

RAMCO INSTITUTE OF TECHNOLOGY
(Approved by AICTE, Affiliated by Anna University Chennai)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

REGULATION-2017

Course Outcomes

Semester - I	
Course code and Name	Course Outcomes(CO) After completion of the course, the students will be able to
HS8151 Communicative English	<p>CO1: Communicate clearly both in the written form and orally using appropriate vocabulary and comprehend written texts to make inferences.</p> <p>CO2: Speak persuasively in different social contexts and write biographical details and technical documents cohesively, coherently and flawlessly using appropriate words.</p> <p>CO3: Speak, read and write effectively for a variety of professional and social settings.</p> <p>CO4: Read descriptive, narrative, expository and interpretive texts and write using creative, critical, analytical and evaluative methods.</p> <p>CO5: Listen, comprehend and respond to different spoken and written discourses/excerpts in different accents and write different genres of texts adopting various writing strategies.</p>
MA8151 Engineering Mathematics - I	<p>CO1: Use both the limit definition and rules of differentiation to differentiate functions.</p> <p>CO2: Apply differentiation to solve maxima and minima problems.</p> <p>CO3: Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus, also evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts, in addition to determine convergence/divergence of improper integrals and evaluate convergent improper integrals.</p> <p>CO4: Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables.</p> <p>CO5: Apply various techniques in solving differential equations.</p>

<p>PH8151 Engineering Physics</p>	<p>CO1: Students interpret the fundamental knowledge about the elastic nature of materials and be able to choose the materials depending upon the modulus of elasticity for different applications.</p> <p>CO2: Identify and appreciate the advantages of optical communication using LASER</p> <p>CO3: Students understand thermal conducting properties of solids and liquids and differentiate a good thermal conductor from the bad thermal conductor.</p> <p>CO4: Apply the knowledge of quantum mechanics and classical mechanics in addressing the problems related to science and technology.</p> <p>CO5: Students extend the knowledge about the crystal structures, crystal defects and crystal growth.</p>
<p>CY8151 Engineering Chemistry</p>	<p>CO1: Comprehend the importance of water technology in the purification of water and its domestic and industrial applications.</p> <p>CO2: Understand the concept of absorption in surface chemistry and catalysis and its applications.</p> <p>CO3: Make use of the phase rule in identifying its application in metallurgy and manufacture of alloys.</p> <p>CO4: Learn the different types of industrial techniques of petroleum processing and the determination of caloric values and combustion parameters.</p> <p>CO5: Empathize the fundamentals of different alternative source of energy, the generation process and batteries.</p>
<p>GE8151 Problem Solving and Python Programming</p>	<p>CO1: Develop algorithmic solutions to simple computational problems.</p> <p>CO2: Read, write and execute simple python programs.</p> <p>CO3: Apply control, looping structures and functions to solve problems.</p> <p>CO4: Represent compound data using python lists, tuples, and dictionaries.</p> <p>CO5: Read and Write data from/to files in python programs.</p>
<p>GE8152 Engineering Graphics</p>	<p>CO1: Familiarize with the fundamentals and standards of Engineering graphics</p> <p>CO2: Perform freehand sketching of basic geometrical constructions and multiple views of objects.</p> <p>CO3: Project orthographic projections of lines and plane surfaces.</p> <p>CO4: Draw projections and section of solids and development of</p>

	<p>surfaces.</p> <p>CO5: Visualize and to project isometric and perspective sections of simple solids.</p>
<p>GE8161 Problem Solving and Python Programming Laboratory</p>	<p>CO1: Write, test, and debug simple Python programs.</p> <p>CO2: Implement Python programs with conditionals and loops.</p> <p>CO3: Develop Python programs step-wise by defining functions and calling them.</p> <p>CO4: Demonstrate the use Python lists, tuples, and dictionaries for representing compound data.</p> <p>CO5: Illustrate the concepts of read and write data from/to files in Python.</p>
<p>BS8161 Physics and Chemistry Laboratory</p>	<p>CO1: The students will have the ability to test materials by using their knowledge of applied physics principles in optics and properties of matter.</p> <p>CO2: Gain hands-on knowledge in the quantitative chemical analysis of chloride, dissolved oxygen, hardness, and alkalinity and copper ions by titration methods.</p> <p>CO3: Understand basic concept in the determination of acids, sodium, potassium and iron by the instrumental methods of analysis.</p>
<p>Semester – II</p>	
<p>HS8251 Technical English</p>	<p>CO1: Read technical texts and write area specific texts effortlessly.</p> <p>CO2: Listen and comprehend lectures and talks in their areas of specialization and write effectively for a variety of professional and social settings.</p> <p>CO3: Speak and write appropriately and effectively in varied formal and informal contexts.</p> <p>CO4: Write effectively and persuasively and produce different types of writing such as letters, minutes, reports and winning job applications.</p> <p>CO5: Communicate clearly using technical vocabulary in their professional correspondences.</p>
<p>MA8251 Engineering Mathematics - II</p>	<p>CO1: Eigenvalues and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices.</p> <p>CO2: Gradient, divergence and curl of a vector point function and related identities, Evaluation of line, surface and volume integrals using Gauss, Stokes and Green's theorems and their verification.</p> <p>CO3: Analytic functions and conformal mapping Complex</p>

