

K S INSTITUTE OF TECHNOLOGY, BENGALURU
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
COURSE OUTCOME FOR 2020-24 Batch

Course: Transform Calculus, Fourier Series and Numerical Techniques (18MAT31)	
CO1	Use Laplace transform and inverse Laplace transform in solving differential/ integral equation arising in network analysis, control systems and other fields of engineering.
CO2	Demonstrate Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.
CO3	Make use of Fourier transform and Z-transform to illustrate discrete/continuous function arising in wave and heat propagation, signals and systems.
CO4	Solve first and second order ordinary differential equations arising in engineering problems using single step and multistep numerical methods.
CO5	Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.

Course: DATA STRUCTURES AND APPLICATIONS (18CS32)	
CO1	Use different types of data structures, operations and algorithms.
CO2	Apply searching and sorting operations on files .
CO3	Use stack, Queue, Lists, Trees and Graphs in problem solving.
CO4	Implement all data structures in a high-level language for problem solving.

Course: ANALOG AND DIGITAL ELECTRONICS (18CS33)	
CO1	Design and analyze application of analog circuits using photo devices, timer IC, power supply and regulator IC and op-amp.
CO2	Explain the basic principles of A/D and D/A conversion circuits and develop the same.
CO3	Simplify digital circuits using Karnaugh Map , and Quine-McClusky Methods
CO4	Explain Gates and flip flops and make us in designing different data processing circuits, registers and counters and compare the types.
CO5	Develop simple HDL programs

Course: COMPUTER ORGANIZATION (18CS34)	
CO1	Explain the basic organization of a computer system.
CO2	Demonstrate functioning of different sub systems, such as processor, Input/output, and memory.
CO3	Illustrate hardwired control and micro programmed control, pipelining, embedded and other computing systems.
CO4	Design and analyse simple arithmetic and logical units.

Course: SOFTWARE ENGINEERING (18CS35)	
CO1	Design a software system, component, or process to meet desired needs within realistic constraints.
CO2	Assess professional and ethical responsibility
CO3	Function on multi-disciplinary teams
CO4	Use the techniques, skills, and modern engineering tools necessary for engineering practice
CO5	Analyze, design, implement, verify, validate, implement, apply, and maintain software systems or parts of software systems

Course: DISCRETE MATHEMATICAL STRUCTURES (18CS36)	
CO1	Use propositional and predicate logic in knowledge representation and truth verification.
CO2	Demonstrate the application of discrete structures in different fields of computer science.
CO3	Solve problems using recurrence relations and generating functions.
CO4	Application of different mathematical proofs techniques in proving theorems in the courses.
CO5	Compare graphs, trees and their applications.

Course: ANALOG AND DIGITAL ELECTRONICS LABORATORY (18CSL37)	
CO1	Use appropriate design equations / methods to design the given circuit.
CO2	Examine and verify the design of both analog and digital circuits using simulators.
CO3	Make us of electronic components, ICs, instruments and tools for design and testing of circuits for the given the appropriate inputs. .
CO4	Compile a laboratory journal which includes; aim, tool/instruments/software/components used, design equations used and designs, schematics, program listing, procedure followed, relevant theory, results as graphs and tables, interpreting and concluding the findings.

Course: DATA STRUCTURES LABORATORY (18CSL38)	
CO1	Analyze and Compare various linear and non-linear data structures
CO2	Code, debug and demonstrate the working nature of different types of data structures and their Applications.
CO3	Implement, analyze and evaluate the searching and sorting algorithms
CO4	Choose the appropriate data structure for solving real world problems.

IV SEM

Course: COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS (18MAT41)	
CO1	Use the concepts of analytic function and complex potentials to solve the problems arising in electromagnetic field theory.
CO2	Utilize conformal transformation and complex integral arising in aerofoil theory, fluid flow visualization and image processing.
CO3	Apply discrete and continuous probability distributions in analyzing the probability models arising in engineering field.
CO4	Make use of the correlation and regression analysis to fit a suitable mathematical model for the statistical data.
CO5	Construct joint probability distributions and demonstrate the validity of testing the hypothesis.

