Sri Sairam Engineering College
Department of Information Technology
Regulation 2017 – Course Outcomes

Subject Code:	**HS8151**	**Semester**	**1**
Subject Name:	**COMMUNICATIVE ENGLISH**		
Course Code: C101			
Course outcomes			
CO1	Understand the basics of LSRW skills and will be able to participate effectively in conversations, to exchange personal information and to express opinions in English. (K2)		
CO2	Comprehend reading and listening tasks and also to describe a simple process with a right choice of vocabulary. (K2)		
CO3	Articulate ideas coherently and write on general and creative topics using grammatically correct sentences. (K6)		
CO4	Read, comprehend and interpret articles of a general kind in magazines and newspapers and also write informal letters and e-mails in English employing grammatically correct sentences. (K2)		
CO5	Speak clearly, confidently and comprehensively using communicative strategies and write paragraphs and short essays cohesively and coherently. (K6)		

Subject Code:	MA8151	**Semester**	**1**
Subject Name:	**ENGINEERING MATHEMATICS - 1**		
Course Code: C102			
Course outcomes			
CO1	Apply various techniques in solving differential equations with constant and variable coefficients. (K3)		
CO2	Gain knowledge on limits, continuity and rules of differentiation and apply them to find the derivative of various functions. (K2)		
CO3	Understand the concepts of partial differentiation, total derivatives and Jacobian. (K2)		
CO4	Evaluate integrals using both Riemann sums, fundamental theorem of calculus and various integration techniques and determine the convergence and divergence of improper integrals. (K3)		
CO5	Apply various integration techniques to compute multiple integrals and find the area and volume using double and triple integrals respectively (K4)		

Subject Code:	PH8151	Semester	1
Subject Name:	ENGINEERING PHYSICS		
Course Code: C103			
Course outcomes			
CO1	Understand the basics of properties of matter and its applications. (K2)		
CO2	Acquire knowledge on the concepts of waves and optical devices and their applications in fibre optics (K1)		
CO3	Evaluate the concepts of thermal properties of materials and their applications in expansion joints and heat exchangers (K3)		
CO4	Get knowledge on advanced physics concepts of quantum theory and its applications in tunneling microscopes (K1)		
CO5	Understand the basics of crystals, their structures and different crystal growth techniques (K3)		

Subject Code:	CY8151	Semester	1
Subject Name:	ENGINEERING CHEMISTRY		
Course Code: C104			
Course outcomes			
CO1	Identify the origin of water resources and develop innovative methods to produce soft water for industrial use and potable water at cheaper cost. (K2)		
CO2	Explore the fundamental concepts in surface chemistry and their application in the field of catalysis. (K5)		
CO3	Gain knowledge about phase diagrams and their applications of heterogeneous equilibrium. Emphasis on heat treatment of alloys and applications. (K4)		
CO4	Understand the chemistry of fuels and combustion and its application in various levels. (K3)		
CO5	Acquire the basics of non-conventional sources of energy and understand the principles and the reaction mechanism of batteries and fuel cells. (K4)		

Subject Code:	GE8151	Semester	1
Subject Name:	PROBLEM SOLVING AND PYTHON PROGRAMMING		
Course Code: C105			
Course outcomes			
CO1	Understand the syntax of python program statements. (K2)		
CO2	Illustrate simple python programs using branching statements(K4)		
CO3	Illustrate python programs using List, Tuples, dictionaries. (K4)		
CO4	Compare different programming structures of python. (K5)		
CO5	Develop a python program for a given problem. (K6)		

Subject Code:	GE8152	Semester	1
Subject Name:	ENGINEERING GRAPHICS		
Course Code: C106			
Course outcomes			
CO1	Communicate thoughts and ideas graphically in a neat fashion and ability to perform free hand sketching of basic geometrical constructions, curves used in engineering practices, multiple views of objects.(K2)		
CO2	Understand the concepts of orthographic projection from lines and plane surfaces (K2)		
CO3	Acquire the knowledge of Orthographic projection in three dimensions from solids of basic shapes using change of position and change of reference line method (K3)		
CO4	Understand the interior shapes of machine elements and structures through sections of solids and development of lateral surfaces. (K3)		
CO5	Understand the three dimensional view of an object using isometric and perspective projections. (K4)		

Subject Code:	GE8161	Semester	1
Subject Name:	PROBLEM SOLVING AND PYTHON PROGRAMMING LAB		
Course Code: C107			
Course outcomes			
CO1	Write, test and debug simple Python programs.(K1)		
CO2	Implement Python programs with conditionals and loops. (K3)		
CO3	Develop the Python programs step-wise by defining functions and calling hem (K4)		
CO4	Use Python lists, tuples, dictionaries for representing compound data.(K3)		
CO5	Read and write data from/to files in Python.(K1)		

Subject Code:	BS8161	Semester	1
Subject Name:	PHYSICS AND CHEMISTRY LAB		
Course Code: C108			
Course outcomes			
CO1	Apply the principles of Laser for engineering applications (K3)		
CO2	Understand the basic knowledge of elasticity (K2)		
CO3	Know the practical applications of thermal physics (K2)		
CO4	Acquire practical skills in the determination of water quality parameters through volumetric method (K3)		
CO5	Understand the practical knowledge on pH and conductometric titrations (K2)		

