SSM INSTITUTE OF ENGINEERING AND TECHNOLOGY
(An Autonomous Institution)
Dindigul – 624 002

Criteria 3 : Course Outcomes and Program Outcomes
Sub Criteria : 3.1.1. Course Outcomes
Branch : Department of Computer Science and Engineering
Regulation : R 2017

Semester	Course code	Course Name	Course No.	Course Outcomes
1	HS8151	Communicative English	C101.1	Read articles of a general kind in magazines and newspapers.
			C101.2	Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English
			C101.3	Comprehend conversations and short talks delivered in English
			C101.4	Listen to dialogues and conversations and to complete exercises based on them.
			C101.5	Write short essays of a general kind and personal letters and emails in English.
	MA8151	Engineering Mathematics - I	C102.1	Use both the limit definition and rules of differentiation to differentiate functions.
			C102.2	Apply differentiation to solve maxima and minima problems.
			C102.3	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus.
			C102.4	Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
			C102.5	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts.
	PH8151	Engineering Physics	C103.1	The students will gain knowledge on the basics of properties of matter and its applications.
			C103.2	The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics,
			C103.3	The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers.
			C103.4	The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunnelling microscopes,
			C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.
	CY8151	Engineering Chemistry	C104.1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
			C104.2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
			C104.3	To apply the knowledge of phase rule and composites for material selection requirements.
			C104.4	To recommend suitable fuels for engineering processes and applications.

			C104.5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors
	GE8151	**Problem Solving and Python Programming**	C105.1	Develop algorithmic solutions to simple computational problems
			C105.2	Read, write, execute and structure by hand simple Python programs.
			C105.3	Decompose a Python program into functions.
			C105.4	Represent compound data using Python lists, tuples, and dictionaries.
			C105.5	Read and write data from/to files in Python Programs.
	GE8152	**Engineering Graphics**	C106.1	Familiarize with the fundamentals and standards of Engineering graphics
			C106.2	Perform freehand sketching of basic geometrical constructions and multiple views of objects.
			C106.3	Project orthographic projections of lines and plane surfaces.
			C106.4	Draw projections and solids and development of surfaces.
			C106.5	Visualize and to project isometric and perspective sections of simple solids.
	GE8161	**Problem Solving and Python Programming Laboratory**	C107.1	Develop algorithmic solutions to simple computational problems
			C107.2	Develop and execute simple Python programs.
			C107.3	Implement programs in Python using conditionals and loops for solving problems.
			C107.4	Deploy functions to decompose a Python program
	BS8161	**Physics and Chemistry Laboratory**	C108.1	Apply principles of elasticity, optics and thermal properties for engineering applications
			C108.2	Analyze youngs modulus, rigidity modulus, wavelength of different colors and particle size of minute particles
			C108.3	Able to analyze the quality of water for domestic and industrial purposes
			C108.4	To acquire knowledge about the conductivity of acids and bases.
2	**HS8251**	**Technical English**	C109.1	Read technical texts and write area- specific texts effortlessly.
			C109.2	Listen and comprehend lectures and talks in their area of specialization successfully.
			C109.3	Speak appropriately and effectively in varied formal and informal contexts.
			C109.4	Write reports and winning job applications.
			C109.5	Participate effectively in public speaking and group discussion
	MA8251	**Engineering Mathematics - II**	C110.1	Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.
			C110.2	Gradient, divergence and curl of a vector point function and related identities.
			C110.3	Evaluation of line, surface and volume integrals using Gauss, Stokes and Green‘s theorems and their verification.
			C110.4	Analytic functions, conformal mapping and complex integration.
			C110.5	Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients.