	<p>integration.</p> <p>CO4: Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients</p>
PH8252 Physics for Information Science	<p>CO1: Extend the knowledge about the conducting materials and their properties.</p> <p>CO2: Interpret the fundamental knowledge about the semiconductors and able to differentiate various types of semiconductors.</p> <p>CO3: Apply the knowledge of magnetic materials and principles in data storage.</p> <p>CO4: Identify and appreciate the functioning and applications of optical materials.</p> <p>CO5: Utilize the knowledge about the quantum structures and nano materials in various applications.</p>
BE8255 Basic Electrical and Electronics and Measurement Engineering	<p>CO1: Apply the concept of electric circuit laws, network reduction theorems.</p> <p>CO2: Explain the basic operation of electrical machines and transformers.</p> <p>CO3: Illustrate the operation of renewable energy sources, lamps, batteries and protective devices.</p> <p>CO4: Explain the operations and characteristics of various electronic devices.</p> <p>CO5: Determine various types of errors present in measurements and explain the operating principles of different meters, transducers.</p>
GE8291 Environmental Science and Engineering	<p>CO1: Understand the importance of Environment, biodiversity, ecosystem and how to solve environmental related problems.</p> <p>CO2: Identify and explain about the causes, effect and control measures of air pollution, water pollution, soil pollution, noise pollution, radioactive pollution and thermal pollution with its relevant case studies.</p> <p>CO3: Discuss the various renewable and non-renewable resources and energy conservation processes.</p> <p>CO4: Explain the social issues and solutions for sustainable environment with relevant Act and case studies.</p> <p>CO5: Summarize the impact of human population in the environment and its remedial measures.</p>
CS8251 Programming in C	<p>CO1: Develop simple applications in C using basic constructs.</p> <p>CO2: Design and implement applications in C using arrays and strings.</p> <p>CO3: Develop and implement applications in C using functions and</p>

	<p>pointers.</p> <p>CO4: Apply the concepts of structure and develop applications in C using structures.</p> <p>CO5: Design applications using sequential and random access file processing</p>
GE8261 Engineering Practices Laboratory	<p>CO1: Construct Electrical and Electronic circuit.</p> <p>CO2: Examine different types of electronic circuits and components.</p> <p>CO3: Recognize electrical safety rules, grounding, general housing wiring.</p> <p>CO4: Explore soldering practice.</p>
CS8261 C Programming Laboratory	<p>CO1: Develop C programs for simple applications making use of basic constructs.</p> <p>CO2: Implement C programs for simple applications using arrays and strings.</p> <p>CO3: Develop C programs involving functions, recursion and pointers.</p> <p>CO4: Design and implement application in C using structures.</p> <p>CO5: Design applications using sequential and random access file processing.</p>
Semester – III	
MA8351 Discrete Mathematics	<p>CO1: Have knowledge of the concepts needed to test the logic of a program.</p> <p>CO2: Have an understanding in identifying structures on many levels.</p> <p>CO3: 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.</p> <p>CO4: Be aware of the counting principles.</p> <p>CO5: Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.</p>
CS8351 Digital Principles and System Design	<p>CO1: Analyze different methods used for simplification of Boolean expressions</p> <p>CO2: Design and implement Combinational logic circuits and write simple HDL codes for combinational circuits</p> <p>CO3: Design and implement the synchronous sequential logic circuits and write simple HDL codes for sequential circuits</p> <p>CO4: Implement asynchronous sequential logic circuits</p> <p>CO5: Apply the concepts of memory devices and programmable logic devices in Integrated Circuits.</p>
	<p>CO1: Implement the operations of list ADT with examples.</p>