Subject Code:	HS8251	Semester	2
Subject Name:	TECHNICAL ENGLISH		
Course Code: C109			
Course outcomes			
CO1	Read, identify the transition in texts and comprehend scientific and technical contexts in an enhanced way. (K1)		
CO2	Read and interpret data from graphical representations and charts in an effective way. (K2)		
CO3	Write reports effectively using appropriate vocabulary and accurate spelling and grammar. (K6)		
CO4	Draft job application letters with Resume and e-mails in a convincing manner. (K2)		
CO5	Describe processes, participate in formal and informal conversations, Group Discussions and make technical presentations effectively. (K6)		

Subject Code:	MA8251	Semester	2
Subject Name:	ENGINEERING MATHEMATICS – II		
Course Code: C110			
Course outcomes			
CO1	Evaluate Eigen values and Eigen vectors and apply them in diagonalization of matrices. (K5)		
CO2	Acquire knowledge in the fundamentals and basic concepts in vector calculus. (K4)		
CO3	Apply the concept of analyticity in complex functions and evaluate complex derivatives. (K3)		
CO4	Recognize the nature of singularities, evaluate residues and contour integrals. (K2)		
CO5	Understand the usage of Laplace transforms in mathematics and apply in relevant situations (K2)		

Subject Code:	PH8252	Semester	2
Subject Name:	PHYSICS FOR INFORMATION SCIENCE		
Course Code: C111			
Course outcomes			
CO1	Gain knowledge on classical and quantum electron theories and energy band structures (K2)		
CO2	Acquire knowledge basics of semiconductor physics and its applications in various devices (K2)		
CO3	Get knowledge on magnetic properties of materials and their applications in data storage. (K2)		
CO4	Have the necessary understanding on the functioning of optical material for optoelectronics (K3)		
CO5	Understand the basics of quantum structures and their applications in carbon electronics. (K2)		

Subject Code:	BE8255	Semester	2
Subject Name:	BASIC ELECTRICAL, ELECTRONICS AND MEASUREMENT ENGINEERING		
Course Code: C112			
Course outcomes			
CO1	Understand the basic concepts of electric circuits analysis (K2)		
CO2	Learn the basic concepts of both AC and DC Mchines(K2)		
CO3	Familiar about the working of different type of lamps and other electrical appliances.(K2)		
CO4	Realize the basic electronic devices and its applications (K4)		
CO5	Analyze the working of different types of measuring instruments and various Transducers.(K4)		

Subject Code:	IT8201	Semester	2
Subject Name:	INFORMATION TECHNOLOGY ESSENTIALS		
Course Code: C113			
Course outcomes			
CO1	Design and deploy web-sites (K3)		
CO2	Design and deploy simple web-applications (K3)		
CO3	Create simple database applications (K3)		
CO4	Develop information system (K4)		
CO5	Describe the basics of networking and mobile communications (K2)		

Subject Code:	CS8251	Semester	2
Subject Name:	PROGRAMMING IN C		
Course Code: C114			
Course outcomes			
CO1	Develop simple applications in C using basic constructs (K4)		
CO2	Design and implement applications using arrays and strings (K3)		
CO3	Develop and implement applications in C using functions and pointers (K4)		
CO4	Develop applications in C using structures (K4)		
CO5	Design applications using sequential and random access file processing (K3)		

Subject Code:	GE8261	Semester	2
Subject Name:	ENGINEERING PRACTICES LAB		
Course Code: C115			
Course outcomes			
CO1	Elaborate on the components, gates, soldering practices.Calculate electrical parameters such as voltage, current, resistance and power. (K2)		
CO2	Measure the electrical energy by single phase and three phase energy meters. (K3)		
CO3	Prepare the carpentry and plumbing joints. (K2)		
CO4	Perform different types of welding joints and sheet metal works (K2)		
CO5	Perform different machining operations in lathe and drilling (K2)		

Subject Code:	CS8261	Semester	2
Subject Name:	C PROGRAMMING LAB		
Course Code: C116			
Course outcomes			
CO1	Develop C programs for simple applications making use of basic constructs, array (K4)		
CO2	Develop C programs involving Strings & functions. (K4)		
CO3	Develop C programs involving recursion & pointers. (K4)		
CO4	Design applications using Structures. (K3)		
CO5	Design applications using file Concepts. (K3)		

Subject Code:	IT8211	Semester	2
Subject Name:	INFORMATION TECHNOLOGY ESSENTIALS LAB		
Course Code: C117			
Course outcomes			
CO1	Design interactive websites using basic HTML tags, different styles, links and with all basic control elements. (K3)		
CO2	Create client and server side programs using scripts and PHP (K4)		
CO3	Design dynamic websites and handle multimedia components (K3)		
CO4	Create application with PHP connected to database (K4)		
CO5	Create Personal Information System and study the technologies associated with mobile communication (K4)		

