INFO INSTITUTE OF ENGINEERING,COIMBATORE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

PROGRAM OUTCOMES

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

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

3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

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

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

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

11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. **Life-long learning**: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technologicalchange.

PROGRAMME EDUCATIONAL OBJECTIVES

- To enable graduates to pursue higher education and research, or have a successful career in industries associated with Computer Science and Engineering, or as entrepreneurs. To ensure that graduates will have the ability and attitude to adapt to emerging technological changes.

PROGRAM SPECIFIC OUTCOMES

- To analyze, design and develop computing solutions by applying foundational concepts ofComputer Science and Engineering.

- To apply software engineering principles and practices for developing quality software for scientificand business applications.

- To adapt to emerging Information and Communication Technologies (ICT) to innovate ideas and solutions to existing/novel problems.

COURSE OUTCOMES

Regulation 2017 Anna University Chennai

SUBJECT	COs	

IV Semester		
MA8402 Probability and Queueing Theory	CO1	Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon.
	CO2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
	CO3	Apply the concept of random processes in engineering disciplines
	CO4	Acquire skills in analyzing queueing models.
	CO5	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner
CS8491 Computer Architecture	CO1	Understand the basics structure of computers, operations and instructions.
	CO2	Design arithmetic and logic unit.
	CO3	Understand pipelined execution and design control unit.
	CO4	Understand parallel processing architectures.
	CO5	Understand the various memory systems and I/O communication.
CS8492 Database Management Systems	CO1	Classify the modern and futuristic database applications based on size and complexity
	CO2	Map ER model to Relational model to perform database design effectively
	CO3	Write queries using normalization criteria and optimize queries
	CO4	Compare and contrast various indexing strategies in different database systems
	CO5	Appraise how advanced databases differ from traditional databases
CS8491 Design and Analysis of	CO1	Design algorithms for various computing problems.

Algorithms	CO2	Analyze the time and space complexity of algorithms
	CO3	Critically analyze the different algorithm design techniques for a given problem.
	CO4	Modify existing algorithms to improve efficiency
CS8493 Operating Systems	CO1	Analyze various scheduling algorithms.
	CO2	Understand deadlock, prevention and avoidance algorithms.
	CO3	Compare and contrast various memory management schemes.
	CO4	Understand the functionality of file systems
	CO5	Perform administrative tasks on Linux Servers.
	CO6	Compare iOS and Android Operating Systems
CS8494 Software Engineering	CO1	Identify the key activities in managing a software project
	CO2	Compare different process models.
	CO3	Concepts of requirements engineering and Analysis Modeling.
	CO4	Apply systematic procedure for software design and deployment
	CO5	Compare and contrast the various testing and maintenance.
	CO6	Manage project schedule, estimate project cost and effort required.
CS8481 Database Management Systems Laboratory	CO1	Use typical data definitions and manipulation commands.
	CO2	Design applications to test Nested and Join Queries
	CO3	Implement simple applications that use Views.
	CO4	Implement applications that require a Front-end Tool
	CO5	Critically analyze the use of Tables, Views, Functions and Procedures
CS8461 Operating Systems Laboratory	CO1	Compare the performance of various CPU Scheduling Algorithms
	CO2	Implement Deadlock avoidance and Detection Algorithms
	CO3	Implement Semaphores
	CO4	Create processes and implement IPC
	CO5	Analyze the performance of the various Page Replacement Algorithms

	CO6	Implement File Organization and File Allocation Strategies
HS8461 Advanced Reading and Writing	CO1	Write different types of essays
	CO2	Write winning job applications.
	CO3	Read and evaluate texts critically
	CO4	Display critical thinking in various professional contexts

V Semester		
MA8551 Algebra and Number Theory	CO1	Apply the basic notions of groups, rings, fields which will then be used to solve related problems.
	CO2	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
	CO3	Demonstrate accurate and efficient use of advanced algebraic techniques.
	CO4	Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text.
	CO5	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	CO1	Understand the basic layers and its functions in computer networks.
	CO2	Evaluate the performance of a network.
	CO3	Understand the basics of how data flows from one node to another.
	CO4	Analyze and design routing algorithms.
	CO5	Design protocols for various functions in the network.
	CO6	Understand the working of various application layer
EC8691 Microprocessors and Microcontrollers	CO1	Understand and execute programs based on 8086 microprocessor.
	CO2	Design Memory Interfacing circuits.
	CO3	Design and interface I/O circuits.
	CO4	Design and implement 8051 microcontroller based systems.

CS8501 Theory of Computation	CO1	Construct automata, regular expression for any pattern.
	CO2	Write Context free grammar for any construct.
	CO3	Design Turing machines for any language
	CO4	Propose computation solutions using Turing machines
	CO5	Derive whether a problem is decidable or not.
CS8592 Object Oriented Analysis and Design	CO1	Express software design with UML diagrams
	CO2	Design software applications using OO concepts.
	CO3	Identify various scenarios based on software requirements
	CO4	Transform UML based software design into pattern based design using design patterns
	CO5	Understand the various testing methodologies for OO software
OMD552 Hospital Waste Management	CO1	Upon completion of the course, the students will be able to
	CO2	Explain healthcare hazard control responsibility, management, accident analysis & prevention.
	CO3	Interpret biomedical waste handling & disposal.
	CO4	Summarize hazardous materials & respiratory protection.
	CO5	Summarize facility guidelines & safety maintenance.
	CO6	Outline infection control, prevention and patient safety.
EC8681 Microprocessors and Microcontrollers Laboratory	CO1	Write ALP Programmes for fixed and Floating Point and Arithmetic operatio
	CO2	Interface different I/Os with processor
	CO3	Generate waveforms using Microprocessors
	CO4	Execute Programs in 8051
	CO5	Explain the difference between simulator and Emulator
CS8582 Object Oriented	CO1	Perform OO analysis and design for a given problem specification
	CO2	Identify and map basic software requirements in UML mapping

Analysis and Design Laboratory	CO3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns
	CO4	Test the compliance of the software with the SRS
CS8581 Networks Laboratory	CO1	Implement various protocols using TCP and UDP.
	CO2	Compare the performance of different transport layer protocols.
	CO3	Use simulation tools to analyze the performance of various network protocols.
	CO4	Analyze various routing algorithms
	CO5	Implement error correction codes.