Course: DESIGN AND ANALYSIS OF ALGORITHMS (18CS42)	
CO1	Describe computational solution to well known problems like searching, sorting etc.
CO2	Estimate the computational complexity of different algorithms.
CO3	Devise an algorithm using appropriate design strategies for problem solving.

Course: OPERATING SYSTEMS (18CS43)	
CO1	Demonstrate need for OS and different types of OS
CO2	Apply suitable techniques for management of different resources
CO3	Use processor, memory, storage and file system commands
CO4	Realize the different concepts of OS in platform of usage through case studies

Course: MICROCONTROLLER AND EMBEDDED SYSTEMS (18CS44)	
CO1	Describe the architectural features and instructions of ARM microcontroller
CO2	Apply the knowledge gained for Programming ARM for different applications.
CO3	Interface external devices and I/O with ARM microcontroller.
CO4	Interpret the basic hardware components and their selection method based on the characteristics and attributes of an embedded system.
CO5	Develop the hardware /software co-design and firmware design approaches..
CO6	Demonstrate the need of real time operating system for embedded system applications.

Course: OBJECT ORIENTED CONCEPTS (18CS45)	
CO1	Explain the object-oriented concepts and JAVA.
CO2	Develop computer programs to solve real world problems in Java.
CO3	Develop simple GUI interfaces for a computer program to interact with users, and to understand the event-based GUI handling principles using swings.

Course: DATA COMMUNICATION (18CS46)	
CO1	Explain the various components of data communication.
CO2	Explain the fundamentals of digital communication and switching.
CO3	Compare and contrast data link layer protocols.
CO4	Summarize IEEE 802.xx standards

Course: DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY (18CSL47)	
CO1	Design algorithms using appropriate design techniques (brute-force, greedy, dynamic programming, etc.)
CO2	Implement a variety of algorithms such as sorting, graph related, combinatorial, etc., in a high level language.
CO3	Analyze and compare the performance of algorithms using language features.
CO4	Apply and implement learned algorithm design techniques and data structures to solve real-world problems.

Course: MICROCONTROLLER AND EMBEDDED SYSTEMS LABORATORY (18CSL48)	
CO1	Develop and test program using ARM7TDMI/LPC2148
CO2	Conduct the following experiments on an ARM7TDMI/LPC2148 evaluation board using evaluation version of Embedded 'C' & Keil Uvision-4 tool/compiler.

V SEM

Course: MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY(18CS51)	
CO1	Define management, organization, entrepreneur, planning, staffing, ERP and outline their importance in entrepreneurship
CO2	Utilize the resources available effectively through ERP
CO3	Make use of IPRs and institutional support in entrepreneurship

Course: PYTHON PROGRAMMING(18AI52)	
CO1	Demonstrate proficiency in handling of loops and creation of functions.
CO2	Identify the methods to create and manipulate lists, tuples and dictionaries.
CO3	Discover the commonly used operations involving regular expressions and file system.
CO4	Interpret the concepts of Object-Oriented Programming as used in Python.
CO5	Determine the need for scraping websites and working with CSV, JSON and other file formats.

Course: DATABASE MANAGEMENT SYSTEM (18CS53)	
CO1	Identify, analyze and define database objects, enforce integrity constraints on a database using RDBMS.
CO2	Use Structured Query Language (SQL) for database manipulation.
CO3	Design and build simple database systems
CO4	Develop application to interact with databases.

Course: AUTOMATA THEORY AND COMPUTABILITY(18CS54)	
CO1	Acquire fundamental understanding of the core concepts in automata theory and Theory of Computation
CO2	Learn how to translate between different models of Computation (e.g., Deterministic and Non-deterministic and Software models).
CO3	Design Grammars and Automata (recognizers) for different language classes and become knowledgeable about restricted models of Computation (Regular, Context Free) and their relative powers.
CO4	Develop skills in formal reasoning and reduction of a problem to a formal model, with an emphasis on semantic precision and conciseness..
CO5	Classify a problem with respect to different models of Computation.

