

Gopalan College of Engineering & Management
Dept of CSE - Regulation 2018

Year:II

SEM:III

Course code:18MAT31		Course Name: TRANSFORM CALCULUS, FOURIER SERIES AND NUMERICAL TECHNIQUES
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
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 code:18MATDIP31		Course: ADDITIONAL MATHEMATICS-I
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Apply concepts of complex numbers and vector algebra to analyze the problems arising in related area.	
CO2	Use derivatives and partial derivatives to calculate rate of change of multivariate functions.	
CO3	Analyze position, velocity and acceleration in two and three dimensions of vector valued functions.	
CO4	Learn techniques of integration including the evaluation of double and triple integrals.	
CO5	Identify and solve first order ordinary differential equations.	

Course code :18CS32		Course : DATA STRUCTURES AND APPLICATIONS
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
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 code:18CS33		Course: ANALOG AND DIGITAL ELECTRONICS
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
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 code: 18CS34		Course :COMPUTER ORGANIZATION
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
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 Code: 18CS35		Course :SOFTWARE ENGINEERING
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Design a software system, component, or process to meet desired needs within realistic constraints.	
CO2	Assess professional and ethical responsibility	

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 code :18CS36		Course :DISCRETE MATHEMATICAL STRUCTURES
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CSL37		Course :ANALOG AND DIGITAL ELECTRONICS LABORATORY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 use 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 code:18CSL38		Course:DATA STRUCTURES LABORATORY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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	

Year:II		SEM:IV
Course code:18MAT41		Course:COMPLEX ANALYSIS, PROBABILITY AND STATISTICAL METHODS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18MATDIP41		Course: ADDITIONAL MATHEMATICS – II
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Solve systems of linear equations using matrix algebra.	
CO2	Apply the knowledge of numerical methods in modelling and solving engineering problems.	
CO3	Make use of analytical methods to solve higher order differential equations.	
CO4	Classify partial differential equations and solve them by exact methods.	
CO5	Apply elementary probability theory and solve related problems.	

Course code:18CS42		Course:DESIGN AND ANALYSIS OF ALGORITHMS
Outcomes		
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 code:18CS43		Course:OPERATING SYSTEMS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CS44		Course:MICROCONTROLLER AND EMBEDDED SYSTEMS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CS45		Course: OBJECT ORIENTED CONCEPTS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CS46		Course:DATA COMMUNICATION
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CSL47		Course:DESIGN AND ANALYSIS OF ALGORITHMS LABORATORY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CSL48		Course:MICROCONTROLLER AND EMBEDDED SYSTEMS LABORATORY
Outcomes		
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.	

Year:III		SEM:V
Course code:18CS51		Course: MANAGEMENT AND ENTREPRENEURSHIP FOR IT INDUSTRY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CS52		Course: COMPUTER NETWORKS AND SECURITY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain principles of application layer protocols	
CO2	Recognize transport layer services and infer UDP and TCP protocols	
CO3	Classify routers, IP and Routing Algorithms in network layer	
CO4	Understand the Wireless and Mobile Networks covering IEEE 802.11 Standard	
CO5	Describe Multimedia Networking and Network Management	

Course code:18CS53		Course:DATABASE MANAGEMENT SYSTEM
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	

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 code:18CS54		Course:AUTOMATA THEORY AND COMPUTABILITY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CS55		Course:APPLICATION DEVELOPMENT USING PYTHON
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CS56		Course:UNIX PROGRAMMING
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain Unix Architecture, File system and use of Basic Commands	
CO2	Illustrate Shell Programming and to write Shell Scripts	
CO3	Categorize, compare and make use of Unix System Calls	
CO4	Build an application/service over a Unix system.	

Course code:18CSL57		Course:COMPUTER NETWORK LABORATORY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Analyze and Compare various networking protocols.	
CO2	Demonstrate the working of different concepts of networking.	
CO3	Implement, analyze and evaluate networking protocols in NS2 / NS3 and JAVA programming language	

Course code:18CSL58		Course:DBMS LABORATORY WITH MINI PROJECT
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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.	

Year:III		SEM:VI
Course code:18CS61		Course: SYSTEM SOFTWARE AND COMPILERS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain system software	
CO2	Design and develop lexical analyzers, parsers and code generators	
CO3	Utilize lex and yacc tools for implementing different concepts of system software	

Course code:18CS62		Course:COMUTER GRAPHICS AND VISUALIZATION
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Design and implement algorithms for 2D graphics primitives and attributes.	
CO2	Illustrate Geometric transformations on both 2D and 3D objects.	
CO3	Apply concepts of clipping and visible surface detection in 2D and 3D viewing, and Illumination Models.	
CO4	Decide suitable hardware and software for developing graphics packages using OpenGL.	

Course code:18CS63		Course:WEB TECHNOLOGY AND ITS APPLICATIONS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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 code:18CS641		Course:DATA MINING AND DATA WAREHOUSING
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CO No.	COURSE OUTCOMES (Cos)
	At the end the course student will able to
CO1	Identify data mining problems and implement the data warehouse
CO2	Write association rules for a given data pattern.
CO3	Choose between classification and clustering solution.