	PH8252	**Physics for Information Science**	C111.1	Gain knowledge on classical and quantum electron theories, and energy band structures,
			C111.2	Acquire knowledge on basics of semiconductor physics and its applications in various devices,
			C111.3	Get knowledge on magnetic properties of materials and their applications in data storage,
			C111.4	Have the necessary understanding on the functioning of optical materials for optoelectronics,
			C111.5	Understand the basics of quantum structures and their applications in carbon electronics.
	BE8255	**Basic Electrical, Electronics and Measurement Engineering**	C112.1	Discuss the essentials of electric circuits and analysis.
			C112.2	Discuss the basic operation of electric machines and transformers
			C112.3	Introduction of renewable sources and common domestic loads.
			C112.4	Introduction to measurement and metering for electric circuits.
			C112.5	Design and develop the solution for various real time problems associated with Electrical Circuits, Machines, Domestic appliances, Electron Devices and measurement devices
	GE8291	**Environmental Science and Engineering**	C113.1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
			C113.2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
			C113.3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
			C113.4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development
			C113.5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.
	CS8251	**Programming in C**	C114.1	Develop simple applications in C using basic constructs
			C114.2	Design and implement applications using arrays and strings
			C114.3	Develop and implement applications in C using functions and pointers.
			C114.4	Develop applications in C using structures.
			C114.5	Design applications using sequential and random access file processing.
	GE8261	**Engineering Practice laboratory**	C115.1	Fabricate carpentry components and pipe connections including plumbing works.
			C115.2	Use welding equipment's to join the structures.
			C115.3	Carry out the basic machining operations
			C115.4	Make the models using sheet metal works Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings
	CS8261		C116.1	Develop programs in C using basic constructs and arrays

		C Programming Laboratory	C116.2	Develop applications in C using strings, pointers, functions.
			C116.3	Develop applications in C using structures.
			C116.4	Develop applications in C using file processing
3	**MA8351**	**Discrete Mathematics**	C201.1	Have knowledge of the concepts needed to test the logic of a program.
			C201.2	Have an understanding in identifying structures on many levels.
			C201.3	Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
			C201.4	Be aware of the counting principles.
			C201.5	Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.
	CS8351	**Digital Principles and System Design**	C202.1	Simplify Boolean functions using KMap
			C202.2	Design and Analyze Combinational Circuits
			C202.3	Design and Analyze Synchronous and Asynchronous Sequential Circuits
			C202.4	Implement designs using Programmable Logic Devices
			C202.5	Write HDL code for combinational and Sequential Circuits
	CS8391	**Data Structures**	C203.1	Implement Abstract datatype for linear and non-linear data structures.
			C203.2	Implement linear and non–linear data structure operations.
			C203.3	Use appropriate linear/non–linear data structure operations for solving a given problem.
			C203.4	Apply appropriate graph algorithms for graph applications.
			C203.5	Critically analyze the various searching and sorting algorithms.
	CS8392	**Object Oriented Programming**	C204.1	Apply the concepts of classes and objects to solve simple problems
			C204.2	Develop programs using inheritance, packages and interfaces
			C204.3	Make use of exception handling mechanisms and multithreaded model to solve real world problems
			C204.4	Build Java applications with I/O packages, string classes, Collections and generics concepts
			C204.5	Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications
	EC8395	**Communication Engineering**	C205.1	Ability to comprehend and appreciate the significance and role of this course in the present contemporary world
			C205.2	Apply analog and digital communication techniques.
			C205.3	Use data and pulse communication techniques.
			C205.4	Analyze Source and Error control coding.
			C205.5	Identify different spread spectrum and multiple access techniques.
	CS8381	**Data Structures Laboratory**	C206.1	Implement Linear data structure algorithms.
			C206.2	Implement applications using Stacks and Linked lists
			C206.3	Implement Binary Search tree and AVL tree operations.
			C206.4	Implement graph algorithms
	CS8383	**Object oriented programming Laboratory**	C207.1.	Design and develop java programs using object oriented programming concepts
			C207.2.	Develop simple applications using object oriented concepts such as package, exceptions
			C207.3.	Implement multithreading, and generics concepts

