ST. JOSEPH'S COLLEGE OF ENGINEERING AND TECHNOLOGY, THANJAVUR

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE COURSE OUTCOME

REGULATION : 2021				
S.No	**Sem**	**Course Code**	**Course Name**	**Course Outcome**
1	I	HS3152	Professional English - I	CO1:To use appropriate words in a professional context
				CO2:To gain understanding of basic grammatic structures and use them in right context.
				CO3:To read and infer the denotative and connotative meanings of technical texts
				CO4:To write definitions, descriptions, narrations and essays on various topics
2		MA3151	Matrices and Calculus	CO1:Use the matrix algebra methods for solving practical problems.
				CO2:Apply differential calculus tools in solving various application problems.
				CO3:Able to use differential calculus ideas on several variable functions.
				CO4:Apply different methods of integration in solving practical problems.
				CO5:Apply multiple integral ideas in solving areas, volumes and other practical problems.
3		PH3151	Engineering Physics	CO1:Understand the importance of mechanics.
				CO2:Express their knowledge in electromagnetic waves.
				CO3:Demonstrate a strong foundational knowledge in oscillations, optics and lasers.
				CO4:Understand the importance of quantum physics.
				CO5:Comprehend and apply quantum mechanical principles towards the formation of energy bands.
4		CY3151	Engineering Chemistry	CO1:To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water.
				CO2:To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
				CO3:To apply the knowledge of phase rule and composites for material selection requirements.
				CO4:To recommend suitable fuels for engineering processes and applications.
				CO5:To recognize different forms of energy resources and apply them for suitable applications in energy sectors.
5		GE3151	Problem Solving and Python Programming	CO1: Develop algorithmic solutions to simple computational problems.
				CO2: Develop and execute simple Python programs.
				CO3: Write simple Python programs using conditionals and loops for solving problems.
				CO4: Decompose a Python program into functions.
				CO5: Represent compound data using Python lists, tuples, dictionaries etc.
				CO6: Read and write data from/to files in Python programs.
6		HS3252	Professional English - II	CO1:To compare and contrast products and ideas in technical texts.
				CO2:To identify and report cause and effects in events, industrial processes through technical texts
				CO3:To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
				CO4:To present their ideas and opinions in a planned and logical manner
				CO5:To draft effective resumes in the context of job search.

7	II	MA3251	Statistics and Numerical Methods	CO1:Apply the concept of testing of hypothesis for small and large samples in real life problems.
				CO2:Apply the basic concepts of classifications of design of experiments in the field of agriculture.
				CO3:Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
				CO4:Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
				CO5:Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
8		PH3256	Physics for Information Science	CO1:gain knowledge on classical and quantum electron theories, and energy band structures
				CO2:acquire knowledge on basics of semiconductor physics and its applications in various devices
				CO3:get knowledge on magnetic properties of materials and their applications in data storage,
				CO4:have the necessary understanding on the functioning of optical materials for optoelectronics
				CO5:understand the basics of quantum structures and their applications and basics of quantum Computing
9		BE3251	Basic Electrical and Electronics Engineering	CO1: Compute the electric circuit parameters for simple problems
				CO2: Explain the working principle and applications of electrical machines
				CO3: Analyze the characteristics of analog electronic devices
				CO4: Explain the basic concepts of digital electronics
				CO5: Explain the operating principles of measuring instruments
10		GE3251	Engineering Graphics	CO1:Use BIS conventions and specifications for engineering drawing.
				CO2:Construct the conic curves, involutes and cycloid.
				CO3:Solve practical problems involving projection of lines.
				CO4:Draw the orthographic, isometric and perspective projections of simple solids.
				CO5:Draw the development of simple solids
11		AD3251	Data Structures Design	CO1: Explain abstract data types
				CO2: Design, implement, and analyse linear data structures, such as lists, queues, and stacks, according to the needs of different
				CO3: Design, implement, and analyse efficient tree structures to meet requirements such as searching, indexing, and sorting
				CO4: Model problems as graph problems and implement efficient graph algorithms to solve them
12	III	MA3354	Discrete Mathematics	CO1:Have knowledge of the concepts needed to test the logic of a program.
				CO2:Have an understanding in identifying structures on many levels.
				CO3:Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
				CO4:Be aware of the counting principles.
				CO5:Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.
13		CS3351	Digital Principles and Computer Organization	CO1 : Design various combinational digital circuits using logic gates
				CO2 : Design sequential circuits and analyze the design procedures
				CO3 : State the fundamentals of computer systems and analyze the execution of an instruction
				CO4 : Analyze different types of control design and identify hazards
				CO5 : Identify the characteristics of various memory systems and I/O communication