Subject Code:	MA8351	Semester	3
Subject Name:	DISCRETE MATHEMATICS		
Course Code: C201			
Course outcomes			
CO1	Acquire knowledge in testing the logic of a program (K2)		
CO2	Evaluate problems using the counting principles (K4)		
CO3	Understand the concepts of graphs, connected graphs, Euler and Hamilton graphs.(K2)		
CO4	Understand properties of algebraic structures such as groups, rings and fields. (K2)		
CO5	Analyze the class of functions which transform a finite set into another finite set which relates to input and output functions in computer science. (K4)		

Subject Code:	CS8351	**Semester**	**3**
Subject Name:	**DIGITAL PRINCIPLES AND SYSTEM DESIGN**		
Course Code: C202			
Course outcomes			
CO1	Design digital circuits using simplified Boolean functions (K3)		
CO2	Analyze and design combinational circuits (K4)		
CO3	Analyze and design synchronous and asynchronous sequential circuits (K4)		
CO4	Understand Programmable Logic Devices (K2)		
CO5	Develop HDL code for combinational and sequential circuits (K4)		

Subject Code:	CS8391	**Semester**	**3**
Subject Name:	**DATA STRUCTURES**		
Course Code: C203			
Course outcomes			
CO1	Understand the concept of abstract data type and its types.(K2)		
CO2	Analyze the applications of linear data structure using Stack and Queue implementation.(K4)		
CO3	Evaluate the expression using the Non-Linear Data Structure Trees. (K3)		
CO4	Create and apply the basic concepts of the Non-Linear Data Structure - Graph in finding the shortest path. (K4)		
CO5	Illustrate the various sorting algorithms and Hashing Techniques with examples(K3)		

Subject Code:	CS8392	**Semester**	**3**
Subject Name:	**OBJECT ORIENTED PROGRAMMING**		
Course Code: C204			
Course outcomes			
CO1	Comprehend Object Oriented Programming Concepts in Java (K2)		
CO2	Apply the Object Oriented Programming Concepts such as inheritance and interfaces to develop the reusable Applications (K3)		
CO3	Illustrate the object oriented applications using Java Exceptions and I/O Streams (K2)		
CO4	Understand Multi-threading and Generic Classes in Java (K2)		
CO5	Apply AWT to develop simple Graphical User Interface Applications (K4)		

Subject Code:	EC8394	**Semester**	**3**
Subject Name:	**ANALOG AND DIGITAL COMMUNICATION**		
Course Code: C205			
Course outcomes			
CO1	Apply analog communication techniques.(K2)		
CO2	Use data and pulse communication techniques (K4)		
CO3	Apply Digital communication techniques. (K4)		
CO4	Analyze Source and Error control coding (K5)		
CO5	Utilize multi-user radio communication. (K4)		

Subject Code:	CS8381	Semester	3
Subject Name:	DATA STRUCTURES LAB		
Course Code: C206			
Course outcomes			
CO1	Write functions to implement linear and non-linear data structure operations.(K2)		
CO2	Implement the different operations of search trees. (K3)		
CO3	Implement the Graph Traversal Algorithm. (K3)		
CO4	Implement Various searching and Sorting Algorithm. (K3)		
CO5	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval. (K4)		

Subject Code:	CS8383	Semester	3
Subject Name:	OBJECT ORIENTED PROGRAMMING LAB		
Course Code: C207			
Course outcomes			
CO1	Develop and implement Java programs for simple applications that make use of classes (K4)		
CO2	Develop and implement Java programs for simple applications that make use of packages and interfaces (K4)		
CO3	Develop and implement Java programs with array list, exception handling and multithreading (K4)		
CO4	Design applications using file processing (K3)		
CO5	Design applications using generic programming and event handling & Java Swing (K3)		

Subject Code:	CS8382	Semester	3
Subject Name:	DIGITAL SYSTEMS LAB		
Course Code: C208			
Course outcomes			
CO1	Use Boolean simplification techniques to design a combinational hardware circuit. (K2)		
CO2	Design and implement combinational and sequential circuits. (K4)		
CO3	Analyze a given digital circuit-combinational and sequential. (K4)		
CO4	Design the different functional units in a digital computer system (K5)		
CO5	Design and implement a simple digital system. (K4)		

Subject Code:	HS8381	Semester	3
Subject Name:	Intepersonal Skills/Listening & Speakng		
Course Code: C209			
Course outcomes			
CO1	Listen and respond appropriately. (K2)		
CO2	Participate in group discussions (K2)		
CO3	Make effective presentations (K3)		
CO4	Involve confidently and appropriately in conversations both formal and informal (K3)		
CO5	Understand the role of communication in personal & professional success (K2)		

Subject Code:	MA8391	Semester	4
Subject Name:	PROBABILITY AND STATISTICS		
Course Code: C210			
Course outcomes			
CO1	Use basic counting techniques (multiplication rule, combinations and permutations) to compute probability and odds. Compute conditional probabilities directly and using Bayes' theorem, and check for independence of events. Know basic properties of the binomial, Poisson, Gaussian and other distributions and apply them in engineering and computer science applications. Determine the expectation and variance of a random variable from its distribution. (K2)		
CO2	Use 2-dimensional random vectors to model experiments with two simultaneous outcomes and compute correlation and regression of two dimensional random variables. Understand the central limit theorem. (K2)		
CO3	Learn how to formulate and test hypotheses about means, variances and proportions and to draw conclusions based on the results of statistical tests. (K2)		
CO4	Understand how the analysis of variance procedures can be used to determine if means of more than two populations are equal (K2)		
CO5	Understand the fundamentals of quality control and the methods used to control systems and processes. (K2)		

