ACADEMIC YEAR 2019-20

YEAR: II SEMISTER: I REGULATION: R18

Course Name: Analog and Digital Electronics Course Code: CS301ES

CO1	Differentiate various components and devices with characteristics.
CO2	Analyze and design various transistor amplifiers using BJTs and FETs
CO3	Utilize the postulates of the Boolean Algebra to minimize the Combinational circuits.
CO4	Design and Analyze Combinational and Sequential circuits
CO5	Design the logic gates using different Logic families.

Course Name: Data Structures Course Code: CS302PC

CO1	Understand the concept of ADT.
CO2	Ability to select the data structures that efficiently model the information in a problem.
CO3	Ability to assess efficiency trade-offs among different data structure implementations or combinations.
CO4	Implement and know the application of algorithms for sorting and pattern matching.
CO5	Design programs using a variety of data structures, including hash tables, binary and general tree structures, search trees, tries, heaps, graphs, and AVL-trees.

Course Name: Computer Oriented Statistical Methods Course Code: MA303BS

CO1	Distinguish between discrete and continuous probability. Distributions
CO2	Analyze and interpret statistical data using appropriate probability distributions. .
CO3	Apply sampling distributions concept in various fields in real world problems.
CO4	Estimate the value for a given parameter by choosing appropriate method and apply suitable test to accept or reject a given hypothesis
CO5	Apply Stochastic process and Markov process to solve various problems

Course Name: Computer Organization and Architecture Course Code: CS304PC

CO1	Ability to Demonstrate an understanding of the design of the functional units of a digital computer system
CO2	Ability to design of control unit and Explain the instruction set, instruction formats and
CO3	Addressing modes of CPU
CO4	Ability to Recognize and manipulate representations of numbers stored in digital computers and perform Basic arithmetic Operations.
CO5	Ability to analyze memory hierarchy and its impact on computer Cost/performance.

Course Name: Object Oriented Programming using C++ Course Code: CS305PC

CO1	Define Object Oriented Programming concepts.
CO2	Demonstrate C++ classes and data abstraction.
CO3	Develop C++ programs with reusability concept.
CO4	Explain File handling in C++
CO5	Handle exceptions in programming

Course Name: Analog and Digital Electronics Lab Course Code: CS306ES

CO1	Design and test rectifiers with filters
CO2	Design, construct and test amplifier circuits and interpret the results.
CO3	Utilize the postulates of the Boolean Algebra to minimize the Combinational circuits.
CO4	Design and Analyze Combinational and Sequential circuits and verify the functionality.
CO5	Realize the logic gates using different Logic families and verify the functionality.

Course Name: Data Structures Lab Course Code: CS307PC

CO1	Appreciate the importance of structure and Abstract data type, and their basic usability in different applications.
CO2	Able to implement linear and non-linear data structures using linked lists.
CO3	Able to understand and apply various data structures such as stacks, queues, trees, graphs etc. to solve various computing problems.
CO4	Able to implement various kinds of searching and sorting techniques, and decide when to choose which technique.
CO5	Able to identify and use a suitable data structure and algorithm to solve a real world problem.

Course Name: IT Workshop Lab Course Code: CS308PC

CO1	Apply knowledge for computer assembling and software installation and solve trouble shooting problems
CO2	Ability to effectively use of internet and World Wide Web
CO3	Ability to effectively use of internet, www and web browsers
CO4	Apply the tools for documentation
CO5	Apply the tools for ppt, Budget sheet etc

Course Name: C++ Programming Lab Course Code: CS309PC

CO1	Explain polymorphism and develop C++ programs
CO2	Develop C++ programs with reusability concept.
CO3	Compare classes & structures and develop C++ programs using classes & structures
CO4	Write C++ programs to handle exceptions in programming
CO5	Solve different type of problems using object-oriented programming Techniques

YEAR: II SEMISTER: II REGULATION: R18

Course Name: Discrete Mathematics Course Code: CS401PC

CO1	Illustrate various formal proof methods for validating the arguments
CO2	Discuss various types of relations, functions and algebraic structures
CO3	Apply counting techniques to solve computational problems
CO4	List various techniques to solve the recurrence relations
CO5	Justify the graph theory techniques to solve real world problems

Course Name: Business Economics & Financial Analysis Course Code: SM402MS

CO1	Understand the relative importance of Business Economics and structure of Business Firms ranging from types, formation, entry and exit from markets and output decisions.
CO2	Be equipped with the tools for analyzing Demand and costs as well as in forecasting product demand and to develop critical and integrative thinking in the Analysis of consumer behavior
CO3	Able to identify key domestic as well as global economic factors and analyze the impact of fast changing global economic factors with domestic macroeconomic policies
CO4	To develop the students to understand the accounting language and to have a basic understanding of preparation of financial statement.
CO5	To assess the company profitability and financial position by suing financial tools and techniques and to explore opportunities for future merger and acquisition and expansion

