Artificial Intelligence & Data Science Department

Course Outcomes (COs)

S.E. Artificial Intelligence & Data Science (2019 Pattern)

Course Code: 210241	
Name of Course: Discrete Mathematics	
CO1	Apply proof techniques and solve the problems using set theory.
CO2	Apply proof techniques and solve the problems using set theory.
CO3	Devise mathematical models using graph theory
CO4	Analyze types of relations and functions to provide solution to computational problems.
CO5	Identify techniques of number theory and its application.
CO6	Identify and apply the fundamental algebraic structures.

Course Code: 210242	
Name of Course: Fundamentals of Data Structures	
CO1	Design the algorithms to solve the programming problems, identify appropriate algorithmic strategy for specific application, and analyze the time and space complexity.
CO2	Discriminate the usage of various structures, Design/Program/Implement the appropriate data structures; use them in implementations of abstract data types and Identity the appropriate data structure in approaching the problem solution.
CO3	Demonstrate use of sequential data structures- Array and Linked lists to store and process data.
CO4	Understand the computational efficiency of the principal algorithms for searching and sorting and choose the most efficient one for the application.
CO5	Compare and contrast different implementations of data structures (dynamic and static).
CO6	Understand, Implement and apply principles of data structures-stack and queue to solve computational problems.

Course Code: 210243
Name of Course: Object Oriented Programming(OOP)

CO1	Apply constructs- sequence, selection and iteration; classes and objects, inheritance, use of predefined classes from libraries while developing software.
CO2	Design object-oriented solutions for small systems involving multiple objects.
CO3	Use virtual and pure virtual function and complex programming situations.
CO4	Apply object-oriented software principles in problem solving.
CO5	Analyze the strengths of object-oriented programming.
CO6	Develop the application using object oriented programming language(C++).

Course Code: 210244	
Name of Course: Computer Graphics	
CO1	Identify the basic terminologies of Computer Graphics and interpret the mathematical foundation of the concepts of computer graphics.
CO2	Illustrate the concepts of windowing and clipping and apply various algorithms to fill and clip polygons .
CO3	Understand and apply the core concepts of computer graphics, including transformation in two and three dimensions, viewing and projection.
CO4	Understand the concepts of color models, lighting, shading models and hidden surface elimination
CO5	"Create effective programs using concepts of curves, fractals, animation and gaming. Course Contents
CO6	Create effective programs using concepts of curves, fractals, animation and gaming.

Course Code: 217521	
Name of Course: Operating Systems	
CO1	Enlist functions of OS and types of system calls
CO2	Apply process scheduling algorithms to solve a given problem
CO3	Illustrate deadlock prevention, avoidance and recovery
CO4	Explain memory management technique
CO5	Illustrate I/O and file management policies
CO6	Describe Linux process management

Course Code: 217528	
Name of Course: Statistics	
CO1	Identify the use of appropriate statistical term to describe data.
CO2	Understand the concept of frequency distribution and measures of central tendency.
CO3	Apply the knowledge of measures of dispersion, skewness, kurtosis, correlation and regression.
CO4	Apply the knowledge of probability distribution.
CO5	Understand the concept inferential statistics.
CO6	Apply the knowledge of hypothesis testing in inferential statistics.

Course Code: 210252	
Name of Course: Software Engineering	
CO1	Understand the principles of Software Engineering and analyze Software Process Models.
CO2	Analyze and validate software requirements
CO3	Construct software of high quality – software that is reliable, and that is reasonably easy to understand, modify and maintain efficient, reliable, robust and cost-effective software solutions by proper understanding of project estimation and scheduling.
CO4	Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.
CO5	Identify and handle risk management and software configuration management.
CO6	Utilize knowledge of software testing approaches, approaches to verification and validation.

Course Code: 210253	
Name of Course: DSA	
CO1	Understand Hashing Data Structure and its real time applications.
CO2	Understand Tree Data Structure and its real time applications.
CO3	Understand Graph Data Structure and its real time applications.
CO4	Analyze the algorithmic solutions for resource requirements and optimization.
CO5	Use efficient indexing methods and multiway search techniques to store and maintain

	data.
CO6	Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.

Course Code: 217529	
Name of Course: IOT	
CO1	Have a thorough understanding of the structure, function and characteristics of computer systems and Understand the structure of various number systems and its application in digital design.
CO2	Develop the skill set to build IoT systems and sensor interfacing.
CO3	Explain the concept of Internet of Things and identify the technologies that make up the Internet of Things.
CO4	Analyze trade-offs in interconnected wireless embedded device networks. Select appropriate Protocols for IoT Solutions.
CO5	Design a simple IoT system comprising sensors by analyzing the requirements of IoT Application.
CO6	Identify the Application of IoT in automation of Commercial and Real World examples.

