY OF COMPUTATION Yr/Sem: III/V	
CO1	Explain the basic concepts of deterministic and non-deterministic finite automata, regular language, context-free language, Turing machines, computability and complexity.
CO2	The ability to develop, build, and analyze the formal relationships among machines, languages and grammars
CO3	To Explore the fundamentals of Solve the problems using formal language
CO4	To Develop a view on the importance of computational theory
CO5	Should be able to understand the Storage and File Structures of Database management system
IT-E51 COMPUTER HARDWARE AND TROUBLESHOOTING Yr/Sem: III/V	
CO1	To provides insight to the various parts and types of computer.
CO2	It familiarizes the hardware types and the evolution in each of them and it also gives the basics of troubleshooting.
CO3	The students will have theoretical exposure as well as hands on exposure to know about the hardware aspects of computer.
CO4	students will have theoretical exposure as well as hands on exposure to know about the hardware aspects of computer.
CO5	Able to understand the Troubleshooting tools and In-CircuitEmulator, LogicState/ Timing Analyzers–Digital Multimeters.

IT-P51 COMMUNICATION ENGINEERING LAB		Yr/Sem: III/V
CO1	To understand the working of main concepts of analogue and digital communication systems. Ans to enhance technical skills through analyzing the waveforms obtained at various stages of the experiment.	
CO2	To verify the experimentally obtained and simulated outputs and knowing the reason for the deviation and to Follow rapid developments in the field of communication systems.	
CO3	To Apply problem-solving skills, Recognize and utilize latest analogue and digital communication technologies and to Interpret and integrate diverse information sources to form a coherent understanding of the subject	
IT-P52 OPERATING SYSTEMS LAB		Yr/Sem: III/V
CO1	To simulate the scheduling algorithms and to implement dining philosophers, reader-writer's using synchronization mechanisms and to learn the concept of memory management and file systems.	
CO2	Learn the concepts of job scheduling in systems and to Learn event synchronization mechanisms.	
CO3	To train the students to Study the concept of memory management	
IT-P53 DATABASE MANAGEMENT SYSTEMS LABORATORY		Yr/Sem: III/V
CO1	To design databases for real-time applications and to provide students with hands-on experience to understand and to be familiar in Oracle database, SQL, Oracle Reports and Oracle Forms.	
CO2	To understand how to administer a database system and to acquire knowledge of JDBC and ODBC connectivity	

CO3	An ability to analyze database needs and functions and to create data models from Entity-Relationship (E-R) diagrams and to implement databases using database technology also to use normalization rules and principles to create normalized databases and an ability to manage databases as a DBA
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HS-P54 GENERAL PROFICIENCY-I		Yr/Sem: III/V
CO1	To enhance the employability prospects of students and to hone the communication and language skills and make the students industry-ready	
CO2	To groom the students holistically and to ensure a hassle-free transition for students from college set-up to corporate set-up	
CO3	Become good communicators , Imbibe the requisite soft skills , Sharpen their writing skills and Analyse contemporary issues from various perspectives	

VI-SEMESTER

IT-T61 COMPUTER NETWORKS		Yr/Sem: III/V
CO1	Gets the idea of choosing the required functionality at each layer for a given application and trace the flow of information from one node to another node in the network.	
CO2	Then gives the understanding of division of network functionalities into layers, the component required to build different types of networks and identifying the solution for the functionalities in each layer. .	
CO3	To Understand the operation of the main components of computer networks and	
CO4	To Learn various network protocols and algorithms	
CO5	To Acquire the required skill to design simple computer networks.	

IT-T62 WEB TECHNOLOGY		Yr/Sem: III/V
CO1	To make the students to understand the basics of Network Model.	
CO2	To introduce the Web Development Process and Various Web Technologies	
CO3	Able to learn Networking and Security issues of Internet	
CO4	To Use appropriate web development tools for various web application	
CO5	To develop skills in various Networking and Security issues of Internet to have a protected internet use.	