Course Name: Operating System Course Code: CS403PC

CO1	Able to explain the basic concepts of operating systems
CO2	Able to compare different process scheduling algorithms and interpret the concurrency problem to overcome it by using different solutions
CO3	Able to estimate the memory allocated for a process
CO4	Able to interpret the structure of a file system and disk and also able to manage them
CO5	Able to analyze sharing of resources among multiple processes in order to detect, prevent and avoid a deadlock

Course Name: Database Management Systems Course Code: CS404PC

CO1	Define the basic concepts of database management systems
CO2	Ability to design entity relationship model and convert entity relationship diagrams into RDBMS and formulate SQL queries on the data.
CO3	Able to demonstrate transaction processing and concurrency control
CO4	Able to apply normalization technique for schema refinement
CO5	Ability to compare different storage structures

Course Name: Java Programming **Course Code: CS405PC**

CO1	Able to Define OOPs concepts & basics of java programming
CO2	Able to Identify the use of classes, interface, packages in solving specific problems
CO3	Able to Analyze the use of Single threading and multithreading programs using Synchronization and handle the exceptions to increase the performance of program.
CO4	Able to know the importance of collection framework in developing effective programs.
CO5	Analyze and Design GUI based applications using swings and applets

Course Name: Operating Systems Lab **Course Code: CS406PC**

CO1	Able to implement different CPU scheduling algorithms using C-language
CO2	Able to create c programs for different file allocation and file organization techniques
CO3	Able to develop c programs for various memory allocation strategies like MVT and MFT
CO4	Able to implement c programs for prevention and avoidance of deadlocks
CO5	Able to develop c programs for paging technique and page replacement algorithms

Course Name: Database Management Systems Lab **Course Code: CS407PC**

CO1	Able to choose appropriate database schema for a given problem
CO2	Able to design an E-R model for real world problem
CO3	Able to develop relational model for schema refinement
CO4	Able to build a database for roadway travels and formulate quires using DDl, DMl, DCL commands
CO5	Able to create triggers, cursors for given problem

Course Name: Java Programming Lab **Course Code: CS408PC**

CO1	Able to apply OOP in problem solving and develop basic programs.
CO2	Able to develop basic programs on multithreading and exception handling
CO3	Able to implement code for accessing the information from files
CO4	Able to implement code for data structures and sorting techniques
CO5	Able to create GUI based applications using swings and applets

YEAR: III SEMISTER: I REGULATION: R16

Course Name: Design and Analysis of Algorithms Course Code: CS501PC

CO1	Describe different types of Algorithms
CO2	Estimate performance of an Algorithm
CO3	Compare different types of design techniques of Algorithms
CO4	Choose Appropriate design techniques or Algorithms for solving problems
CO5	Develop Algorithms for real time scenarios

Course Name: Data Communication and Computer Networks Course Code: CS502PC

CO1	Define Network and its components
CO2	Illustrate the functionality of OSI and TCP/IP reference models
CO3	Compare different network layer protocols
CO4	Evaluate Architecture for Application layer protocols
CO5	Choose appropriate protocol for desired communication service

Course Name: Software Engineering Course Code: CS503PC

CO1	Able to define software engineering process and practices, and demonstrate various process models
CO2	Able to identify different types of risks in software development
CO3	Able to distinguish different testing strategies and it's working
CO4	Able to Estimate the quality of software process
CO5	Able to develop the SRS document for project.

Course Name: Fundamentals of Management Course Code: SM504MS

CO1	Understand the significance of management in their profession.
CO2	Define and summarize the importance of planning and decision making techniques.
CO3	Describe the organizational structures and effective utilization of Human resources in the organization
CO4	Importance of leadership and motivation to reach the organizational goals
CO5	Define controlling and enlist its features, process and different controlling techniques

Course Name: Computer Graphics Course Code: ME512OE

CO1	Able to Define basics of Computer Graphics, display devices along with output primitives
CO2	Able to Outline various 2D, 3D geometric transformations and viewing
CO3	Able to Compare and Contrast various object representation
CO4	Able to List various algorithms to detect hidden surfaces and rendering
CO5	Able to Create animation scenes

Course Name: Design and Analysis of Algorithms Lab Course Code: CS505PC

CO1	Able to write programs in java to solve problems using divide and conquer strategy.
CO2	Able to write programs in java to solve problems on graph traversals.
CO3	Able to write programs in java to solve problems using backtracking strategy.
CO4	Able to write programs in java to solve problems using greedy techniques
CO5	Able to write programs in java to solve problems using dynamic programming.

