

SSM INSTITUTE OF ENGINEERING ANTECHNOLOGY



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Dindigul – Palani Highway, Dindigul 624 002

Department of Computer Science and Engineering

Anna University Regulations 2017

First Year Courses (I & II Semester)

Course Outcomes (COs)

C101	HS8151	Communicative English
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Course Outcomes (Cos)

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.

C102	MA8151	Engineering Mathematics – I
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Course Outcomes (Cos)

C102.1	Use both the limit definition and rules of differentiation to differentiate functions and Apply differentiation to solve maxima and minima problems.
C102.2	Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus
C102.3	Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts and Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.
C102.4	Determine convergence/divergence of improper integrals and evaluate convergent improper integrals
C102.5	Apply various techniques in solving differential equations parts.

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C103	PH8151	Engineering Physics
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Course Outcomes (Cos)

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 fiber 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 tunneling microscopes,
C103.5	The students will understand the basics of crystals, their structures and different crystal growth techniques.

C104	CY8151	Engineering Chemistry
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Course Outcomes (Cos)

C104.1	The knowledge gained on engineering materials, fuels, energy sources and water treatment techniques will facilitate better understanding of engineering processes and applications for further learning.
C104.2	To develop an understanding of the basic concepts of phase rule and its applications to single and two component systems and appreciate the purpose and significance of alloys.
C104.3	To know the Preparation, properties and applications of engineering materials.
C104.4	To know the types of fuels, calorific value calculations, manufacture of solid, liquid and gaseous fuels.
C104.5	To apply the Principles and generation of energy in batteries, nuclear reactors, solar cells, windmills and fuel cells.

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C105	GE8151	Problem Solving and Python Programming
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Course Outcomes (Cos)

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.

C106	GE8152	Engineering Graphics
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Course Outcomes (Cos)

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.

C107	GE8161	Problem Solving and Python Programming Laboratory
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Course Outcomes (Cos)

C107.1	Write, test, and debug simple Python programs.
C107.2	Implement Python programs with conditionals and loops.
C107.3	Develop Python programs stepwise by defining functions and calling them.
C107.4	Use Python lists, tuples, dictionaries for representing compound data.
C107.5	Read and write data from/to files in Python.

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C108	BS8161	Physics and Chemistry Laboratory
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Course Outcomes (Cos)

C108.1	Apply principles of elasticity, optics and thermal properties for engineering applications.
C108.2	The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

C109	HS8251	Technical English
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Course Outcomes (Cos)

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

C110	MA8251	Engineering Mathematics – II
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Course Outcomes (Cos)

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.

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C111	PH8252	Physics for Information Science
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Course Outcomes (Cos)

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.

C112	BE8253	Basic Electrical, Electronics and Instrumentation Engineering
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Course Outcomes (Cos)

C112.1	Students will be able to understand electric circuits.
C112.2	Students will be able to determine the regulation and efficiency of transformer
C112.3	Students will be able to describe the construction and working principle of electrical machines.
C112.4	Students will be able to understand the concepts of various electronic device
C112.5	Students will be able to choose appropriate instruments for electrical measurement for a specific application

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C113	GE8291	Environmental Science and Engineering
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Course Outcomes (Cos)

C113.1	Define Environment, ecosystem and biodiversity, classify types of ecosystems and outline the impacts to biodiversity.
C113.2	Define pollution, classify its types, analyze the causes and suggest control measures for Pollution.
C113.3	Outline various natural resources; explain causes and impacts of destruction of resources.
C113.4	List various social issues related to land, water and energy; summarize the concerning government acts and rules to overcome these problems.
C113.5	Interpret population explosion and variation among nations, show the impacts of over population and illustrate the methods to mitigate the same.

C114	CS8251	Programming in C
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Course Outcomes (Cos)

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.

