DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

COURSE OUTCOME

Regulation 2017

Sem.	Course code	Course Name	Course Outcome
I	HS8151	Communicative English	• Read articles of a general kind in magazines and newspapers. • Participate effectively in informal conversations; introduce themselves and their friends and express opinions in English. • Comprehend conversations and short talks delivered in English • Write short essays of a general kind and personal letters and emails English
I	MA8151 - I	Engineering Mathematics	• Use both the limit definition and rules of differentiation to differentiate functions. • Apply differentiation to solve maxima and minima problems. • Evaluate integrals both by using Riemann sums and by using the Fundamental Theorem of Calculus. • Apply integration to compute multiple integrals, area, volume, integrals in polar coordinates, in addition to change of order and change of variables. • Evaluate integrals using techniques of integration, such as substitution, partial fractions and integration by parts. • Determine convergence/divergence of improper integrals and evaluate convergent improper integrals. • Apply various techniques in solving differential equations
I	PH8151	Engineering Physics	• The students will gain knowledge on the basics of properties of matter and its applications • The students will acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics, • The students will have adequate knowledge on the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers, • The students will get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes, • The students will understand the basics of crystals, their structures and different crystal growth techniques
I	CY8151	Engineering Chemistry	• 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.
I	GE8151	Problem Solving and Python Programming	• Develop algorithmic solutions to simple computational problems • Read, write, execute by hand simple Python programs. • Structure simple Python programs for solving problems. • Decompose a Python program into functions. • Represent compound data using Python lists, tuples, dictionaries. • Read and write data from/to files in Python Programs
I	GE8152	Engineering Graphics	• Familiarize with the fundamentals and standards of Engineering graphics. • Perform freehand sketching of basic geometrical constructions and multiple views of objects.

			• Project orthographic projections of lines and plane surfaces. • Draw projections and solids and development of surfaces. • Visualize and to project isometric and perspective sections of simple solids.
I	GE8161	Problem Solving and Python Programming Laboratory	• Write, test, and debug simple Python programs. • Implement Python programs with conditionals and loops. • Develop Python programs step-wise by defining functions and calling them. • Use Python lists, tuples, dictionaries for representing compound data. • Read and write data from/to files in Python.
I	BS8161	Physics and Chemistry Laboratory	• Apply principles of elasticity, optics and thermal properties for engineering applications. • The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters
I	HS8251	Technical English	• Read technical texts and write area- specific texts effortlessly. • Listen and comprehend lectures and talks in their area of specialisation successfully. • Speak appropriately and effectively in varied formal and informal contexts. • Write reports and winning job applications.
II	MA8251	Engineering Mathematics - II	• Eigen values and eigenvectors, diagonalization of a matrix, Symmetric matrices, Positive definite matrices and similar matrices. • 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. • Analytic functions, conformal mapping and complex integration. • Laplace transform and inverse transform of simple functions, properties, various related theorems and application to differential equations with constant coefficients
II	PH8252	Physics for Information Science	• Gain knowledge on classical and quantum electron theories, and energy band structures, • Acquire knowledge on basics of semiconductor physics and its applications in various devices, • Get knowledge on magnetic properties of materials and their applications in data storage, • Have the necessary understanding on the functioning of optical materials for optoelectronics, • Understand the basics of quantum structures and their applications in carbon electronics..
II	BE8255	Basic Electrical, Electronics and Measurement Engineering	• Discuss the essentials of electric circuits and analysis. • Discuss the basic operation of electric machines and transformers • Introduction of renewable sources and common domestic loads. • Introduction to measurement and metering for electric circuits.
II	GE8291	Environmental Science and Engineering	• Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. Public awareness of environmental is at infant stage. • Ignorance and incomplete knowledge has lead to misconceptions • Development and improvement in std. of living has lead to serious environmental disasters
II	CS8251	Programming in C	• Develop simple applications in C using basic constructs • Design and implement applications using arrays and strings