Course Name: Computer Networks Lab Course Code: CS506PC

CO1	Ability to implement error detection techniques.
CO2	Ability to apply appropriate algorithm for finding of shortest route.
CO3	Ability to configure the routing table.
CO4	Ability to understand the encryption and decryption concepts in Linux environment
CO5	Ability to implement client/server communication

Course Name: Software Engineering Lab Course Code: CS507PC

CO1	Able to Plan a software engineering process life cycle.
CO2	Able to elicit, analyze and specify software requirements.
CO3	Able to Analyze and translate a specification into a design.
CO4	Able to Built an SRS documents :Realize design practically, using an appropriate software engineering
CO5	Develop prototype model for a given case study using modern engineering tools.

YEAR: III SEMISTER: II REGULATION: R16

Course Name: Compiler Design Course Code: CS601PC

CO1	Able to define different types of translators used in programming
CO2	Explain symbol table organization and role of semantic analysis in compiler design
CO3	Able to construct a top down and bottom up parser
CO4	List various code generation techniques
CO5	Able to design a Lexical analyzer

Course Name: Web Technologies Course Code: CS602PC

CO1	Able to explain server side scripting and make use of PHP
CO2	Able to define client side scripting and make use of JavaScript and AJAX to validate at client side.
CO3	Able to define XML and choose appropriate parser techniques (DOM and SAX).
CO4	Able demonstrate Server side programming and adopt to build applications with java Servlets and JSP's.
CO5	Able to contrast server side scripting and Server side programming and develop database connectivity by make use of java and PHP.

Course Name: Cryptography and Network Security Course Code: CS603PC

CO1	Understand and apply the cryptographic algorithms to safeguard from intruders
CO2	Compare and contrast symmetric and asymmetric encryption systems and their vulnerability to attack
CO3	Implement the various key distribution, management and message authentication schemes to send the messages with security
CO4	Identify information system requirements for Transport level, wireless network, E-Mail and IP
CO5	Design a network security system by implementing all the concepts of encryption and decryption algorithms

Course Name: Intellectual Property Rights Course Code: CE623OE

CO1	Able to Define different types of Intellectual Property Rights.
CO2	Able to Classify different Intellectual Property Rights
CO3	Able to Identify importance of Trademark & Copy Right Laws.
CO4	Able to Explain importance of Patents, Trade Secret Laws
CO5	Able to Create new Intellectual Properties

Course Name: Design Patterns Course Code: CS612PE

CO1	Define the design patterns that are common in software applications.
CO2	Ability to interpret common design patterns to incremental or iterative development
CO3	Apply the core solutions to object- oriented design problems
CO4	Ability to analyze appropriate patterns for design of given problem
CO5	Design knowledge of the principles of object- oriented design problems in real world

Course Name: Cryptography and Network Security Lab Course Code: CS604PC

CO1	Use C language to develop simple XOR operation for encryption of data
CO2	Make use of C/Java to implement Symmetric cryptography
CO3	Choose C/Java to develop Asymmetric cryptography
CO4	Implement Diffie-Hellman Key exchange using HTML and Javascript
CO5	Develop java programs on MD-5 and SHA-1 algorithms

Course Name: Web Technologies Lab Course Code: CS605PC

CO1	Able to build a static website using HTML
CO2	Able to include JavaScript for validations
CO3	Able to use XML to store and forwarding data.
CO4	Students able to implement dynamic websites using PHP
CO5	Able to develop Web applications by using JSP with Database Connectivity.

Course Name: Advanced English Communication Skills Lab Course Code: EN606HS

CO1	Develops confidence to use relevant vocabulary, using apt kinesics or body language in communication
CO2	Infer the meaning of the text easily through comprehension techniques like, skimming, scanning and effective reading through proper vocabulary
CO3	Analyze the writing skills through letters, reports and resume writing from the text and use for all professional settings
CO4	Gather ideas, information and organize them relevantly in making presentations
CO5	Self assured to organize and deliver discussions, presentations and strategies to face the interviews effectively

YEAR: IV SEMISTER: I REGULATION: R16

Course Name: Data Mining Course Code: CS701PC

CO1	Utilize the existing tool and perform data pre-processing
CO2	Ability to analyze the data and apply appropriate algorithm for decision making
CO3	Ability to add mining algorithms as a component to the existing tool
CO4	Ability to develop a system to help a loan officer to decide whether the credit of a customer is good or bad using mining algorithms
CO5	Ability to classify web pages, extracting knowledge from the web

Course Name: Principles of Programming Languages Course Code: CS702PC

CO1	Able to Explain the important features of the Programming Languages
CO2	Able to Compare different Programming Domains
CO3	Ability to Evaluate Merits and Demerits of a Particular Programming Language.
CO4	Able to Choose Specific Programming Language for the Development of Specific Applications
CO5	Able to Understand and Analyze the Importance of Implementation Process

Course Name: Python Programming Course Code: CS721PE

CO1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.
CO2	Demonstrate proficiency in handling Threads, File and Exceptions.
CO3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions
CO4	Interpret the concepts of GUI and WEB Programming as used in Python
CO5	Implement exemplary applications related to Database Programming with ORM in Python.