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C115	GE8261	Engineering Practices Laboratory
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Course Outcomes (Cos)

C115.1	Students will be able to fabricate welding equipment's to join the structures and also carpentry components and pipe connections including plumbing works.
C115.2	Students will be able to carry out the basic machining operations and able to make the models using sheet metal works.
C115.3	Students will be able to illustrate centrifugal pump, air conditioner, operations of smithy, foundry and fittings.
C115.4	Students will be able to carry out basic home electrical works and appliances and able to measure the electrical quantities.
C115.5	Students will be able to elaborate on the components, gates, soldering practices.
C115.6	Students will be able to fabricate welding equipment's to join the structures and also carpentry components and pipe connections including plumbing works.

C116	CS8261	C Programming Laboratory
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Course Outcomes (Cos)

C116.1	Develop C programs for simple applications making use of basic constructs, arrays and strings.
C116.2	Develop C programs involving functions, recursion, pointers, and structures
C116.3	Design applications using sequential and random access file processing

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Second Year Courses (III & IV Semester)

Course Outcomes (COs)

C201	MA8351	Discrete Mathematics
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Course Outcomes (Cos)

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.

C202	CS8351	Digital Principles and System Design
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Course Outcomes (Cos)

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

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C203	CS8391	Data Structures
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Course Outcomes (Cos)

C203.1	Implement abstract data types for linear data structures.
C203.2	Apply the different linear and non-linear data structures to problem solutions
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 analyse the various sorting algorithms.

C204	CS8392	Object Oriented Programming
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Course Outcomes (Cos)

C204.1	Develop Java programs using OOP principles
C204.2	Develop Java programs with the concepts inheritance and interfaces
C204.3	Build Java applications using exceptions and I/O streams
C204.4	Develop Java applications with threads and generics classes
C204.5	Develop interactive Java programs using swings

C205	EC8395	Communication Engineering
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Course Outcomes (Cos)

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.

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C206	CS8381	Data Structures Laboratory
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Course Outcomes (Cos)

C206.1	Write functions to implement linear and non-linear data structure operations
C206.2	Suggest appropriate linear / non-linear data structure operations for solving a given problem
C206.3	Appropriately use the linear / non-linear data structure operations for a given problem
C206.4	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval

C207	CS8383	Object Oriented Programming Laboratory
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Course Outcomes (Cos)

C207.1	Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.
C207.2	Develop and implement Java programs with arraylist, exception handling and multithreading
C207.3	Design applications using file processing, generic programming and event handling.

C208	CS8382	Digital Systems Laboratory
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Course Outcomes (Cos)

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

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C209	HS8381	Interpersonal Skills / Listening & Speaking
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Course Outcomes (Cos)

C209.1	Listen and respond appropriately.
C209.2	Participate in group discussions
C209.3	Make effective presentations
C209.4	Participate confidently and appropriately in conversations both formal and informal

C210	MA8402	Probability and Queueing Theory
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Course Outcomes (Cos)

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 queueing models.
C210.5	Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner

C211	CS8491	Computer Architecture
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Course Outcomes (Cos)

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.

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C212	CS8492	Database Management Systems
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Course Outcomes (Cos)

C212.1	Classify the modern and futuristic database applications based on size and complexity
C212.2	Map ER model to Relational model to perform database design effectively
C212.3	Write queries using normalization criteria and optimize queries
C212.4	Compare and contrast various indexing strategies in different database systems
C212.5	Appraise how advanced databases differ from traditional databases.

C213	CS8451	Design and Analysis of Algorithms
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Course Outcomes (Cos)

C213.1	Design algorithms for various computing problems.
C213.2	Analyze the time and space complexity of algorithms.
C213.3	Critically analyze the different algorithm design techniques for a given problem.
C213.4	Modify existing algorithms to improve efficiency.
C214.5	Classify computational problems into P, NP, NP-Hard and NP and design efficient algorithms using Backtracking and Branch Bound Techniques for solving problems.