Course: PRINCIPLES OF ARTIFICIAL INTELLIGENCE(18AI55)	
CO1	Apply the knowledge of Artificial Intelligence to write simple algorithm for agents.
CO2	Apply the AI knowledge to solve problem on search algorithm.
CO3	Develop knowledge base sentences using propositional logic and first order logic.
CO4	Apply first order logic to solve knowledge engineering process.

Course: MATHEMATICS FOR MACHINE LEARNING (18AI56)	
CO1	Improve the skills and knowledge in linear algebra to get more out of machine learning.
CO2	Understand the vector calculus required to build many common machine learning techniques.
CO3	Learn the probability and distribution in statistics to build machine learning applications.
CO4	Learn the basic theoretical properties of optimization problems, for applications in machine learning

Course: ARTIFICIAL INTELLIGENCE LABORATORY (18AIL57)	
CO1	Implement and demonstrate AI algorithms.
CO2	Evaluate different algorithms.

Course: DBMS LABORATORY WITH MINI PROJECT (18CSL58)	
CO1	Create, Update and query on the database.
CO2	Demonstrate the working of different concepts of DBMS
CO3	Implement, analyze and evaluate the project developed for an application.

VI SEM

Course: MACHINE LEARNING(18AI61)	
CO1	Choose the learning techniques with this basic knowledge.
CO2	Apply effectively ML algorithms for appropriate applications.
CO3	Apply bayesian techniques and derive effectively learning rules.

Course: DIGITAL IMAGE PROCESSING (18AI62)	
CO1	Understand, Ascertain and describe the basics of image processing concepts through mathematical interpretation.
CO2	Apply image processing techniques in both the spatial and frequency (Fourier)domains.
CO3	Demonstrate image restoration process and its respective filters required.
CO4	Design image analysis techniques in the form of image segmentation and toevaluate the Methodologies for segmentation..
CO5	Conduct independent study and analysis of Image Enhancement techniques.

Course: JAVA FOR MOBILE APPLICATIONS (18AI63)	
CO1	Interpret the need for advanced Java concepts like enumerations and collections in developing modular and efficient programs
CO2	modular and efficient programs
CO3	Understand various application components in android.
CO4	Design efficient user interface using different layouts.

Course: WEB PROGRAMMING (18AI643)	
CO1	Adapt HTML and CSS syntax and semantics to build web pages.
CO2	Construct and visually format tables and forms using HTML and CSS
CO3	Develop Client-Side Scripts using JavaScript and Server-Side Scripts using PHP to generate and display the contents dynamically.
CO4	Appraise the principles of object oriented development using PHP
CO5	Inspect JavaScript frameworks like jQuery and Backbone which facilitates developer to focus on core features..

Course: SUPPLY CHAIN MANAGEMENT (18ME653)	
CO1	Understand the framework and scope of supply chain management.
CO2	Build and manage a competitive supply chain using strategies, models, techniques and information technology.
CO3	Plan the demand, inventory and supply and optimize supply chain network.
CO4	Understand the emerging trends and impact of IT on Supply chain.

Course: MACHINE LEARNING LABORATORY (18AI66)	
CO1	Implement and demonstration of ML algorithms.
CO2	Evaluation of different algorithms.

Course: DIGITAL IMAGE PROCESSING LABORATORY WITH MINI PROJECT (18AIL67)	
CO1	Image Segmentation algorithm development
CO2	Image filtering in spatial and frequency domain.
CO3	Morphological operations in analyzing image structures

Course: MOBILE APPLICATION DEVELOPMENT LABORATORY (18AIL68)	
CO1	Create, test and debug Android application by setting up Android development environment.
CO2	Implement adaptive, responsive user interfaces that work across a wide range of devices.
CO3	Infer long running tasks and background work in Android applications.
CO4	Demonstrate methods in storing, sharing and retrieving data in Android applications.
CO5	Infer the role of permissions and security for Android applications.


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