			• Develop and implement applications in C using functions and pointers. • Develop applications in C using structures. • Design applications using sequential and random access file processing.
II	GE8261	Engineering Practices Laboratory	• Fabricate carpentry components and pipe connections including plumbing works. • Use welding equipments to join the structures. • Carry out the basic machining operations • Make the models using sheet metal works • Illustrate on centrifugal pump, Air conditioner, operations of smithy, foundary and fittings • Carry out basic home electrical works and appliances • Measure the electrical quantities • Elaborate on the components, gates, soldering practices
II	CS8261	C Programming Laboratory	• Develop C programs for simple applications making use of basic constructs, arrays and strings. • Develop C programs involving functions, recursion, pointers, and structures. • Design applications using sequential and random access file processing
II	MA8351	Discrete Mathematics	• Have knowledge of the concepts needed to test the logic of a program. • Have an understanding in identifying structures on many levels. • 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. • Be aware of the counting principles. • Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.
III	CS8351	Digital Principles and System Design	• Simplify Boolean functions using KMap • Design and Analyze Combinational and Sequential Circuits • Implement designs using Programmable Logic Devices • Write HDL code for combinational and Sequential Circuits
III	CS8391	Data Structures	• Implement abstract data types for linear data structures. • Apply the different linear and non-linear data structures to problem solutions. • Critically analyze the various sorting algorithms.
III	CS8392	Object Oriented Programming	• Develop Java programs using OOP principles • Develop Java programs with the concepts inheritance and interfaces • Build Java applications using exceptions and I/O streams • Develop Java applications with threads and generics classes • Develop interactive Java programs using swings
III	EC8395	Communication Engineering	• Ability to comprehend and appreciate the significance and role of this course in the present contemporary world • Apply analog and digital communication techniques. • Use data and pulse communication techniques. • Analyze Source and Error control coding
III	CS8381	Data Structures Laboratory	• Write functions to implement linear and non-linear data structure operations • Suggest appropriate linear / non-linear data structure operations for solving a given problem • Appropriately use the linear / non-linear data structure operations for a given problem

			• Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval
III	CS8383	Object Oriented Programming Laboratory	• Develop and implement Java programs for simple applications that make use of classes,packages and interfaces. • Develop and implement Java programs with arraylist, exception handling and multithreading . • Design applications using file processing, generic programming and event handling.
III	CS8382	Digital Systems Laboratory	• Implement simplified combinational circuits using basic logic gates • Implement combinational circuits using MSI devices • Implement sequential circuits like registers and counters • Simulate combinational and sequential circuits using HDL
III	HS8381	Interpersonal Skills/Listening &Speaking	• Listen and respond appropriately. • Participate in group discussions • Make effective presentations • Participate confidently and appropriately in conversations both formal and informal
IV	MA8402	Probability and Queueing Theory	• Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon. • Understand the basic concepts of one and two dimensional random variables and apply in engineering applications. • Apply the concept of random processes in engineering disciplines. • Acquire skills in analyzing queueing models. • Understand and characterize phenomenon which evolve with respect to time in a probabilistic manner
IV	CS8491	Computer Architecture	• Understand the basics structure of computers, operations and instructions. • Design arithmetic and logic unit. • Understand pipelined execution and design control unit. • Understand parallel processing architectures. • Understand the various memory systems and I/O communication
IV	CS8492	Database Management Systems	• Classify the modern and futuristic database applications based on size and complexity • Map ER model to Relational model to perform database design effectively • Write queries using normalization criteria and optimize queries • Compare and contrast various indexing strategies in different database systems • Appraise how advanced databases differ from traditional databases.
IV	CS8451	Design and Analysis of Algorithms	• Design algorithms for various computing problems. • Analyze the time and space complexity of algorithms. • Critically analyze the different algorithm design techniques for a given problem. • Modify existing algorithms to improve efficiency
IV	CS8493	Operating Systems	• Analyze various scheduling algorithms. • Understand deadlock, prevention and avoidance algorithms. • Compare and contrast various memory management schemes. • Understand the functionality of file systems. • Perform administrative tasks on Linux Servers. • Compare iOS and Android Operating Systems
IV	CS8494	Software Engineering	• Identify the key activities in managing a software project. • Compare different process models.