C214	CS8493	Operating Systems
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Course Outcomes (Cos)

C214.1	Analyze various scheduling algorithms.
C214.2	Understand deadlock, prevention and avoidance algorithms.
C214.3	Compare and contrast various memory management schemes.
C214.4	Understand the functionality of file systems.
C214.5	Perform administrative tasks on Linux Servers and Compare iOS and Android Operating Systems.

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C215	CS8494	Software Engineering
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Course Outcomes (Cos)

C215.1	Identify the key activities in managing a software project and different process models.
C215.2	Concepts of requirements engineering and Analysis Modelling.
C215.3	Apply systematic procedure for software design and deployment.
C215.4	Compare and contrast the various testing and maintenance.
C215.5	Manage project schedule, estimate project cost and effort required.

C216	CS8481	Database Management Systems Laboratory
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Course Outcomes (Cos)

C216.1	Use typical data definitions and manipulation commands.
C216.2	Design applications to test Nested and Join Queries
C216.3	Implement simple applications that use Views
C216.4	Implement applications that require a Front-end Tool
C216.5	Critically analyze the use of Tables, Views, Functions and Procedures

C217	CS8461	Operating Systems Laboratory
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Course Outcomes (Cos)

C217.1	Compare the performance of various CPU Scheduling Algorithms
C217.2	Implement Deadlock avoidance and Detection Algorithms
C217.3	Implement Semaphores
C217.4	Create processes and implement IPC
C217.5	Analyze the performance of the various Page Replacement Algorithms
C217.6	Implement File Organization and File Allocation Strategies

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C218	HS8461	Advanced Reading and Writing
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Course Outcomes (Cos)

C218.1	Write different types of essays.
C218.2	Write winning job applications.
C218.3	Read and evaluate texts critically.
C218.4	Display critical thinking in various professional contexts.

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Department of Computer Science and Engineering

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Third Year Courses (V & VI Semester)

Course Outcomes (COs)

C301	MA8551	Algebra and Number Theory
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Course Outcomes (Cos)

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.

C302	CS8591	Computer Networks
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Course Outcomes (Cos)

C302.1	Understand the basic layers and its functions in computer networks. Evaluate the performance of a network.
C302.2	Understand the basics of how data flows from one node to another.
C302.3	Analyze and design routing algorithms.
C302.4	Design protocols for various functions in the network.
C302.5	Understand the working of various application layer protocols.

C303	EC8691	Microprocessors and Microcontrollers
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Course Outcomes (Cos)

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

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C304	CS8501	Theory of Computation
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Course Outcomes (Cos)

C304.1	Construct automata, regular expression for any pattern.
C304.2	Write Context free grammar for any construct.
C304.3	Design Turing machines for any language.
C304.4	Propose computation solutions using Turing machines.
C304.5	Derive whether a problem is decidable or not.

C305	CS8592	Object Oriented Analysis and Design
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Course Outcomes (Cos)

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

C322	OMF551	Product Design and Development
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Course Outcomes (Cos)

C322.1	Design some products for the given set of applications\
C322.2	Generate Ideas and approaches to solve a problem
C322.3	Identify various design issues and develop an architecture for the product
C322.4	Understand a product design and development of product strategy can be achieved
C322.5	The students will be able to gain a knowledge through prototyping technology will help the students to make a prototype of a problem

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C330	EC8681	Microprocessors and Microcontrollers Laboratory
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Course Outcomes (Cos)

C330.1	Write ALP Programmes for fixed and Floating Point and Arithmetic operations
C330.2	Interface different I/Os with processor
C330.3	Generate waveforms using Microprocessors
C330.4	Execute Programs in 8051
C330.5	Explain the difference between simulator and Emulator

C331	CS8582	Object Oriented Analysis and Design Laboratory
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Course Outcomes (Cos)

C331.1	Perform OO analysis and design for a given problem specification.
C331.2	Identify and map basic software requirements in UML mapping.
C331.3	Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns
C331.4	Test the compliance of the software with the SRS.