Course Code: 217530	
Name of Course: MIS	
CO1	Explain the concepts of Management Information System and Business Intelligence for MIS.
CO2	Illustrate the need of information systems in global business and ethical issues.
CO3	List the IT infrastructure components and explain security in the Information System.
CO4	Demonstrate the importance of project management and extend its use in the International Information system.
CO5	Illustrate the concepts of decision support systems for business applications
CO6	Relate Artificial Intelligence and Data Science for Management Information System.

Artificial Intelligence & Data Science Department

Course Outcomes (COs)

T.E. Artificial Intelligence & Data Science (2019 Pattern)

Course Code: 310241	
Name of Course: Database Management Systems	
CO1	Analyze and design Database Management System using ER model
CO2	Implement database queries using database languages
CO3	Normalize the database design using normal forms
CO4	Apply Transaction Management concepts in real-time situations
CO5	Use NoSQL databases for processing unstructured data
CO6	Differentiate between Complex Data Types and analyze the use of appropriate data types

Course Code: 317521	
Name of Course: Computer Networks	
CO1	Summarize fundamental concepts of Computer Networks, architectures, protocols and technologies
CO2	Analyze the working of physical layer protocols
CO3	Analyze the working of different routing protocols and mechanisms
CO4	Implement client-server applications using sockets
CO5	Illustrate role of application layer with its protocols, client-server architectures
CO6	Summarize concepts of MAC and Ethernet

Course Code: 310253	
Name of Course: Artificial Intelligence	
CO1	Identify and apply suitable Intelligent agents for various AI applications
CO2	Build smart system using different informed search / uninformed search or heuristic approaches
CO3	Identify knowledge associated and represent it by ontological engineering to plan a strategy to solve given problem
CO4	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.
CO5	Implement ideas underlying modern logical inference systems
CO6	Represent complex problems with expressive yet carefully constrained language of representation

Course Code: 317531	
Name of Course: Artificial Neural Network	
CO1	Understand the basic features of neural systems and be able to build the neural model.
CO2	Perform the training of neural networks using various learning rules
CO3	Grasping the use of Associative learning Neural Network
CO4	Describe the concept of Competitive Neural Networks
CO5	Implement the concept of Convolution Neural Networks and its models
CO6	Use a new tool /tools to solve a wide variety of real-world problems

Course Code: 310252	
Name of Course: Web technology	
CO1	Implement and analyse the behaviour of web pages using HTML and CSS
CO2	Apply the client side technologies for web development
CO3	Analyze the concepts of Servlet and JSP
CO4	Analyze the Web services and frameworks
CO5	Apply the server side technologies for web development
CO6	Create the effective web applications for business functionalities using latest web development platforms

Course Code: 310245(B)	
Name of Course: Human Computer Interface	
CO1	Design effective Human-Computer-Interfaces for all kinds of users
CO2	Apply and analyze the user-interface with respect to golden rules of interface
CO3	Design good web user interface for health care application
CO4	Implement and evaluate User Interface Design for e-shopping website
CO5	Analyze the scope of HCI in various paradigms like ubiquitous computing, virtual reality, multi-media, World wide web related environments
CO6	Enlist and evaluate HCI for mobile and handled devices

Course Code: 317529	
Name of Course: Data Science	
CO1	Analyze needs and challenges for Data Science
CO2	Apply statistics for Data Analytics
CO3	Apply the lifecycle of Data analytics to real world problems
CO4	Implement Data Analytics using Python programming
CO5	Implement data visualization using visualization tools in Python programming
CO6	Design and implement Big Databases using the Hadoop ecosystem

Course Code: 317530	
Name of Course: Cyber Security	
CO1	Gauge the security protections and limitations provided by today's technology
CO2	Identify cyber security threats.
CO3	Analyze threats in order to protect or defend it in cyberspace from cyber-attacks.
CO4	Build appropriate security solutions against cyber-attacks
CO5	Build appropriate security solutions through firewall.
CO6	To know the laws of Indian Perspective for Cyber Forensic, Hacking& its countermeasures

Course Code: 310254(D)	
Name of Course: Software Modeling and Architecture	
CO1	Analyze Requirement modeling and use case modeling for Online shopping system
CO2	Design and analyze an application using UML modeling as fundamental tool
CO3	Design UML dynamic Diagrams of for Real life applications.
CO4	Use appropriate architectural styles and software design patterns
CO5	Do architectural designs for air traffic control and transform it into proper model and document it.
CO6	Analyze design patterns for any real time application