Department of Computer Science and Engineering

R19-Course Outcomes

Year &Sem	Course Code	Course Name	After completion of the course, the student will be able to
I-I	19A54101	Algebra and Calculus	CO1: develop the use of matrix algebra techniques that is needed by engineers for practical applications
			CO2: Utilize mean value theorems to real life problems
			CO3: familiarize with functions of several variables which is useful in optimization
			CO4: important tools of calculus in higher dimensions. Students will become familiar with 2- dimensional coordinate systems
			CO5: Students will become familiar with 3- dimensional coordinate systems and also learn the utilization of special functions
I-I	19A51102T	Chemistry	CO1: compare the materials of construction for battery and electrochemical sensors
			CO2: explain the preparation, properties, and applications of thermoplastics & thermo settings, elastomers & conducting polymers
			CO3: explain the principles of spectrometry, GC and HPLC in separation of gaseous and liquid mixtures
			CO4: apply the principle of supra molecular chemistry in application of molecular machines and switches
			CO5: explain the band theory of solids for conductors, semiconductors and insulators
I-I	19A05101T	Problem Solving & Programming	CO1: Recognize the importance of programming language independent constructs
			CO2: Solve computational problems
			CO3: Select the features of C language appropriate for solving a problem
			CO4: Design computer programs for real world problems
			CO5: Organize the data which is more appropriated for solving a problem
I-I	19A03102	Engineering Graphics Lab	CO1: draw various curves applied in engineering
			CO2: show projections of solids and sections graphically
			CO3: draw the development of surfaces of solids

			CO4: use computers as a drafting tool
			CO5: draw isometric and orthographic drawings using CAD packages
I-I	**19A03101**	Engineering Workshop	CO1: Apply wood working skills in real world applications.
			CO2: Build different parts with metal sheets in real world applications
			CO3: Apply fitting operations in various applications
			CO4: Apply different types of basic electric circuit connections.
			CO5: Demonstrate soldering and brazing.
I-I	**19A51102P**	ChemistryLab	CO1: determine the cell constant and conductance of solutions
			CO2: prepare advanced polymer materials
			CO3: measure the strength of an acid present in secondary batteries
			CO4: analyze the IR of some organic compounds
			CO5: analyze the NMR of some organic compounds
I-I	**19A05101P**	ProblemSolving&Programming Lab	CO1: Construct a Computer given its parts
			CO2: Select the right control structure for solving the problem
			CO3: Analyze different sorting algorithms
			CO4: Design solutions for computational problems
			CO5: Develop C programs which utilize the memory efficiently using programming constructs like pointers
I-II	19A05201T	Data Structures	CO1: Select Appropriate Data Structure for solving a real world problem
			CO2: Select appropriate file organization technique depending on the processing to be done
			CO3 : Construct Indexes for Databases
			CO4 : Analyze the Algorithms
			CO5 : Develop Algorithm for Sorting large files of data
I-II	19A05202	ComputerScienceandEngineering Workshop	CO1: Construct a computer from its parts and prepare it for use
			CO2: Develop Documents using Word processors
			CO3 : Develop presentations using the presentation tool
			CO4 : Perform computations using spreadsheet tool
			CO5 : Connect computer using wired and wireless connections
I-II	19A05201P	DataStructuresLab	CO1: Select the data structure appropriate for solving the problem
			CO2: Implement searching and sorting algorithms
			CO3: Design new data types
			CO4: Illustrate the working of stack and queue
			CO5: Organize the data in the form of files
	19A54303	MathematicalFoundationsofComputer	CO1: Evaluate elementary mathematical arguments and identify fallacious reasoning
			CO2: Understand the properties of Compatibility, Equivalence and Partial Ordering relations, Lattices and Has see Diagrams