Course Name: Software Process and Project Management Course Code: CS734PE

CO1	Able to Explain Conventional Software Management Process to Develop Software
CO2	Able to Identify factors for Improving Software Economics
CO3	Ability to find the Relationships among Different Life Cycle Phases
CO4	Compare and Differentiate Organization Structure and Project Structure
CO5	Able to Predict Metrics and forecasting guidelines for Project Cost Schedule and Quality Control

Course Name: Cloud Computing Course Code: CS742PE

CO1	Able to explain and examine various computing paradigms
CO2	Able to define cloud computing and explain fundamental concepts of cloud
CO3	Able to describe cloud architecture, deployment and management
CO4	Able to explain the basics of cloud computing stack and cloud service models
CO5	Able to Identify various cloud service providers , their services and tools

Course Name: Data Mining Lab Course Code: CS703PC

CO1	Ability to explain different kinds of data warehouse tools.
CO2	Utilize the existing tool and perform data pre-processing.
CO3	Ability to analyze the data and apply appropriate algorithm for decision making
CO4	Ability to add mining algorithms as a component to the existing tool
CO5	Ability to develop a system to help a loan officer to decide whether the credit of a customer is good or bad using mining algorithms

Course Name: Python Programming Lab Course Code: CS751PE

CO1	Student should be able to understand the basic concepts scripting and the contributions of scripting language
CO2	Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data.
CO3	Identify the external modules and import specific methods form them
CO4	Demonstrate proficiency in handling Strings and File Systems.
CO5	Ability to explore python especially the object oriented concepts, and the built in objects of Python

Course Name: Industry Oriented Mini Project Course Code: CS705PC

CO1	Graduates will be able to identify and define problems in the area of Computer science
CO2	Graduates will be able to explain and illustrate their practical skills needed to understand and modify problems related to programming and designing.
CO3	Graduates will get a chance to apply current technologies and develop applications for the problems
CO4	Graduates will get opportunities to practice as teams on multidisciplinary projects with effective writing and communication skills
CO5	Able to apply the engineering and management principles to achieve the goal of the project

Course Name: Seminar **Course Code: CS706PC**

CO1	The students will be able to recall existing technologies in the area of computer science
CO2	The students will be able to describe, compare and evaluate different technologies
CO3	The students will be able to decide the area of interest
CO4	The students will be able to develop their communication skills
CO5	The students will be able to write technical reports.

YEAR: IV SEMISTER: II REGULATION: R16

Course Name:Data Analytics **Course Code: EM831OE**

CO1	Understand the impact of data analytics for business decisions and strategy
CO2	Carry out data analysis/statistical analysis
CO3	To carry out standard data visualization and formal inference procedures
CO4	Design Data Architecture
CO5	Understand various Data Sources

Course Name: Real-Time Systems **Course Code: CS852PE**

CO1	Able to explain real-time concepts such as preemptive multitasking, task priorities, priority inversions, mutual exclusion, context switching, and synchronization, interrupt latency and response time, and semaphores
CO2	Able describe how a real-time operating system kernel is implemented.
CO3	Able explain how tasks are managed
CO4	Explain how the real-time operating system implements time management.
CO5	Discuss how tasks can communicate using semaphores, mailboxes, and queues

Course Name: Computer Forensics **Course Code: CS863PE**

CO1	Understand the real time computer forensic issue
CO2	Understand data recovery, forensics lab certification and physical requirements.
CO3	Identify different storage formats for data acquisition
CO4	Analyze various data acquisition tools for collecting digital evidence
CO5	Identify and apply various computer forensics tools to solve the computer forensic cases.

Course Name: Major Project **Course Code: CS801PC**

CO1	Graduates will be able to identify and define problems in the area of Computer science
CO2	Graduates will be able to explain and illustrate their practical skills needed to understand and modify problems related to programming and designing
CO3	Graduates will get a chance to apply current technologies and develop applications for the problems.
CO4	Graduates will get opportunities to practice as teams on multidisciplinary projects with effective writing and communication skills.
CO5	Able to apply the engineering and management principles to achieve the goal of the project