Subject Code:	CS8491	Semester	4
Subject Name:	COMPUTER ARCHITECTURE		
Course Code: C211			
Course outcomes			
CO1	Understand the basic structure, hardware-software interface and operation of digital computers. (K2)		
CO2	Apply the fixed and floating point operations in arithmetic and logical unit. (K3)		
CO3	Design and analyse the concepts and control units of pipelining. (K4)		
CO4	Understand and evaluate the processing activities of parallel processing architectures. (K2)		
CO5	Evaluate performance of memory systems including cache and virtual memory with I/O device communications (K4)		

Subject Code:	CS8492	Semester	4
Subject Name:	DATABASE MANAGEMENT SYSTEMS		
Course Code: C212			
Course outcomes			
CO1	To learn the fundamentals of data models and to represent a database system using ER diagrams. (K2)		
CO2	To study SQL and relational database design. (K2)		
CO3	To understand the internal storage structures using different file and indexing techniques which will help in physical DB design. (K2)		
CO4	To understand the fundamental concepts of transaction processing-concurrency control techniques and recovery procedures. (K2)		
CO5	To have an introductory knowledge about the Storage and Query processing Techniques (K2)		

Subject Code:	CS8451	Semester	4
Subject Name:	DESIGN AND ANALYSIS OF ALGORITHMS		
Course Code: C213			
Course outcomes			
CO1	Analyze worst-case running times of algorithms using asymptotic analysis and argue the correctness of algorithms using inductive proofs and invariants. (K3)		
CO2	Illustrate how computing problems are solved using brute force and divide and conquer methods (K2)		
CO3	Demonstrate how problems are solved using dynamic programming and greedy techniques (K3)		
CO4	Illustrate the iterative improvement method for problem solving (K2)		
CO5	Find the limitations of algorithms and apply backtracking and branch and bound techniques to solve the problems (K3)		

Subject Code:	CS8493	Semester	4
Subject Name:	OPERATING SYSTEMS		
Course Code: C214			
Course outcomes			
CO1	Design various Scheduling algorithms. (K2)		
CO2	Apply the principles of concurrency, Design deadlock, prevention and avoidance algorithms. (K3)		
CO3	Compare and contrast various memory management schemes. (K4)		
CO4	Design and Implement a prototype file systems. (K5)		
CO5	Perform administrative tasks on Linux Servers, Compare iOS and Android Operating Systems. (K3)		

Subject Code:	GE8291	Semester	4
Subject Name:	ENVIRONMENTAL SCIENCE AND ENGINEERING		
Course Code: C215			
Course outcomes			
CO1	Understand the basics of Structure and functions of an ecosystem, the values of biodiversity and conservation of biodiversity. (K2)		
CO2	Understand the causes, effects and control measures of different pollution and disasters. (K2)		
CO3	Remember the importance of natural resources and to know the role of an individual in conservation of natural resources and their case studies. (K1)		
CO4	Gain knowledge about the concept of Sustainable development, Environmental Laws and role of Government and Non- Governmental Organizations (NGO) in Environmental Protection. (K2)		
CO5	Learn the importance of family welfare programs, population explosion and Value education. (K2)		

Subject Code:	CS8481	Semester	4
Subject Name:	DATABASE MANAGEMENT SYSTEMS LAB		
Course Code: C216			
Course outcomes			
CO1	Use typical data definitions and manipulation commands (K2)		
CO2	Design applications to test Nested and Join Queries (K4)		
CO3	Implement simple applications that use Views (K4)		
CO4	Implement applications that require a Front-end Tool (K4)		
CO5	Critically analyze the use of Tables, Views, Functions and Procedures (K3)		

Subject Code:	CS8461	Semester	4
Subject Name:	OPERATING SYSTEMS LAB		
Course Code: C217			
Course outcomes			
CO1	Learn the basic Unix commands and shell programming. (K2)		
CO2	Be exposed to Programming in C using system calls (K4)		
CO3	Be familiar with implementation of CPU scheduling Algorithm and file allocation and organisation methods. (K4)		
CO4	Implement Deadlock avoidance and Detection algorithms and various Page replacement algorithms. (K5)		
CO5	Create a process and implement an IPC and synchronization application. (K4)		

Subject Code:	MA8551	Semester	5
Subject Name:	ALGEBRA AND NUMBER THEORY		
Course Code: C301			
Course outcomes			
CO1	Know the fundamental definitions and results in group theory, ring theory, integral domain and fields.		
CO2	State and establish elementary propositions relating irreducibility, roots and factorization in polynomial rings over a field.		
CO3	Define and interpret the concepts of divisibility, congruence, greatest common divisor, prime and prime-factorization.		
CO4	Solve linear Diophantine equations and linear congruences.		
CO5	Solve polynomial congruences using Chinese remainder theorem.		
CO6	Apply Euler-Fermat's theorem to prove relations involving prime numbers.		