			• Concepts of requirements engineering and Analysis Modeling. • Apply systematic procedure for software design and deployment. • Compare and contrast the various testing and maintenance. • Manage project schedule, estimate project cost and effort required.
IV	CS8481	Database Management Systems Laboratory	• Use typical data definitions and manipulation commands. • Design applications to test Nested and Join Queries • Implement simple applications that use Views • Implement applications that require a Front-end Tool • Critically analyze the use of Tables, Views, Functions and Procedures
IV	CS8461	Operating Systems Laboratory	• Compare the performance of various CPU Scheduling Algorithms • Implement Deadlock avoidance and Detection Algorithms • Implement Semaphores • Create processes and implement IPC • Analyze the performance of the various Page Replacement Algorithms • Implement File Organization and File Allocation Strategies
IV	HS8461	Advanced Reading and Writing	• Write different types of essays. • Write winning job applications. • Display critical thinking in various professional contexts
V	MA8551	Algebra and Number Theory	• Apply the basic notions of groups, rings, fields which will then be used to solve related problems. • Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts. • Demonstrate accurate and efficient use of advanced algebraic techniques. • Demonstrate their mastery by solving non - trivial problems related to the concepts, and by proving simple theorems about the, statements proven by the text. • Apply integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject
V	CS8591	Computer Networks	• Understand the basic layers and its functions in computer networks. • Evaluate the performance of a network. • Understand the basics of how data flows from one node to another. • Analyze and design routing algorithms. • Design protocols for various functions in the network. • Understand the working of various application layer protocols
V	EC8691	Microprocessors and Microcontrollers	• Understand and execute programs based on 8086 microprocessor. • Design Memory Interfacing circuits. • Design and interface I/O circuits. • Design and implement 8051 microcontroller based systems
V	CS8501	Theory of Computation	• Construct automata, regular expression for any pattern. • Write Context free grammar for any construct. • Design Turing machines for any language. • Propose computation solutions using Turing machines. • Derive whether a problem is decidable or not.
V	CS8592	Object Oriented Analysis and Design	• Express software design with UML diagrams • Design software applications using OO concepts. • Identify various scenarios based on software requirements • Transform UML based software design into pattern based design using design patterns

			• Understand the various testing methodologies for OO software
V	OMD553	Telehealth technology	• Apply multimedia technologies in telemedicine. • Explain Protocols behind encryption techniques for secure transmission of data • Apply telehealth in healthcare
V	EC8681	Microprocessors and Microcontrollers Laboratory	• Write ALP Programmes for fixed and Floating Point and Arithmetic operations • Interface different I/Os with processor • Generate waveforms using Microprocessors • Execute Programs in 8051 • Explain the difference between simulator and Emulator
V	CS8582	Object Oriented Analysis and Design Laboratory	• Perform OO analysis and design for a given problem specification. • Identify and map basic software requirements in UML mapping. • Improve the software quality using design patterns and to explain the rationale behind applying specific design patterns • Test the compliance of the software with the SRS.
V	CS8581	Networks Laboratory	• Implement various protocols using TCP and UDP. • Compare the performance of different transport layer protocols. • Use simulation tools to analyze the performance of various network protocols. • Analyze various routing algorithms. • Implement error correction codes
VI	CS8651	Internet Programming	• Construct a basic website using HTML and Cascading Style Sheets. • Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms. • Develop server side programs using Servlets and JSP. • Construct simple web pages in PHP and to represent data in XML format. • Use AJAX and web services to develop interactive web applications
VI	CS8691	Artificial Intelligence	• Use appropriate search algorithms for any AI problem • Represent a problem using first order and predicate logic • Provide the apt agent strategy to solve a given problem • Design software agents to solve a problem • Design applications for NLP that use Artificial Intelligence
VI	CS8601	Mobile Computing	• Explain the basics of mobile telecommunication systems • Illustrate the generations of telecommunication systems in wireless networks • Determine the functionality of MAC, network layer and Identify a routing protocol for a given Ad hoc network • Explain the functionality of Transport and Application layers • Develop a mobile application using android/blackberry/ios/Windows SDK
VI	CS8602	Compiler Design	• Understand the different phases of compiler. • Design a lexical analyzer for a sample language. • Apply different parsing algorithms to develop the parsers for a given grammar. • Understand syntax-directed translation and run-time environment. • Learn to implement code optimization techniques and a simple code generator. • Design and implement a scanner and a parser using LEX and YACC tools.