II-I		Science	CO3: Understand the general properties of Algebric Systems, Semi Groups, Monoids and Groups
			CO4: Design solutions for problems using breadth first and depth first search techniques
			CO5: Apply the concepts of functions to identify the Isomorphic Graphs
II-I	19A05301	DigitalLogi cDesign	CO1: Analyze the number systems and codes.
			CO2: Decide the Boolean expressions using Minimization methods.
			CO3: Design the sequential and combinational circuits.
			CO4: Apply state reduction methods to solve sequential circuits.
			CO5: Describe various types of memories.
II-I	19A05302T	DatabaseMana gement Systems	CO1 : Design a database for a real world information system
			CO2 : Define transactions which preserve the integrity of the database
			CO3 : Generate tables for a database
			CO4 : Organize the data to prevent redundancy
			CO5 : Pose queries to retrieve the information from database.
II-I	19A05303T	ObjectOrientedProg rammingThrough Java	CO1 : To solve real world problems using OOP techniques.
			CO2 : To apply code reusability through inheritance, packages and interfaces
			CO3 : To solve problems using java collection framework and I/O classes.
			CO4 : To develop applications by using parallel streams for better performance.
			CO5 : To build GUIs and handle events generated by user interactions.
II-I	19A05304T	PythonProgra mming	CO1 : Apply the features of Python language in various real applications.
			CO2 : Select appropriate data structure of Python for solving a problem
			CO3 : Design object oriented programs using Python for solving real-world problems.
			CO4 : Apply modularity to programs
			CO5 : Organize data in the form of files
II-I	19A05302P	DatabaseMana gementSystem sLab	CO1 : Design database for any real world problem
			CO2 : Implement PL/SQL programs
			CO3 : Define SQL queries
			CO4 : . Decide the constraints
			CO5 : Investigate for data inconsistency
II–I	19A05303P	ObjectOrientedProg rammingThrough JavaLab	CO1 : Recognize the Java programming environment.
			CO2 : Develop efficient programs using multithreading
			CO3 : Design reliable programs using Java exception handling features.
			CO4 : Extend the programming functionality supported by Java
			CO5 : Select appropriate programming construct to solve a problem.
	19A05304P		CO1 : Design solutions to mathematical problems.
			CO2 : Organize the data for solving the problem.

II–I		Python Programmin gLab	CO3 : Develop Python programs for numerical and text based problems
			CO4 : Select appropriate programming construct for solving the problem.
			CO5 : Illustrate object oriented concepts.
II–II	19A05401	ComputerOr ganization	CO1 : Understand computer architecture concepts related to design of modern processors, memories and I/Os
			CO2 : Identify the hardware requirements for cache memory and virtual memory
			CO3 : Design algorithms to exploit pipelining and multiprocessors
			CO4 : Understand the importance and tradeoffs of different types of memories
			CO5 : Identify pipeline hazards and possible solutions to those hazards
II–II	19A05402T	DesignandAnal ysisofAlgorith ms	CO1 : Determine the time complexity of an algorithm by solving the corresponding recurrence equation
			CO2 : Apply the Divide and Conquer strategy to solve searching, sorting and matrix multiplication problems.
			CO3 : Analyze the efficiency of Greedy and Dynamic Programming design techniques to solve the optimization problems
			CO4 : Apply Backtracking technique for solving constraint satisfaction problems.
			CO5 : Analyze the LC and FIFO branch and bound solutions for optimization problems, and compare the time complexities with Dynamic Programming techniques.
II-II	19A05403T	OperatingSy stems	CO1 : Realize how applications interact with the operating system
			CO2 : Analyze the functioning of a kernel in an Operating system.
			CO3 : Summarize resource management in operating systems
			CO4 : Apply memory management techniques in design of operating systems
			CO5 : Understand the deadlock prevention and avoidance
II–II	19A05404T	SoftwareEngineeri ng	CO1 : Obtain basic software life cycle activity skills.
			CO2 : Design software requirements specification for given problems.
			CO3 : Implement structure, object oriented analysis and design for given problems
			CO4 : Design test cases for given problems.
			CO5 : Apply quality management concepts at the application level.
II–II	19A05403P	OperatingSy stemsLab	CO1 : Trace different CPU Scheduling algorithm
			CO2 : Implement Bankers Algorithms to Avoid and prevent the Dead Lock
			CO3 : Evaluate Page replacement algorithms
			CO4 : Illustrate the file organization techniques
			CO5 : Design new scheduling algorithms