Subject Code:	CS8591	Semester	5
Subject Name:	COMPUTER NETWORKS		
Course Code: C302			
Course outcomes			
CO1	Understand the basic layers and its functions in computer networks (K2)		
CO2	Evaluate the performance of a network (K5)		
CO3	Understand the basics of how data flows from one node to another (K2)		
CO4	Analyze and design routing algorithms.(K4)		
CO5	Design protocols for various functions in the network(K6)		
CO6	Understand the working of various application layer protocols (K2)		

Subject Code:	EC8691	Semester	5
Subject Name:	MICROPROCESSORS AND MICROCONTROLLERS		
Course Code: C303			
Course outcomes			
CO1	Restate the architecture, memory organization of 8086 and 8051.(K2)		
CO2	Identify the different ways of interfacing memory,I/O with 8086 and 8051 (K1)		
CO3	Apply the programming using ALP in 8086 and 8051 for arithmetic logical and real time applications.(K3)		
CO4	Analyze the interfacing concept of different programmable interfacing devices.(K4)		
CO5	Developing programming concepts for various applications.(K6)		
CO6	Design microprocessor and microcontroller based applications.(K6)		

Subject Code:	IT8501	Semester	5
Subject Name:	WEB TECHNOLOGY		
Course Code: C304			
Course outcomes			
CO1	Describe the fundamental concepts to develop web pages.(K2)		
CO2	Apply the various Client side scripting technologies to design interactive web pages.(K3)		
CO3	Apply the various Server side scripting technologies to design interactive web pages.(K3)		
CO4	Analyze the Advanced web technologies.(K4)		
CO5	Evaluate the web page using web technologies.(K5)		
CO6	Review the web technologies. (K2)		

Subject Code:	CS8494	Semester	5
Subject Name:	SOFTWARE ENGINEERING		
Course Code: C305			
Course outcomes			
CO1	Identify the key activities in managing a software project and understand the agile methodology**(K1)**		
CO2	Analyze different process models and apply to real world problems **(K4)**		
CO3	Understand the concepts of requirements engineering and Analysis Modeling. (**K2)**		
CO4	Apply systematic procedure for software design and deployment**. (K3)**		
CO5	Compare and contrast various testing and maintenance methods.**(K2)**		
CO6	Interpret the project schedule, estimate project cost and effort required.**(K2)**		

Subject Code:	OBT554	Semester	5
Subject Name:	PRINCIPLES OF FOOD PRESERVATION		
Course Code: C306 (a)			
Course outcomes			
CO1	Acquire knowledge about the basic concepts and principles of food preservation techniques.(K1)		
CO2	Demonstrate the crop harvesting methods and basic food processing techniques for fish, meat, fruits and vegetables.(K2		
CO3	Illustrate the methods for freezing and packaging of raw and processed foods. (K2)		
CO4	Identify and apply the processing operations used food preservation including thermal processing methods. (K3)		
CO5	Interpret the different types of dryers and freezers used in food storage. (K3)		
CO6	Disseminate the non thermal methods of food preservation. (K2)		

Subject Code:	OEC552	Semester	5
Subject Name:	SOFT COMPUTING		
Course Code: C306 (b)			
Course outcomes			
CO1	Describe various soft computing concepts for building practical applications. (**K2**)		
CO2	Review the concepts of neural networks and its algorithms to address real time problems. (**K2**)		
CO3	Apply fuzzy rules and reasoning to develop decision making and expert system. (**K3**)		
CO4	Classify the importance of optimization techniques and genetic programming. (**K4**)		
CO5	Evaluate and compare different solutions by various soft computing approaches for a given problem. **(K5)**		
CO6	Compose various hybrid soft computing techniques. **(K6)**		

Subject Code:	EC8681	Semester	5
Subject Name:	MICROPROCESSORS AND MICROCONTROLLERS LAB		
Course Code: C307			
Course outcomes			
CO1	Write ALP Programmes for fixed and Floating Point Arithmetic operations (k2)		
CO2	Interface different I/Os with processor (K2)		
CO3	Generate waveforms using Microprocessors (K2)		
CO4	Understand the working of MASM and execute programs in MASM (K2)		
CO5	Execute Programs in 8051 (K3)		
CO6	Explain the difference between simulator and Emulator (K2)		

Subject Code:	**CS8581**	**Semester**	**5**
Subject Name:	**NETWORKS LABORATORY**		
Course Code: C308			
Course outcomes			
CO1	Implement various protocols using TCP and UDP. **(K3)**		
CO2	Compare the performance of different transport layer protocols. **(K2)**		
CO3	Use simulation tools to analyze the performance of various network protocols. **(K3)**		
CO4	Analyze various routing algorithms. **(K4)**		
CO5	Implement error correction codes. **(K3)**		
CO6	Experimenting to know the concept of data transfer between nodes. **(K3)**		