CS8391 Data Structures	<p>CO2: Apply the stack and queue ADTs to problem solutions.</p> <p>CO3: Design non-linear data structure like tree for various applications.</p> <p>CO4: Apply non-linear data structure – graph and its operation for solving various problems.</p> <p>CO5: Analyze the different sorting, searching algorithms and hashing techniques.</p>
CS8392 Object Oriented Programming	<p>CO1: Develop Java programs using OOP principles.</p> <p>CO2: Develop Java programs with the concepts inheritance and interfaces.</p> <p>CO3: Build Java applications using exceptions and I/O streams</p> <p>CO4: Develop Java applications with threads and generics classes</p> <p>CO5: Develop interactive Java programs using swings.</p>
EC8395 Communication Engineering	<p>CO1: Comprehend and appreciate the significance and role of this course in the present contemporary world</p> <p>CO2: Apply analog and digital communication techniques.</p> <p>CO3: Use data and pulse communication techniques for various applications.</p> <p>CO4: Analyze Source and Error control coding</p> <p>CO5: Describe about various techniques in Multiple access schemes.</p>
CS8381 Data Structures Laboratory	<p>CO1: Write functions to implement linear data structure operations.</p> <p>CO2: Suggest appropriate linear / non-linear data structure operations for solving a given problem.</p> <p>CO3: Appropriately use the linear / non-linear data structure operations for a given problem.</p> <p>CO4: Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.</p> <p>CO5: Choose appropriate searching and sorting algorithm for an application and implement it in a modularized way.</p>
CS8383 Object Oriented Programming Laboratory	<p>CO1: Develop and implement Java programs for simple applications that make use of classes, packages and interfaces.</p> <p>CO2: Develop and implement Java programs with exception handling and multithreading.</p> <p>CO3: Develop and implement Java programs using Stack ADT and Array List using Interfaces</p> <p>CO4: Design applications using file processing, generic programming and event handling.</p> <p>CO5: Develop and deploy mini-projects using Java concepts.</p>
	<p>CO1: Implement simplified combinational circuits using basic logic</p>

CS8382 Digital Systems Laboratory	gates CO2: Implement combinational circuits using MSI devices CO3: Implement sequential circuits like registers and counters CO4: Simulate combinational and sequential circuits using HDL
HS8381 Interpersonal Skills/Listening &Speaking	CO1: Listen and respond appropriately. CO2: Participate in group discussions CO3: Make effective presentations CO4: Participate confidently and appropriately in conversations both formal and informal.
Semester IV	
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: Analyze the performance of the computer operations and understand the instructions in MIPS architecture. CO2: Design arithmetic and logic unit for fixed-point and floating-point operation. CO3: Design and describe the function of control unit, pipeline for execution of instructions and types of hazards. CO4: Classify and explain the different parallel processing techniques and parallel processor. CO5: Explain the memory hierarchy, input/output mechanism and evaluate the performance of the memory system.
CS8492 Database Management Systems	CO1: Design relational databases for applications. CO2: Map ER model to Relational model to perform database design effectively and write queries using normalization criteria. CO3: Apply concurrency control and recovery mechanisms for practical problems. CO4: Compare and contrast various indexing strategies in different database systems. CO5: Appraise how advanced databases differ from traditional databases.

<p>CS8451 Design and Analysis of Algorithms</p>	<p>CO1: Analyze the time and space complexity of algorithms. CO2: Design algorithms for various computing problems using brute force and divide-and conquer technique. CO3: Design various computing problems and algorithms using dynamic programming and greedy technique. CO4: Apply the iterative improvement techniques for solving problems. CO5: Critically analyze the different algorithm design techniques for a given problem and modify existing algorithms to improve efficiency.</p>
<p>CS8493 Operating Systems</p>	<p>CO1: Summarize the basic concepts System call, structure and functions of Operating Systems. CO2: Explain the various scheduling algorithms, deadlock prevention, deadlock avoidance algorithms and principles of concurrency. CO3: Compare and contrast the various memory management schemes. CO4: Summarize the functionalities of File Systems and I/O Systems. CO5: Perform administrative tasks on Linux servers and summarize the concepts of Mobile OS.</p>
<p>CS8494 Software Engineering</p>	<p>CO1: Describe the purpose and facts of different software development process models with an insight into generic process framework. CO2: Identify the functional and non-functional requirements for software development by preparing IEEE Software Requirements Document. CO3: Explain software design activities using data flow diagrams and architectural diagrams. CO4: Develop a testing framework by understanding the purposes and stages of software testing and test-driven development. CO5: Explain the project management activities involved in developing a framework including planning, scheduling, risk assessment/management.</p>
<p>CS8481 Database Management Systems Laboratory</p>	<p>CO1: Use typical data definitions and manipulation commands. CO2: Design applications to test Nested and Join Queries. CO3: Critically analyze the use of Tables, Views, Functions and Procedures. CO4: Implement applications that require a Front-end Tool.</p>
<p>CS8461 Operating Systems Laboratory</p>	<p>CO1: Compare the performance of various CPU Scheduling Algorithms</p>

	<p>CO2: Implement Deadlock avoidance and Detection Algorithms</p> <p>CO3: Create processes and implement IPC, Semaphores</p> <p>CO4: Analyse the performance of the various Page Replacement Algorithms</p> <p>CO5: Implement File Organization and File Allocation Strategies.</p>
<p>HS8461 Advanced Reading and Writing</p>	<p>CO1: Read and evaluate different types of texts critically and predict content.</p> <p>CO2: Write different types of essays using appropriate discourse markers.</p> <p>CO3: Display critical thinking in various professional contexts.</p> <p>CO4: Write winning job applications.</p> <p>CO5: Prepare technical documents like project proposals and statement of purpose.</p>