VI	CS8603	Distributed Systems	• Elucidate the foundations and issues of distributed systems • Understand the various synchronization issues and global state for distributed systems. • Understand the Mutual Exclusion and Deadlock detection algorithms in distributed systems • Describe the agreement protocols and fault tolerance mechanisms in distributed systems. • Describe the features of peer-to-peer and distributed shared memory systems
VI	IT8076	software testing	• Design test cases suitable for a software development for different domains. • Identify suitable tests to be carried out. • Prepare test planning based on the document. • Document test plans and test cases designed. • Use automatic testing tools
VI	CS8661	Internet Programming Laboratory	• Construct Web pages using HTML/XML and style sheets. • Build dynamic web pages with validation using Java Script objects and by applying • different event handling mechanisms. • Develop dynamic web pages using server side scripting. • Use PHP programming to develop web applications. • Construct web applications using AJAX and web services
VI	CS8662	Mobile Application Development Laboratory	• Develop mobile applications using GUI and Layouts. • Develop mobile applications using Event Listener. • Develop mobile applications using Databases. • Develop mobile applications using RSS Feed, Internal/External Storage, SMS, Multithreading and GPS. • Analyze and discover own mobile app for simple needs
VI	CS8611	Mini Project	• On Completion of the project work students will be in a position to take up any challenging practical problems
VI	HS8581	Professional Communication	• Make effective presentations • Participate confidently in Group Discussions. • Attend job interviews and be successful in them. • Develop adequate Soft Skills required for the workplace
VII	MG8591	Principles of Management	• 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
VII	CS8792	Cryptography and Network Security	• Understand the fundamentals of networks security, security architecture, threats and vulnerabilities • Apply the different cryptographic operations of symmetric cryptographic algorithms • Apply the different cryptographic operations of public key cryptography • Apply the various Authentication schemes to simulate different applications. • Understand various Security practices and System security standards
VII	CS8791	Cloud Computing	• Articulate the main concepts, key technologies, strengths and limitations of cloud computing. • Learn the key and enabling technologies that help in the development of cloud. • Develop the ability to understand and use the architecture of compute and storage cloud, service and delivery models. • Explain the core issues of cloud computing such as resource

			management and security.
			• Be able to install and use current cloud technologies
VII	OBM752	Hospital Management	• Explain the principles of Hospital administration. • Identify the importance of Human resource management. • List various marketing research techniques
VII	IT8075	Software project management	• Understand Project Management principles while developing software. • Gain extensive knowledge about the basic project management concepts, framework and the process models. • Obtain adequate knowledge about software process models and software effort estimation techniques. • Estimate the risks involved in various project activities. • Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles
VII	CS8079	Human computer interaction	• Design effective dialog for HCI • Design effective HCI for individuals and persons with disabilities. • Assess the importance of user feedback. • Explain the HCI implications for designing multimedia/ ecommerce/ e-learning Web sites.
VII	CS8711	Cloud Computing Laboratory	• Configure various virtualization tools such as Virtual Box, VMware workstation. • Design and deploy a web application in a PaaS environment. • Learn how to simulate a cloud environment to implement new schedulers. • Install and use a generic cloud environment that can be used as a private cloud. • Manipulate large data sets in a parallel environment
VII	IT8761	Security Laboratory	• Develop code for classical Encryption Techniques to solve the problems. • Build cryptosystems by applying symmetric and public key encryption algorithms. • Construct code for authentication algorithms. • Develop a signature scheme using Digital signature standard. • Demonstrate the network security system using open source tools
VIII	CS8078	Green computing	• Acquire knowledge to adopt green computing practices to minimize negative • impacts on the environment. • Enhance the skill in energy saving practices in their use of hardware. • Evaluate technology tools that can reduce paper waste and carbon footprint by the stakeholders.
VIII	CS8074	Cyber forensics	• Understand the basics of computer forensics • Apply a number of different computer forensic tools to a given scenario • Analyze and validate forensics data • Identify the vulnerabilities in a given network infrastructure • Implement real-world hacking techniques to test system security
VIII	CS8811	Project work	• 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