Subject Code:	**IT8511**	**Semester**	**5**
Subject Name:	**WEB TECHNOLOGY LAB**		
Course Code: C309			
Course outcomes			
CO1	Design and develop basic websites using Client side scripting.(K6)		
CO2	Design and implement user interactive dynamic web based applications using server scripting. (K6)		
CO3	Infer the information interchange formats of XML, contrast document parsing with SAX and DOM. (K2)		
CO4	Learn the installation procedure of Apache Tomcat Server. (K2)		
CO5	Develop web applications that interact with data bases(K6)		
CO6	Examine client server communication using web services. (K4)		

Subject Code:	IT8601	Semester	6
Subject Name:	COMPUTATIONAL INTELLIGENCE		
Course Code: C310			
Course outcomes			
CO1	Discuss the fundamental concepts and Problem-solving through various searching techniques in Computational Intelligence (K2)		
CO2	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning. (K3)		
CO3	Apply the fuzzy logic control and -Neuro-fuzzy Inference to design the fuzzy control using genetic algorithm. (K3)		
CO4	Review problem solving skills using the acquired knowledge in the areas of, reasoning, natural language , Expert systems ,understanding, computer vision, prolog programming and machine learning (k2)		
CO5	Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models. (K3)		
CO6	Evaluate real time problems on machine learning ,information retrieval and information extraction. (K5)		

Subject Code:	CS8592	Semester	6
Subject Name:	OBJECT ORIENTED ANALYSIS AND DESIGN		
Course Code: C311			
Course outcomes			
CO1	Understand the fundamentals of object-oriented method for analysis and design processes **[K2]**		
CO2	Analyze the given problem domain and to design the solution using OOAD techniques / tools **[K4]**		
CO3	Extract an Object Model and Dynamic Model of system functionality from the requirements **[K4]**		
CO4	Design structured, robust, maintainable object-oriented systems across multiple platforms from the specifications developed **[K5]**		
CO5	Evaluate and use various CASE tools for object-oriented software **[K5]**		
CO6	Demonstrate various issues for object oriented testing **[K3]**		

Subject Code:	IT8602	Semester	6
Subject Name:	MOBILE COMMUNICATION		
Course Code: C312			
Course outcomes			
CO1	Understand the principles and theories of mobile communication technologies. **K2**		
CO2	Understand and Identify the GSM, GPRS and Bluetooth software model for mobile communication **K2**		
CO3	Review the various Wireless and Medium Access Protocols and technologies. **K2**		
CO4	Inspect the architectures of various wireless LAN technologies **K4**		
CO5	Determine the functionality of network layer and Identify a routing protocol for a given Adhoc networks **K5**		
CO6	Summarize the functionality of Transport and Application layer **K2**		

Subject Code:	CS8091	Semester	6
Subject Name:	BIG DATA ANALYTICS		
Course Code: C313			
Course outcomes			
CO1	Discuss the concepts of big data, data storage , big data tools and techniques**.(K2)**		
CO2	Recognize and apply various clustering and classification algorithms. **(K1)**		
CO3	Execute different mining algorithms and evaluate them for different data sets**.(K4)**		
CO4	Evaluate the various recommendation systems for real time problems. **(K4)**		
CO5	To understand the concepts of data stream and stream analytics**.(K2)**		
CO6	Appraise the merits of various NoSQL databases and their applications. **(K5)**		

Subject Code:	CS8092	Semester	6
Subject Name:	COMPUTER GRAPHICS AND MULTIMEDIA		
Course Code: C314			
Course outcomes			
CO1	Identify various Illumination and color models.(K 2)		
CO2	Explain line drawing Algorithms, circle drawing Algorithms and ellipse drawing Algorithms.(K 2)		
CO3	Determine two dimensional transformations, clipping, viewing in Graphics. (K 3)		
CO4	Examine three dimensional transformation, clipping, viewing in Graphics.(K 3)		
CO5	Summarize different types of Multimedia File Format.(K 2)		
CO6	Design Basic 3d Scenes using Blender.(K 5)		

Subject Code:	IT8076	Semester	6
Subject Name:	SOFTWARE TESTING		
Course Code: C315 (a)			
Course outcomes			
CO1	Understand about the Software Testing Principles and Defect Classes (K2)		
CO2	Design test cases suitable for a software development for different domains. (K6)		
CO3	Identify suitable tests to be carried out. (K2)		
CO4	Prepare test planning based on the document and document test plans (k6)		
CO5	Use automatic testing tools.(k3)		
CO6	Develop and validate a test plan. (k6)		

Subject Code:	IT8001	Semester	6
Subject Name:	INFORMATION STORAGE AND MANAGEMENT		
Course Code: C315 (b)			
Course outcomes			
CO1	Understand the logical and the physical components of a Storage infrastructure with virtualization techniques.**(K2)**		
CO2	Describe the different types of RAID implementations and Intelligent Storage System**.(K2)**		
CO3	Evaluate the architecture of storage networking technologies such as DAS, SAN,IP SAN, NAS**.(K4)**		
CO4	Analyse the various storage architectures and compare the key elements in classic and virtualized environments.**(K4)**		
CO5	Assess the business continuity solutions with different backup and recovery techniques.**(K5)**		
CO6	Construct the Information Storage System Environment by applying various archives for managing fixed content and different replication technologies. **(K5)**		