Course code:18CS642		Course: OBJECT ORIENTED MODELING AND DESIGN
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Describe the concepts of object-oriented and basic class modelling.	
CO2	Draw class diagrams, sequence diagrams and interaction diagrams to solve problems.	
CO3	Choose and apply a befitting design pattern for the given problem.	

Course code:18CS643		Course: CLOUD COMPUTING AND ITS APPLICATIONS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain cloud computing, virtualization and classify services of cloud computing	
CO2	Illustrate architecture and programming in cloud	
CO3	Describe the platforms for development of cloud applications and List the application of cloud.	

Course code:18CS644		Course: ADVANCED JAVA AND J2EE
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Interpret the need for advanced Java concepts like enumerations and collections in developing modular and efficient programs	
CO2	Build client-server applications and TCP/IP socket programs	
CO3	Illustrate database access and details for managing information using the JDBC API	
CO4	Describe how servlets fit into Java-based web application architecture	
CO5	Develop reusable software components using Java Beans	

Course code:18CS645		Course: SYSTEM MODELLING AND SIMULATION
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain the system concept and apply functional modeling method to model the activities of a static system	
CO2	Describe the behavior of a dynamic system and create an analogous model for a dynamic system;	
CO3	Simulate the operation of a dynamic system and make improvement according to the simulation results.	

Course code:18CS651		Course: MOBILE APPLICATION DEVELOPMENT
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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	Analyze performance of android applications and understand the role of permissions and security	
CO6	Describe the steps involved in publishing Android application to share with the world	

Course code:18CS652		Course: INTRODUCTION TO DATA STRUCTURES AND ALGORITHM
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Identify different data structures in C programming language	
CO2	Appraise the use of data structures in problem solving	
CO3	Implement data structures using C programming language.	

Course code:18CS653		Course: PROGRAMMING IN JAVA
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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	

Course code:18CS654		Course: INTRODUCTION TO OPERATING SYSTEM
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain the fundamentals of operating system	
CO2	Comprehend process management, memory management and storage management.	
CO3	Familiar with various types of operating systems	

Course code:18CSL66		Course: SYSTEM SOFTWARE LABORATORY
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Implement and demonstrate Lexer's and Parser's	
CO2	Evaluate different algorithms required for management, scheduling, allocation and communication used in operating system.	

Course code:18CSL67		Course: COMPUTER GRAPHICS LABORATORY WITH MINI PROJECT
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Apply the concepts of computer graphics	
CO2	Implement computer graphics applications using OpenGL	
CO3	Animate real world problems using OpenGL	

Course code:18CSMP68		Course: MOBILE APPLICATION DEVELOPMENT
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
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.	

Year:IV		SEM:VII
Course code:18CS71		Course: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Appraise the theory of Artificial intelligence and Machine Learning.	
CO2	Illustrate the working of AI and ML Algorithms.	
CO3	Demonstrate the applications of AI and ML.	

Course code:18CS72		Course: BIG DATA AND ANALYTICS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Understand fundamentals of Big Data analytics.	
CO2	Investigate Hadoop framework and Hadoop Distributed File system.	
CO3	Illustrate the concepts of NoSQL using MongoDB and Cassandra for Big Data.	
CO4	Demonstrate the MapReduce programming model to process the big data along with Hadoop tools.	
CO5	Use Machine Learning algorithms for real world big data.	
CO6	Analyze web contents and Social Networks to provide analytics with relevant visualization tools.	

Course code:18CS731		Course: SOFTWARE ARCHITECTURE AND DESIGN PATTERNS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Design and implement codes with higher performance and lower complexity	
CO2	· Be aware of code qualities needed to keep code flexible	
CO3	· Experience core design principles and be able to assess the quality of a design with respect to these principles.	
CO4	· Capable of applying these principles in the design of object oriented systems.	
CO5	· Demonstrate an understanding of a range of design patterns. Be capable of comprehending a design presented using this vocabulary.	
CO6	· Be able to select and apply suitable patterns in specific contexts	

Course code:18CS732		Course: HIGH PERFORMANCE COMPUTING
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Illustrate the key factors affecting performance of CSE applications	
CO2	Illustrate mapping of applications to high-performance computing systems	
CO3	Apply hardware/software co-design for achieving performance on real-world applications	

Course code:18CS733		Course: ADVANCED COMPUTER ARCHITECTURES
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain the concepts of parallel computing and hardware technologies	
CO2	Compare and contrast the parallel architectures	
CO3	Illustrate parallel programming concepts	

Course code:18CS734		Course: USER INTERFACE DESIGN
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Design the User Interface, design, menu creation, windows creation and connection between menus and windows	

Course code:18CS741		Course: DIGITAL IMAGE PROCESSING
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain fundamentals of image processing	
CO2	Compare transformation algorithms	
CO3	Contrast enhancement, segmentation and compression techniques	

Course code:18CS742		Course: NETWORK MANAGEMENT
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Analyze the issues and challenges pertaining to management of emerging network technologies such as wired/wireless networks and high-speed internets.	
CO2	Apply network management standards to manage practical networks	
CO3	Formulate possible approaches for managing OSI network model.	
CO4	Use on SNMP for managing the network	
CO5	Use RMON for monitoring the behavior of the network	
CO6	Identify the various components of network and formulate the scheme for the managing them	

Course code:18CS743		Course: NATURAL LANGUAGE PROCESSING
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Analyze the natural language text.	
CO2	Define the importance of natural language.	
CO3	Understand the concepts Text mining.	
CO4	Illustrate information retrieval techniques.	