C332	CS8581	Networks Laboratory
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Course Outcomes (Cos)

C332.1	Implement various protocols using TCP and UDP.
C332.2	Compare the performance of different transport layer protocols.
C332.3	Use simulation tools to analyse the performance of various network protocols.
C332.4	Analyse various routing algorithms.
C332.5	Implement error correction codes.

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C333	CS8651	Internet Programming
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Course Outcomes (Cos)

C333.1	Construct a basic website using HTML and Cascading Style Sheets.
C333.2	Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.
C333.3	Develop server side programs using Servlets and JSP.
C333.4	Construct simple web pages in PHP and to represent data in XML format.
C333.5	Use AJAX and web services to develop interactive web applications

C334	CS8691	Artificial Intelligence
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Course Outcomes (Cos)

C334.1	Use appropriate search algorithms for any AI problem
C334.2	Represent a problem using first order and predicate logic
C334.3	Provide the apt agent strategy to solve a given problem
C334.4	Design software agents to solve a problem
C334.5	Design applications for NLP that use Artificial Intelligence

C335	CS8601	Mobile Computing
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Course Outcomes (Cos)

C335.1	Explain the basics of mobile telecommunication systems
C335.2	Illustrate the generations of telecommunication systems in wireless networks
C335.3	Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network
C335.4	Explain the functionality of Transport and Application layers
C335.5	Develop a mobile application using android/blackberry/ios/Windows SDK

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C336	CS8602	Compiler Design
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Course Outcomes (Cos)

C336.1	Understand the different phases of the compiler and Design a lexical analyser for a sample language.
C336.2	Apply different parsing algorithms to develop the parsers for a given grammar.
C336.3	Understand syntax-directed translation and run-time environment
C336.4	Learn to implement code optimization techniques and a simple code generator.
C336.5	Design and implement a scanner and a parser using LEX and YACC tools.

C337	CS8603	Distributed Systems
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Course Outcomes (Cos)

C337.1	Elucidate the foundations and issues of distributed systems
C337.2	Understand the various synchronization issues and global state for distributed systems.
C337.3	Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems
C337.4	Describe the agreement protocols and fault tolerance mechanisms in distributed systems.
C337.5	Describe the features of peer-to-peer and distributed shared memory systems

C338	CS8075	Data Warehousing and Data Mining
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Course Outcomes (Cos)

C338.1	Design a Data warehouse system and perform business analysis with OLAP tools.
C338.2	Apply suitable pre-processing and visualization techniques for data analysis
C338.3	Apply frequent pattern and association rule mining techniques for data analysis
C338.4	Apply appropriate classification and clustering techniques for data analysis
C315.5	Understand the concepts of WEKA Tool

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C339	IT8076	Software Testing
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Course Outcomes (Cos)

C339.1	Design test cases suitable for a software development for different domains.
C339.2	Identify suitable tests to be carried out.
C339.3	Prepare test planning based on the document.
C339.4	Document test plans and test cases designed.
C339.5	Use automatic testing tools to develop and validate a test plan

C345	CS8661	Internet Programming Laboratory
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Course Outcomes (Cos)

C345.1	Construct Web pages using HTML/XML and style sheets.
C345.2	Build dynamic web pages with validation using Java Script objects and by applying different event handling mechanisms.
C345.3	Develop dynamic web pages using server side scripting.
C345.4	Use PHP programming to develop web applications.
C345.5	Construct web applications using AJAX and web services.

C346	CS8662	Mobile Application Development Laboratory
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Course Outcomes (Cos)

C346.1	Develop mobile applications using GUI and Layouts.
C346.2	Develop mobile applications using Event Listener.
C346.3	Develop mobile applications using Databases.
C346.4	Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading and GPS.
C346.5	Analyze and discover own mobile app for simple needs.

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C347	CS8611	Mini Project
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Course Outcomes (Cos)

C347.1	On Completion of the mini project work students will be in a position to take up their final year project work and find solution by formulating proper methodology.
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Dindigul – Palani Highway, Dindigul 624 002

Department of Computer Science and Engineering

Anna University Regulations 2017

Final Year Courses (VII & VIII Semester)

Course Outcomes (COs)

C401	MG8591	Principles of Management
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Course Outcomes (Cos)

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.