Subject Code:	CS8662	Semester	6
Subject Name:	MOBILE APPLICATION DEVELOPMENT LABORATORY		
Course Code: C316			
Course outcomes			
CO1	Understand the principles and theories of mobile communication technologies. **K2**		
CO2	Understand and Identify the GSM, GPRS and Bluetooth software model for mobile communication **K2**		
CO3	Review the various Wireless and Medium Access Protocols and technologies. **K2**		
CO4	Inspect the architectures of various wireless LAN technologies **K4**		
CO5	Determine the functionality of network layer and Identify a routing protocol for a given Adhoc networks **K5**		
CO6	Summarize the functionality of Transport and Application layer **K2**		

Subject Code:	CS8582	Semester	6
Subject Name:	OBJECT ORIENTED ANALYSIS AND DESIGN LABORATORY		
Course Code: C317			
Course outcomes			
CO1	Make use of object oriented analysis and design concepts to solve a given problem specifications **K3**		
CO2	Identify and map basic software requirements in UML mapping. **K4**		
CO3	Apply design patterns to improve the software quality **K3**		
CO4	Test the compliance of the software with SRS **K3**		
CO5	Map the object oriented design to the developed code **K3**		
CO6	Apply object oriented design to develop software **K3**		

Subject Code:	IT8611	Semester	6
Subject Name:	MINI PROJECT		
Course Code: C318			
Course outcomes			
CO1	State the technical importance of the problem and societal contribution **[K1]**		
CO2	Identify and survey the relevant literature for getting exposed to related solutions**[K2]**		
CO3	Build project plans with feasible requirements.**[K3]**		
CO4	Analyse, design and develop adaptable and reusable solutions**[K4]**		
CO5	Implement and test solutions to trace against the user requirements **[K5]**		
CO6	Deploy and Demonstrate the solutions for future scope for improvement **[K6]**		

Subject Code:	HS8581	Semester	6
Subject Name:	PROFESSIONAL COMMUNICATION		
Course Code: C319			
Course outcomes			
CO1	Implement the employability and career skills relevant to engineering as a profession (K4)		
CO2	Demonstrate a better understanding of the communication process by applying communication theories communication (K3)		
CO3	Adapt the skills towards grooming as a professional (K3)		
CO4	Execute and develop a planned approach towards building a career (K4)		
CO5	Identify different types of personal interview skills through mock interviews and practices (K2)		
CO6	Discuss and develop critical thinking ability and perform well in group discussions (K4)		

Subject Code:	MG8591	Semester	7
Subject Name:	PRINCIPLES OF MANAGEMENT		
Course Code: C401			
Course outcomes			
CO1	Clear understanding of managerial functions like planning, and have same basic knowledge on international aspect of management (K2)		
CO2	To have a deep understanding about the organization and trends (K2)		
CO3	To understand the planning process in the organization (K2)		
CO4	To understand the concept of organization (K2)		
CO5	Demonstrate the ability to directing ,leadership and communicate effectively (K3)		
CO6	To analysis isolate issues and formulate best control methods. (K4)		

Subject Code:	CS8792	Semester	7
Subject Name:	CRYPTOGRAPHY AND NETWORK SECURITY		
Course Code: C402			
Course outcomes			
CO1	Discuss the mechanisms, attacks and services in security using cryptography.(K2)		
CO2	Apply basics of mathematics in encryption and authentication algorithms. (K3)		
CO3	Review the System security standards in OSI Layers. (K2)		
CO4	Evaluate the data integrity using Symmetric Encryption algorithms. (K5)		
CO5	Evaluate the data integrity based on Asymmetric Encryption algorithms. (K5)		
CO6	Apply Data authentications mechanism for a web based application. (K3)		

Subject Code:	CS8791	Semester	7
Subject Name:	CLOUD COMPUTING		
Course Code: C403			
Course outcomes			
CO1	Articulate the main concepts, key technologies, strengths and limitations of cloud computing. **(K2)**		
CO2	Learn the key and enabling technologies that help in the development of cloud. **(K2)**		
CO3	Develop the ability to understand and use the architecture of compute and storage cloud**(K3)**		
CO4	Illustrate the core issues of cloud computing such as resource management and security. **(K4)**		
CO5	Evaluate and use current cloud technologies for the given scenario. **(K5)**		
CO6	Build an cloud application by choosing the appropriate technologies, algorithms and approaches for implementation and use of cloud. **(K6)**		

Subject Code:	OCY751	Semester	7
Subject Name:	WASTEWATER TREATMENT		
Course Code: C404 (a)			
Course outcomes			
CO1	Will have knowledge on water quality standards (K2)		
CO2	Will gain knowledge on preliminary treatment of water.(K2)		
CO3	Will gain knowledge on treatment of water for industrial standards(K2)		
CO4	Will gain knowledge on conventional treatment methods(K2)		
CO5	Will gain knowledge on wastewater characteristics and treatment and treatment and handling of sludge(K2)		
CO6	Will gain knowledge on advanced treatment processes(K2)		