			C207.4.	Create GUIs and event driven programming applications for real world problems
	CS8382	**Digital Systems Laboratory**	C208.1.	Implement simplified combinational circuits using basic logic gates
			C208.2.	Implement combinational circuits using MSI devices
			C208.3.	Implement sequential circuits like registers and counters
			C208.4.	Simulate combinational and sequential circuits using HDL
	HS8381	**Interpersonal Skills/Listening and Speaking**	C209.1.	To equip student in active listening by providing inputs regarding pronunciation
			C209.2.	To utilize elemental aspects like conversation starters, stress and intonation to improve fluency
			C209.3.	To infer ideas expressed by other participants and spell out views during a group discussion
			C209.4.	To improve spoken skills as an individual or as a group by delivering self-introduction and effective presentations
4	**MA8402**	**Probability and Queueing Theory**	C210.1.	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
			C210.2.	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
			C210.3.	Apply the concept of random processes in engineering disciplines.
			C210.4.	Acquire skills in analyzing queuing models.
			C210.5.	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner
	CS8491	**Computer Architecture**	C211.1.	Understand the basics structure of computers, operations and instructions.
			C211.2.	Design arithmetic and logic unit.
			C211.3.	Understand pipelined execution and design control unit.
			C211.4.	Understand parallel processing architectures.
			C211.5.	Understand the various memory systems and I/O communication.
	CS8492	**Database Management Systems**	C212.1.	Construct SQL Queries using relational algebra
			C212.2.	Design database using ER model and normalize the database
			C212.3.	Construct queries to handle transaction processing and maintain consistency of the database
			C212.4.	Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database
			C212.5.	Appraise how advanced databases differ from Relational Databases and find a suitable database for the given requirement
	CS8451	**Design and Analysis of Algorithms**	C213.1.	Design algorithm for various computing problems
			C213.2.	Analyze the time and space complexity of algorithms
			C213.3.	Critically analyse the different algorithm design techniques for a given problem
			C213.4.	Modify exixting algorithm to improve efficiency
			C213.5.	Solve problems using approximation algorithms
	CS8493	**Operating Systems**	C214.1.	Analyze various scheduling algorithms and process synchronization.
			C214.2.	Explain deadlock prevention and avoidance algorithms.
			C214.3.	Compare and contrast various memory management schemes.
			C214.4.	Explain the functionality of file systems, I/O systems, and Virtualization

			C214.5.	Compare iOS and Android Operating Systems.
	CS8494	**Software Engineering**	C215.1.	Compare various Software Development Lifecycle Models
			C215.2.	Evaluate project management approaches as well as cost and schedule estimation strategies.
			C215.3.	Perform formal analysis on specifications.
			C215.4.	Use UML diagrams for analysis and design.
			C215.5.	Architect and design using architectural styles and design patterns, and test the system
	CS8481	**Database Management Systems Laboratory**	C216.1.	Create databases with different types of key constraints.
			C216.2.	Construct simple and complex SQL queries using DML and DCL commands.
			C216.3.	Use advanced features such as stored procedures and triggers and incorporate in GUI based application development.
			C216.4.	Create an XML database and validate with meta-data using NoSQL(XML schema).
	CS8461	**Operating Systems Laboratory**	C217.1.	Define and implement UNIX Commands.
			C217.2.	Compare the performance of various CPU Scheduling Algorithms.
			C217.3.	Compare and contrast various Memory Allocation Methods.
			C217.4.	Define File Organization and File Allocation Strategies.
	HS8461	**Advanced Reading and Writing**	C218.1.	To understand the strategies of effective reading, predicting the content using photos and use graphic organizers to organize their writing
			C218.2.	To organize writing skills by composing different types of paragraph, essay, job applications etc.
			C218.3.	To analyse their critical thinking skills and write convincing proposals
			C218.4.	To design statement of purpose and letter of recommendation
5	**MA8551**	**Algebra and Number Theory**	C301.1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
			C301.2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
			C301.3	Demonstrate accurate and efficient use of advanced algebraic techniques.
			C301.4	Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
			C301.5	Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.
	CS8591	**Computer Networks**	C302.1.	Understand the basic layers and its functions in computer networks
			C302.2.	Evaluate the performance of a network
			C302.3.	Understand the basics of how data flows from one node to another and analyze the design routing algorithm
			C302.4.	Design protocols for various functions in the network
			C302.5.	Understand the working of various application layer protocols
	EC8691	**Microprocessors and Microcontrollers**	C303.1	Understand and execute programs based on 8086 microprocessor.
			C303.2	Design Memory Interfacing circuits.
			C303.3	Design and interface I/O circuits.
			C303.4	Design and implement 8051 microcontroller based systems.