II–II	19A05404P	SoftwareEngineeringLab	CO1 : Acquaint with historical and modern software methodologies
			CO2 : Understand the phases of software projects and practice the activities of each phase
			CO3 : Practice clean coding
			CO4 : Take part in project management
			CO5 : Adopt skills such as distributed version control, unit testing, integration testing, build management, and deployment
III – I	**19A05501**	**FORMAL LANGUAGES AND AUTOMATA THEORY**	CO1 : Distinguish DFA and NFA. (L4)
			CO2 : Construct regular expression for the given Finite Automata.(L6)
			CO3 : Define Context Free Grammar. (L1)
			CO4 : List the applications of Pushdown Automata. (L1)
			CO5 : List types of Turing Machines.(L1)
III – I	**19A05502T**	**ARTIFICIAL INTELLIGENCE**	CO1:Apply searching techniques for solving a problem (L3)
			CO2 :Design Intelligent Agents (L6)
			CO3: Develop Natural Language Interface for Machines (L6)
			CO4:Design mini robots (L6)
			CO5:Summarize past, present and future of Artificial Intelligence (L5)
III – I	**19A05503T**	**OBJECT-ORIENTED ANALYSIS DESIGN AND TESTING**	CO1:Analyze the problem from object oriented perspective (L4)
			CO2:Model complex systems using UML Diagrams (L3)
			CO3:Choose the suitable design patterns in software design (L5)
			CO4:Adapt Object-Oriented Design Principles (L6)
			CO5:Identify the challenges in testing object-oriented software. (L3)
III – I			CO1:Identify the software and hardware components of a Computer network (L3)
			CO2:Develop new routing, and congestion control algorithms (L3)

	19A05504T	**COMPUTER NETWORKS**	CO3:Assess critically the existing routing protocols (L5)
			CO4:Explain the functionality of each layer of a computer network (L2)
			CO5:Choose the appropriate transport protocol based on the application requirements (L3)
III – I	**19A05505a**	**DATA WAREHOUSI NG AND DATA MINING**	CO1:Design a Data warehouse system and perform business analysis with OLAP tools (L6).
			CO2:Apply suitable pre-processing and visualization techniques for data analysis (L3)
			CO3:Apply frequent pattern and association rule mining techniques for data analysis (L3)
			CO4:Design appropriate classification and clustering techniques for data analysis (L6)
			CO5:Infer knowledge from raw data (L4)
III-I	19A05505b	WEB TECHNOLOGIES	CO1:Construct a basic website using HTML and Cascading Style Sheets.(L3)
			CO2:Build dynamic web page with validation using Java Script objects and byapplying different event handling mechanisms.(L6)
			CO3:Develop server side programs using Servlets and JSP.(L3)
			CO4:Construct simple web pages in PHP and represent data in XML format. (L6)
			CO5:Utilize AJAX and web services to develop interactive web applications.(L3)
III-I	19A05505C	MOBILE APPLICATION DEVELOPMENT	CO1:Identify various concepts of mobile programming that make it unique from programming forother platforms (L3)
			CO2:Evaluate mobile applications on their design pros and cons. (L5)
			CO3:Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces. (L3)
			CO4:Develop mobile applications for the Android operating system that use basic and advanced phone features. (L6)
			CO5:Demonstrate the deployment of applications to the Android marketplace for distribution. (L2)
III-I	19A27506b	COMPUTER APPLICATIONS IN FOOD INDUSTRY	CO1:Computerization, Importance of Computerization in food industry and ITapplications in food industries.
			CO2:Introduction to Software & Programming Languages, Properties, Differences of an Algorithm and Flowcharts
			CO3:Basic Structure of a simple 'C' program. Decision Making/Control Statements.