Subject Code:	OCH752	Semester	7
Subject Name:	ENERGY TECHNOLOGY		
Course Code: C404 (b)			
Course outcomes			
CO1	Learn the basics of energy, energy scenario, various types of energy systems and energy conservation principles. (K2).		
CO2	Apply engineering techniques to understand energy scenario, thermal, hydel, nuclear, solar, wind, ocean, tidal, biomass and energy conservation. (K3)		
CO3	Choosing proper methodology to harvest energy from thermal and hydel energy systems.(K3)		
CO4	Integrating the various methods of power generation using nuclear, solar, wind, ocean, tidal energy systems and implementing them in real time usage. (K3)		
CO5	Categorizing the implication of biomass energy systems. (K4)		
CO6	Moderating of energy conservation systems. (K5)		

Subject Code:	IT8075	Semester	7
Subject Name:	SOFTWARE PROJECT MANAGEMENT		
Course Code: C405			
Course outcomes			
CO1	Understand Project Management principles while developing software. **(K2)**		
CO2	Gain extensive knowledge about the basic project management concepts, framework and the process models. **(K1)**		
CO3	Obtain adequate knowledge about software process models and software effort estimation techniques **(K2)**		
CO4	Applying the network planning models and estimate the risks involved in various project activities. **(K3)**		
CO5	Define the checkpoints, project reporting structure, project progress and tracking mechanisms using project management principles. **(K1)**		
CO6	Learn staff selection process and the issues related to people management **(K1)**		

Subject Code:	CS8079	Semester	7
Subject Name:	HUMAN COMPUTER INTERACTION		
Course Code: C406			
Course outcomes			
CO1	Explain the importance of HCI study and principles of user-centered design (UCD) approach.(K4)		
CO2	Understanding of human factors in HCI design.(K2)		
CO3	Examine and Discuss various models, paradigms and context of interactions.(K1)		
CO4	Evaluate effective user-interfaces following a structured and organized user-centered design		
CO5	Design mobile and web interfaces using tools by studying its concepts.(K6)		
CO6	Illustrate the real time scenario with HCI concepts.(K3)		

Subject Code:	IT8711	Semester	7
Subject Name:	FOSS AND CLOUD COMPUTING LABORATORY		
Course Code: C407			
Course outcomes			
CO1	Learn GCC and Version Control System (K3)		
CO2	Configure various virtualization tools such as Virtual Box, VMware workstation.(K3)		
CO3	Design and deploy a web application in a PaaS environment.(K5)		
CO4	Learn how to simulate a cloud environment to implement new schedulers. (K3)		
CO5	Install and use a generic cloud environment that can be used as a private cloud.(K3)		
CO6	Install and use Hadoop (K3)		

Subject Code:	IT8761	Semester	7
Subject Name:	SECURITY LABORATORY		
Course Code: C408			
Course outcomes			
CO1	Implement the classical substitution and transposition techniques. (K3)		
CO2	Build cryptosystems by applying symmetric Key Algorithms (K3)		
CO3	Build cryptosystems by applying Asymmetric Key Algorithms (K3)		
CO4	Evaluate security mechanisms using Hash Functions. (K5)		
CO5	Implement different Digital signature algorithms. (K3)		
CO6	Use different open source tools for network security and analysis (K2)		

Subject Code:	GE8076	Semester	8
Subject Name:	PROFESSIONAL ETHICS IN ENGINEERING		
Course Code: C409			
Course outcomes			
CO1	Acquire the basic knowledge of human values, morals, ethics, industrial standards, code of ethics and role of professional ethics in the engineering field. (K2)		
CO2	Understand professional rights and responsibilities of an engineer. (K2)		
CO3	Understand the safety and risk benefit analysis. (K2)		
CO4	Imbibe the various ethical theories developed and apply them for a professional and societal advancement. (K2)		
CO5	Obtain adequate knowledge about the culture & the value system adopted by MNCs, local business houses and to create an ethical based work environment. (K3)		
CO6	Learn to solve the employees' conflict & grievances in an amicable and ethical way. (K2)		

Subject Code:	IT8005	Semester	8
Subject Name:	ELECTRONIC COMMERCE		
Course Code: C410			
Course outcomes			
CO1	Learn the E- Commerce platform and the concepts of designing a website. (K1)		
CO2	Design website using HTML, CSS and JSS. (K5)		
CO3	Understanding the flow of building an E- Commerce website and Mobile apps.(K2)		
CO4	Implement the various security measures in E-Commerce environment.(K3)		
CO5	Analyse and evaluate the business concepts in Digital Marketing.(K4)		
CO6	Create responsive websites to manage maintain and support Web Apps.(K6)		

Subject Code:	**IT8811**	**Semester**	**8**
Subject Name:	**PROJECT WORK**		
Course Code: C411			
Course outcomes			
CO1	State technically and economically feasible problems.**[K1]**		
CO2	Identify and survey the relevant literature for getting exposed to related solutions**[K2]**		
CO3	Analyse, design, and develop adaptable solutions using modern tools.**[K3]**		
CO4	Implement and integrate framed solutions of the problem.**[K4]**		
CO5	Evaluate the solutions to trace against the user requirements.**[K5]**		
CO6	Deploy and Demonstrate the solutions for future scope for improvement.**[K6]**		