			C303.5	Design and implement 8051 microcontroller based system with real time applications
	CS8501	**Theory of Computation**	C304.1	Construct automata theory using Finite Automata
			C304.2	Write regular expressions for any pattern
			C304.3	Design context free grammar and Pushdown Automata
			C304.4	Design Turing machine for computational functions
			C304.5	Differentiate between decidable and undecidable problems
	CS8592	**Object oriented analysis and Design**	C305.1	Express software design with UML diagrams
			C305.2	Design software applications using OO concepts.
			C305.3	Identify various scenarios based on software requirements
			C305.4	Transform UML based software design into pattern based design using design patterns
			C305.5	Understand the various testing methodologies for OO software
	EC8681	**Microprocessors and Microcontrollers Laboratory**	C306.1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations
			C306.2	Interface different I/Os with processor
			C306.3	Generate waveforms using Microprocessors
			C306.4	Execute Programs in 8051
	CS8582	**Object oriented analysis and Design Laboratory**	C307.1	Perform OO analysis and design for a given problem specification.
			C307.2	Identify and map basic software requirements in UML mapping.
			C307.3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns
			C307.4	Test the compliance of the software with the SRS.
	CS8581	**Networks Laboratory**	C308.1	Implement various protocols using TCP and UDP.
			C308.2	Compare the performance of different transport layer protocols.
			C308.3	Use NS2 simulation tools to analyse the performance of various network protocols.
			C308.4	Analyse various routing algorithms.
	OMF551	**Product Design and Development**	C309.1	Define, formulate and analyze a problem
			C309.2	Solve specific problems independently or as part of a team
			C309.3	Gain knowledge of the Innovation & Product Development process in the Business Context
			C309.4	Work independently as well as in teams
			C309.5	Manage a project from start to finish
6	**CS8601**	**Mobile Computing**	C310.1	Explain the basics of mobile telecommunication systems
			C310.2	Illustrate the generations of telecommunication systems in wireless networks
			C310.3	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
			C310.4	Explain the functionality of Transport and Application layers
			C310.5	Develop a mobile application using android/blackberry/ios/Windows SDK
	CS8602	**Compiler Design**	C311.1	Understand the different phases of a compiler.
			C311.2	Design a lexical analyser for a sample language and learn to use the LEX tool.
			C311.3	Apply different parsing algorithms to develop a parser and learn to use YACC tool
			C311.4	Understand syntax directed translation and run-time environment.

			C311.5	Learn to implement optimization techniques and a simple code generator.
	CS8603	**Distributed Systems**	C312.1	Explain the foundations of distributed systems (K2)
			C312.2	Solve synchronization and state consistency problems (K3)
			C312.3	Use resource sharing techniques in distributed systems (K3)
			C312.4	Apply working model of consensus and reliability of distributed systems (K3)
			C312.5	Explain the fundamentals of cloud computing (K2)
	CS8651	**Internet Programming**	C313.1	Construct a basic website using HTML and Cascading Style Sheets.
			C313.2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
			C313.3	Develop server side programs using Servlets and JSP.
			C313.4	Construct simple web pages in PHP and to represent data in XML format.
			C313.5	Use AJAX and web services to develop interactive web applications
	CS8691	**Artificial Intelligence**	C314.1	Use appropriate search algorithms for problem solving
			C314.2	Apply reasoning under uncertainty
			C314.3	Build supervised learning models
			C314.4	Build ensembling and unsupervised models
			C314.5	Build deep learning neural network models
	CS8661	**Internet Programming Laboratory**	C315.1	Construct Web pages using HTML/XML/Java/JSP/PhP/AJAX and style sheets.
			C315.2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
			C315.3	Develop dynamic web pages using server side scripting.
			C315.4	Use PHP programming to develop web applications.
	CS8662	**Mobile Application Development Laboratory**	C316.1	Develop mobile applications using GUI and Layouts.
			C316.2	Develop mobile applications using Event Listener.
			C316.3	Develop mobile applications using Databases.
			C316.4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading and GPS.
	CS8611	**Mini Project**	C317.1	Develop the ability to do the literature survey systematically to identify the research gap.
			C317.2	Develop the ability ro demonstrate the problem formulated from the research gap identified through literature survey
			C317.3	Develop the ability to examine a specific problem by formulating proper methodologies
			C317.4	Develop the ability to appraise and select the successful solution for the problem
			C317.5	On Completion of the mini project work students will be in a position to take up any challenging practical problems
	HS8581	**Professional Communication**	C318.1	To relate and illustrate hard, soft, employability and career skills as per the need of the workplace
			C318.2	To utilize communication skills during presentations and Group discussions to groom as a professional
			C318.3	To prioritize interview etiquettes while attending job interviews
			C318.4	To develop long term career plans
7	**MG8591**	**Principles of Management**	C401.1	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing,