VI Semester		
CS8651 Internet Programming	CO1	Construct a basic website using HTML and Cascading Style Sheets.
	CO2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
	CO3	Develop server side programs using Servlets and JSP.
	CO4	Construct simple web pages in PHP and to represent data in XML format.
	CO5	Use AJAX and web services to develop interactive web applications
CS8691 Artificial Intelligence	CO1	Use appropriate search algorithms for any AI problem
	CO2	Represent a problem using first order and predicate logic
	CO3	Provide the apt agent strategy to solve a given problem
	CO4	Design software agents to solve a problem
	CO5	Design applications for NLP that use Artificial Intelligence.
CS8601 Mobile Computing	CO1	Explain the basics of mobile telecommunication systems
	CO2	Illustrate the generations of telecommunication systems in wireless networks
	CO3	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
	CO4	Explain the functionality of Transport and Application layers

	CO5	Develop a mobile application using android/blackberry/ios/Windows SDK
CS8602 Compiler Design	CO1	Understand the different phases of compiler.
	CO2	Design a lexical analyzer for a sample language.
	CO3	Apply different parsing algorithms to develop the parsers for a given grammar.
	CO4	Understand syntax-directed translation and run-time environment.
	CO5	Learn to implement code optimization techniques and a simple code generator.
	CO6	Design and implement a scanner and a parser using LEX and YACC tools.
IT8076 Software Testing	CO1	Design test cases suitable for a software development for different domains.
	CO2	Identify suitable tests to be carried out.
	CO3	Prepare test planning based on the document.
	CO4	Document test plans and test cases designed.
	CO5	Use automatic testing tools.
	CO6	Develop and validate a test plan.
CS8603 Distributed Systems	CO1	Elucidate the foundations and issues of distributed systems
	CO2	Understand the various synchronization issues and global state for distributed systems.
	CO3	Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems
	CO4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems.
	CO5	Describe the features of peer-to-peer and distributed shared memory systems
CS8661 Internet Programming Laboratory	CO1	Construct Web pages using HTML/XML and style sheets.
	CO2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
	CO3	Develop dynamic web pages using server side scripting.
	CO4	Use PHP programming to develop web applications
	CO5	Construct web applications using AJAX and web services.

CS8662 Mobile Application Development Laboratory	CO1	Develop mobile applications using GUI and Layouts.
	CO2	Develop mobile applications using Event Listener.
	CO3	Develop mobile applications using Databases.
	CO4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multi- threading and GPS.
	CO5	Analyze and discover own mobile app for simple needs.
CS8611 Mini Project	CO1	On completion of the project work students will be in a position to take up any challenging practical problems and find solution by formulating proper methodology

VII Semester		
MG8591 Principles of Management	CO1	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
CS8792 Cryptography and Network Security	CO1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
	CO2	Apply the different cryptographic operations of symmetric cryptographic algorithms
	CO3	Apply the different cryptographic operations of public key cryptography
	CO4	Apply the various Authentication schemes to simulate different applications.
	CO5	Understand various Security practices and System security standards
CS8791 Cloud Computing	CO1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing.
	CO2	Learn the key and enabling technologies that help in the development of cloud.
	CO3	Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models.
	CO4	Explain the core issues of cloud computing such as resource management and security.

	CO5	Be able to install and use current cloud technologies.
	CO6	Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.
GE8074 Human Rights	CO1	Engineering students will acquire the basic knowledge of human rights.
OBM752 Hospital Management	CO1	Explain the principles of Hospital administration.
	CO2	Identify the importance of Human resource management.
	CO3	List various marketing research techniques
	CO4	Identify Information management systems and its uses.
	CO5	Understand safety procedures followed in hospitals
CS8711 Cloud Computing Laboratory	CO1	Configure various virtualization tools such as Virtual Box, VMware workstation.
	CO2	Design and deploy a web application in a PaaS environment.
	CO3	Learn how to simulate a cloud environment to implement new schedulers.
	CO4	Install and use a generic cloud environment that can be used as a private cloud.
	CO5	Manipulate large data sets in a parallel environment
IT8761 Security Laboratory	CO1	Develop code for classical Encryption Techniques to solve the problems.
	CO2	Build cryptosystems by applying symmetric and public key encryption algorithms.
	CO3	Construct code for authentication algorithms.
	CO4	Develop a signature scheme using Digital signature standard.
	CO5	Demonstrate the network security system using open source tools

VIII Semester		
CS8078 Green Computing	CO1	Acquire knowledge to adopt green computing practices to minimize negative impacts on the environment.
	CO2	Enhance the skill in energy saving practices in their use of hardware.
	CO3	Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
	CO4	Understand the ways to minimize equipment disposal

		requirements .
GE8076 Professional ethics in Engineering	CO1	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.
CS8811 Project Work	CO1	Identify the problem by applying acquired knowledge and categorize executable project modules after considering risks Analyzing
	CO2	Choose efficient tools for designing project module and Combine all the modules through effective team work after efficient testing