Course code:18CS744		Course: CRYPTOGRAPHY
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Define cryptography and its principles	
CO2	Explain Cryptography algorithms	
CO3	Illustrate Public and Private key cryptography	
CO4	Explain Key management, distribution and certification	
CO5	Explain authentication protocols	
CO6	Tell about IPSec	

Course code:18CS745		Course: ROBOTIC PROCESS AUTOMATION DESIGN & DEVELOPMENT
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	To understand Basic Programming concepts and the underlying logic/structure	
CO2	To Describe RPA , where it can be applied and how its implemented	
CO3	To Describe the different types of variables, Control Flow and data manipulation techniques	
CO4	To Understand Image, Text and Data Tables Automation	
CO5	To Describe automation to Email and various types of Exceptions and strategies to handle	

Course code:18CS751		Course: INTRODUCTION TO BIG DATA ANALYTICS
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Explain the importance of data and data analysis	
CO2	Interpret the probabilistic models for data	
CO3	Define hypothesis, uncertainty principle	
CO4	Evaluate regression analysis	

Course code:18CS752		Course: PYTHON APPLICATION PROGRAMMING
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.	
CO2	Demonstrate proficiency in handling Strings and File Systems.	
CO3	Create, run and manipulate Python Programs using core data structures like Lists, Dictionaries and use Regular Expressions.	
CO4	Interpret the concepts of Object-Oriented Programming as used in Python.	
CO5	Implement exemplary applications related to Network Programming, Web Services and Databases in Python.	

Course code:18CS753		Course: INTRODUCTION TO ARTIFICIAL INTELLIGENCE
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Identify the AI based problems	
CO2	Apply techniques to solve the AI problems	
CO3	Define learning and explain various learning techniques	
CO4	Discuss on expert systems	

Course code:18CS754		Course: INTRODUCTION TO DOT NET FRAMEWORK FOR APPLICATION
CO No.	COURSE OUTCOMES (Cos)	
At the end the course student will able to		
CO1	Build applications on Visual Studio .NET platform by understanding the syntax and semantics of C#	
CO2	Demonstrate Object Oriented Programming concepts in C# programming language	
CO3	Design custom interfaces for applications and leverage the available built-in interfaces in building complex applications.	
CO4	Illustrate the use of generics and collections in C#	
CO5	Compose queries to query in-memory data and define own operator behaviour	

Course code:18CSL76		Course: ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING LABORATORY
CO No.	COURSE OUTCOMES (Cos)	

	At the end the course student will able to
CO1	Implement and demonstrate AI and ML algorithms.
CO2	Evaluate different algorithms.

Year:IV		SEM:VIII
Course code:18CS81		Course: INTERNET OF THINGS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Interpret the impact and challenges posed by IoT networks leading to new architectural models.	
CO2	Compare and contrast the deployment of smart objects and the technologies to connect them to network.	
CO3	· Appraise the role of IoT protocols for efficient network communication.	
CO4	· Elaborate the need for Data Analytics and Security in IoT.	
CO5	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.	

Course code:18CS821		Course: MOBILE COMPUTING
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Explain state of art techniques in wireless communication.	
CO2	Discover CDMA, GSM, Mobile IP, Wimax	
CO3	Demonstrate program for CLDC, MIDP let model and security concerns	

Course code:18CS822		Course: STORAGE AREA NETWORKS
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Identify key challenges in managing information and analyze different storage networking technologies and virtualization	
CO2	Explain components and the implementation of NAS	
CO3	Describe CAS architecture and types of archives and forms of virtualization	
CO4	Illustrate the storage infrastructure and management activities	

Course code:18CS823		Course: NOSQL DATABASE
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Define, compare and use the four types of NoSQL Databases (Document-oriented, Key/Value Pairs, Column-oriented and Graph).	
CO2	Demonstrate an understanding of the detailed architecture, define objects, load data, query data and performance tune Column-oriented NoSQL databases.	
CO3	Explain the detailed architecture, define objects, load data, query data and performance tune Document-oriented NoSQL databases.	

Course code:18CS824		Course: MULTICORE ARCHITECTURE AND PROGRAMMING
CO No.	COURSE OUTCOMES (Cos)	
	At the end the course student will able to	
CO1	Identify the limitations of ILP and the need for multicore architectures	
CO2	Define fundamental concepts of parallel programming and its design issues	
CO3	Solve the issues related to multiprocessing and suggest solutions	
CO4	Make out the salient features of different multicore architectures and how they exploit parallelism	
CO5	Demonstrate the role of OpenMP and programming concept	