				staffing, leading & controlling and have same basic knowledge on international aspect of management
			C401.2	Articulate how to plan and solve the problem using Planning Tools and Techniques
			C401.3	Analyze organization chart and how to select the staff in an organization
			C401.4	Assess the effective communication technology for conveying the information to all staff in an organization
			C401.5	Formulate the managerial functions like planning, organizing, staffing, leading & controlling and have same basic knowledge on international aspect of management.
	CS8792	**Cryptography and Network Security**	C402.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
			C402.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
			C402.3	Apply the different cryptographic operations of public key cryptography
			C402.4	Apply the various Authentication schemes to simulate different applications.
			C402.5	Understand various cyber-crimes and cyber security.
	CS8791	**Cloud Computing**	C403.1	Articulate the main concepts, key technologies, Strengths and limitations of cloud computing
			C403.2	Learn the key and enabling technologies that help in the development of cloud
			C403.3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models
			C403.4	Explain the core issues of cloud computing such as resource management and security.
			C403.5	Evaluate and choose the appropriate technologies , algorithms and approaches for implementation and use of current cloud technologies
	OME752	**Supply Chain Management**	C404.1	The student would understand the framework and scope of supply chain networks and functions.
			C404.2	Analyze the design options for distribution in supply chain management
			C404.3	Identify the factors affecting transportation decisions
			C404.4	Analyze the supplier selection and supplier coordination methods
			C404.5	Appraise the role of IT in supply chain management
	CS8079	**Human Computer Interaction**	C405.1	Design effective dialog for HCI
			C405.2	Design effective HCI for individuals and persons with disabilities
			C405.3	Assess the importance of user feedback
			C405.4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites.
			C405.5	Develop a meaningful user interface.
	CS8711	**Cloud Computing Laboratory**	C406.1	Configure various virtualization tools such as Virtual Box, VMware workstation.
			C406.2	Design and deploy a web application in a PaaS environment.
			C406.3	Learn how to simulate a cloud environment to implement new schedulers

			C406.4	Install and use a generic cloud environment that can be used as a private cloud.
	IT8761	**Security Laboratory**	C407.1	Develop code for classical Encryption Techniques to solve the problems.
			C407.2	Build cryptosystems by applying symmetric and public key encryption algorithms.
			C407.3	Construct code for authentication algorithms.
			C407.4	Develop a signature scheme using Digital signature standard.
8	**GE8076**	**Professional Ethics in Engineering**	C408.1	Upon completion of the course, the student should be able to apply ethics in society, discuss the ethical issues related to engineering and realize the responsibilities and rights in the society.
			C408.2	Identify the multiple ethical interests at stake in a real-world situation or practice
			C408.3	Assess their own ethical values and the social context of problems
			C408.4	Articulate what makes a particular course of action ethically defensible
			C408.5	Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources
	CS8080	**Information Retrieval Techniques**	C409.1	Use an open source search engine framework and explore its capabilities
			C409.2	Apply appropriate methods of classification or clustering.
			C409.3	Design and implement innovative features in a search engine.
			C409.4	Design and implement a recommender system.
			C409.5	Evaluate the map reduce functions
	CS8811	**Project Work**	C410.1	Gain Domain knowledge and technical skill set required for solving industry / research problems
			C410.2	Provide solution architecture, module level designs, algorithms
			C410.3	Implement, test and deploy the solution for the target platform
			C410.4	Prepare detailed technical report, demonstrate and present the work
			C410.5	On Completion of the project work students will be in a position to find solution by formulating proper methodology