			CO4:Concept of Functions (Defining a function & Function Prototypes, Types of functions: Library functions & User defined functions.
			CO5:Concept of Pointers, Structures & Unions. Introduction to Data Structures, Types of Data Structures (Primary & Secondary Data Structures)
III-I	19A05502P	**ARTIFICIAL INTELLIGENCE LABORATORY**	CO1:Implement search algorithms (L3)
			CO2:Solve Artificial intelligence problems (L3)
			CO3:Design chatbot and virtual assistant (L6)
			CO4:Illustrate search algorithms
			CO5:Demonstrate building of intelligent agents
III-I	19A05504P	Computer Networks Laboratory	CO1:Design scripts for Wired network simulation (L6)
			CO2:Design scripts of static and mobile wireless networks simulation (L6)
			CO3:Analyze the data traffic using tools (L4)
			CO4:Design JAVA programs for client-server communication (L6)
			CO5:Construct a wired and wireless networks using the real hardware (L3)
III-I	19A05503P	**OBJECT-ORIENTED ANALYSIS DESIGN AND TESTING LAB**	CO1:Design use case, sequence and collaboration diagrams (L6)
			CO2:Understand and define the context and the external interaction with the System
			CO3:Familiarize with usage of open source UML Case tools
			CO4:Develop the different models to document an Object-oriented design.(L3)
			CO5:Demonstrate class level and system integration testing (L2)

III-II	19A05601	CRYPTOGRAPHY AND NETWORK SECURITY	CO1:Identify various type of vulnerabilities of a computer network (L2)
			CO2:Illustrate various cryptographic algorithms.
			CO3:Outline various security algorithms (L4)
			CO4:Design secure systems (L6)
			CO5:Investigate the threats and identify the solutions for threats (L4)
III-II	19A05602T	BIG DATA ANALYTI CS	CO1:Explain the concepts and challenges of big data (L2)
			CO2:Determine why existing technologies are inadequate to analyze the large data. (L5)
			CO3:Outline the operations viz. Collect, manage, store, query, and analyze various forms ofbig data. (L2)
			CO4:Apply large-scale analytic tools to solve some of the open big data problems. (L3)
			CO5:Design different big data applications. (L6)
III-II	19A05603b	INTRODUCTION TO MACHINE LEARNING	CO1:Identify machine learning techniques suitable for a givenproblem. (L3)
			CO2:Solve the real world problems using various machine learningtechniques. (L6)
			CO3:Apply Dimensionality reductiontechniques for data preprocessing. (L3)
			CO4:Explain what is learning and why it is essential in the design of intelligent machines.(L2)
			CO5:Implement Advanced learning models for language, vision, speech, decision makingetc. (L1)
III-II	19A05603c)	REAL TIME SYSTEMS	CO1: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. (L2)
			CO2:Describe how tasks are managed. (L1)
			CO3:Discuss how tasks can communicate using semaphores, mailboxes, and queues. (L6)
			CO4:Build a real-time system on an embedded processor.(L6)
			CO5:Examine the real time operating systems like RT Linux, Vx Works,
III-II	**19A05603d**	**ADVANCED COMPUTER ARCHITECTU RE**	CO1:Explain Computational models and Computer Architectures.(L2)
			CO2:Elaborate the Concepts of parallel computer models.(L6)
			CO3:Define Scalable Architectures, Pipelining, Superscalar processors, multiprocessors(L1)
			CO4:Impart the concepts and principles of parallel and advanced computer architectures.
			CO5: MicroC /OSII,Tiny OS (L4)
	19A05603e	Computer Vision	CO1:Apply fundamental image processing techniques required for computer vision (L3)
			CO2:Illustrate shape analysis (L2)

III-II			CO3:Evaluate boundary tracking techniques (L5)
			CO4:Apply chain codes and other region descriptors (L3)
			CO5:Develop applications using computer vision techniques (L6)
III-II	19A05602P	BIG DATA ANALYTICS LABORATORY	CO1:Configure Hadoop and perform File Management Tasks (L2)
			CO2:Apply MapReduce programs to real time issues like word count, CO3:weather dataset andsales of a company (L3)
			CO4:Critically analyze huge data set using Hadoop distributed file systems and MapReduce(L5)
			CO5:Apply different data processing tools like Pig, Hive and Spark.(L6)