14		AD3391	Database Design And Management	CO1: Understand the database development life cycle and apply conceptual modeling
				CO2: Apply SQL and programming in SQL to create, manipulate and query the database
				CO3: Apply the conceptual-to-relational mapping and normalization to design relational database
				CO4: Determine the serializability of any non-serial schedule using concurrency techniques
				CO5: Apply the data model and querying in Object-relational and No-SQL databases.
15		AD3351	Design And Analysis Of Algorithms	CO1: Analyze the efficiency of recursive and non-recursive algorithms mathematically
				CO2: Analyze the efficiency of brute force, divide and conquer, decrease and conquer, Transform and conquer algorithmic techniques
				CO3: Implement and analyze the problems using dynamic programming and greedy algorithmic techniques.
				CO4: Solve the problems using iterative improvement techniques for optimization.
				CO5:Compute the limitations of algorithmic power and solve the problems using backtracking and branch and bound techniques.
16	IV	AD3301	Data Exploration And Visualization	CO1:Understand the fundamentals of exploratory data analysis
				CO2: Implement the data visualization using Matplotlib
				CO3: Perform univariate data exploration and analysis.
				CO4:Apply bivariate data exploration and analysis.
				CO5:Use Data exploration and visualization techniques for multivariate and time series data.
17		AL3391	Artificial Intelligence	CO1: Explain intelligent agent frameworks
				CO2:Apply problem solving techniques
				CO3: Apply game playing and CSP techniques
				CO4: Perform logical reasoning
				CO5: Perform probabilistic reasoning under uncertainty
18		MA3391	Probability and statistics	CO1: Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can
				CO2: Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
				CO3: Apply the concept of testing of hypothesis for small and large samples in real life problems.
				CO4: Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control
				CO5: Have the notion of sampling distributions and statistical techniques used in engineering and management problems

19	IV	AL3452	Operating Systems	CO1 : Analyze various scheduling algorithms and process synchronization.
				CO2 : Explain deadlock, prevention and avoidance algorithms.
				CO3 : Compare and contrast various memory management schemes.
				CO4 : Explain the functionality of file systems I/O systems, and Virtualization
				CO5 : Compare iOS and Android Operating Systems.
20		AL3451	Machine Learning	CO1: Explain the basic concepts of machine learning.
				CO2: Construct supervised learning models.
				CO3: Construct unsupervised learning algorithms.
				CO4: Evaluate and compare different models
21		AD3491	Fundamentals of Data Science And Analytics	CO1: Explain the data analytics pipeline
				CO2: Describe and visualize data
				CO3: Perform statistical inferences from data
				CO4: Analyze the variance in the data
				CO5: Analyze the variance in the data
22		GE3451	Environmental Sciences and Sustainability	CO1:To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
				CO2:To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
				CO3:To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
				CO4:To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
				CO5:To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.
23	V	CS3591	Computer Networks	CO 1: Explain the basic layers and its functions in computer networks.
				CO 2: Understand the basics of how data flows from one node to another.
				CO 3: Analyze routing algorithms.
				CO 4: Describe protocols for various functions in the network.
				CO 5: Analyze the working of various application layer protocols.
24		AD3501	Deep Learning	CO1:Explain the basics in deep neural networks
				CO2: Apply Convolution Neural Network for image processing
				CO3: Apply Recurrent Neural Network and its variants for text analysis
				CO4:Apply model evaluation for various applications
				CO5: Apply autoencoders and generative models for suitable applications
25		CW3551	Data And Information Security	CO1: Understand the basics of data and information security
				CO2:Understand the legal, ethical and professional issues in information security
				CO3: Understand the various authentication schemes to simulate different applications.
				CO4: Understand various security practices and system security standards
				CO5: Understand the Web security protocols for E-Commerce applications
				CO1: Explain the foundations of distributed systems
				CO2: Solve synchronization and state consistency problems

26		CS3551	Distributed Computing	CO3 Use resource sharing techniques in distributed systems
				CO4: Apply working model of consensus and reliability of distributed systems
				CO5: Explain the fundamentals of cloud computing
27		CCS334	Bigdata Analytics	CO1: Describe big data and use cases from selected business domains
				CO2: Explain NoSQL big data management.
				CO3: Install, configure, and run Hadoop and HDFS.
				CO4: Perform map reduce analytics using Hadoop
				CO5: Use Hadoop-related tools such as HBase, Cassandra, Pig, Hive for big data analytics

28	V	CCS335	Cloud Computing	CO1: Understand the design challenges in the cloud.
				CO2: Apply the concept of virtualization and its types.
				CO3: Experiment with virtualization of hardware resources and Docker.
				CO4: Develop and deploy services on the cloud and set up a cloud environment.
				CO5: Explain security challenges in the cloud environment.
29		CCW331	Business Analytics	CO1: Explain the real world business problems and model with analytical solutions.
				CO2: Identify the business processes for extracting Business Intelligence
				CO3 : Apply predictive analytics for business fore-casting
				CO4: Apply analytics for supply chain and logistics management
				CO5: Use analytics for marketing and sales.
30		AD3512	Summer Internship	CO1: Industry Practices, Processes,Techniques, technology, automation and other core aspects of software industry
				CO2: Analyze, Design solutions to complex business problems
				CO3: Build and deploy solutions for target platform
				CO4: Preparation of Technical reports and presentation