C402	CS8792	Cryptography and Network Security
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Course Outcomes (Cos)

C402.1	Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
C402.2	Apply the different cryptographic operations of symmetric cryptographic algorithms
C403.3	Apply the different cryptographic operations of public key cryptography
C404.4	Apply the various Authentication schemes to simulate different applications.
C404.5	Understand various Security practices and System security standards

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C403	CS8791	Cloud Computing
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Course Outcomes (Cos)

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	Be able to install and use current cloud technologies. Evaluate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.

C426	OME752	Supply Chain Management
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Course Outcomes (Cos)

C426.1	The student would understand the framework and scope of supply chain networks and functions.
C426.2	Analyze the design options for distribution in supply chain management
C426.3	Identify the factors affecting transportation decisions
C426.4	Analyze the supplier selection and supplier coordination methods
C426.5	Appraise the role of IT in supply chain management

C433	IT8075	Software Project Management
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Course Outcomes (Cos)

C433.1	Understand Project Management principles while developing software
C433.2	Gain extensive knowledge about the basic project management concepts, framework and the process models.
C433.3	Obtain adequate knowledge about software process models and software effort estimation techniques. Estimate the risks involved in various project activities
C433.4	Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principle.
C433.5	Learn staff selection process and the issues related to people management

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C436	GE8077	Total Quality Management
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Course Outcomes (Cos)

C436.1	The student would be able to apply the tools and techniques of quality management to manufacturing and services processes
C436.2	Develop in-depth knowledge on various tools and techniques of quality management.
C436.3	Learn the applications of quality tools and techniques in both manufacturing and service industry.
C436.4	Develop analytical skills for investigating and analyzing quality management issues in the industry and suggest implementable solutions to those.
C436.5	Adapt he/she can able to map the Quality designs to implementation

C438	CS8079	Human Computer Interaction
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Course Outcomes (Cos)

C438.1	Design effective dialog for HCI
C438.2	Design effective HCI for individuals and persons with disabilities
C438.3	Assess the importance of user feedback
C438.4	Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Websites.
C438.5	Develop a meaningful user interface.

C445	CS8711	Cloud Computing Laboratory
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Course Outcomes (Cos)

C445.1	Configure various virtualization tools such as Virtual Box, VMware workstation.
C445.2	Design and deploy a web application in a PaaS environment.
C445.3	Learn how to simulate a cloud environment to implement new schedulers
C445.4	Install and use a generic cloud environment that can be used as a private cloud.
C445.5	Manipulate large data sets in a parallel environment.

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C446	IT8761	Security Laboratory
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Course Outcomes (Cos)

C446.1	Develop code for classical Encryption Techniques to solve the problems.
C446.2	Build cryptosystems by applying symmetric and public key encryption algorithms.
C446.3	Construct code for authentication algorithms.
C446.4	Develop a signature scheme using Digital signature standard.
C446.5	Demonstrate the network security system using open source tools

C453	GE8076	Professional Ethics in Engineering
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Course Outcomes (Cos)

C453.1	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.
C453.2	Identify the multiple ethical interests at stake in a real-world situation or practice
C453.3	Assess their own ethical values and the social context of problems
C453.4	Articulate what makes a particular course of action ethically defensible
C453.5	Identify ethical concerns in research and intellectual contexts, including academic integrity, use and citation of sources

C454	CS8080	Information Retrieval Techniques
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Course Outcomes (Cos)

C454.1	Use an open source search engine framework and explore its capabilities
C454.2	Apply appropriate methods of classification or clustering.
C454.3	Design and implement innovative features in a search engine.
C454.4	Design and implement a recommender system.
C455.5	Evaluate the map reduce functions

C461	CS8811	Project Work
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Course Outcomes (Cos)

C461.1	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.
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