DEPARTMENT OF ARTIFICAL INTELLIGENCE AND DATA SCIENCE(2021 REGULATION)

COURSE OUTCOMES - Regulation– 2021 – UG

YEAR/SEMESTER: I/I	
C101/HS3151 PROFESSIONAL ENGLISH - I	
C101.1	To listen and comprehend complex academic texts
C101.2	To read and infer the denotative and connotative meaning of technical texts
C101.3	To write definitions, descriptions, narrations and essays on various topics
C101.4	To speak fluently and accurately in formal and informal communicative contexts
C101.5	To express their opinions effectively in both oral and written medium of communication

C102/MA3151 - MATRICES AND CALCULUS	
C102.1	Use the matrix algebra methods for solving practical problems
C102.2	Apply differential calculus tools in solving various application problems
C102.3	Able to use differential calculus ideas on several variable functions
C102.4	Apply different methods of integration in solving practical problems
C102.5	Apply multiple integral ideas in solving area, volumes and other practical problems

C104/CY3151 - ENGINEERING CHEMISTRY	
C104.1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water
C104.2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications
C104.3	To apply the knowledge of phase rule and composites for material selection requirements
C104.4	To recommend suitable fuels for engineering processes and applications
C104.5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors.

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C105/GE3151 - PROBLEM SOLVING AND PHYTHON PROGRAMMING	
C105.1	Develop algorithmic solutions to simple computational problems.
C105.2	Develop and execute simple Python programs.
C105.3	Write simple Python programs using conditionals and looping for solving problems.
C105.4	Decompose a Python program into functions.
C105.5	Represent compound data using Python lists, tuples, dictionaries etc.
C105.6	Read and write data from/to files in Python programs.

C106/GE3171 - PROBLEM SOLVING AND PHYTHON PROGRAMMING LABORATORY	
C106.1	Develop algorithmic solutions to simple computational problems
C106.2	Develop and execute simple Python programs.
C106.3	Implement programs in Python using conditionals and loops for solving problems.
C106.4	Deploy functions to decompose a Python program.
C106.5	Process compound data using Python data structures.
C106.6	Utilize Python packages in developing software applications.

C107/ BS3171-PHYSICS AND CHEMISTRY LABORATORY	
CHEMISTRY LABORATORY	
C107.1	To analyse the quality of water samples with respect to their acidity, alkalinity,hardness and DO
C107.2	To determine the amount of metal ions through volumetric and spectroscopic techniques
C107.3	To analyse and determine the composition of alloys.
C107.4	To learn simple method of synthesis of nanoparticles
C107.5	To quantitatively analyze the impurities in solution by electroanalytical techniques

PHYSICS LABORATORY	
C107.1	To learn the proper use of various kinds of physics laboratory equipment.
C107.2	To learn how data can be collected, presented and interpreted in a clear and concise manner.
C107.3	To learn problem solving skills related to physics principles and interpretation of experimental data.
C107.4	To determine error in experimental measurements and techniques used to minimize such error
C107.5	To make the student an active participant in each part of all lab exercises.

C108/ GE3172- ENGLISH LABORATORY	
C108.1	To listen and comprehend complex academic texts
C108.2	To speak fluently and accurately in formal and informal communicative contexts
C108.3	To express their opinions effectively in both oral and written medium of communication

YEAR/SEMESTER: II/III	
C301/MA3351-TRANSFORMS AND PARTIAL DIFFERENTIAL EQUATIONS	
C301.1	Understand how to solve the given standard partial differential equations.
C301.2	Solve differential equations using Fourier series analysis which plays a vital role inengineering applications.
C301.3	Appreciate the physical significance of Fourier series techniques in solving one-and two-dimensional heat flow problems and one-dimensional wave equations.
C301.4	Understand the mathematical principles on transforms and partial differential equations would provide them the ability to formulate and

	solve some of the physical problems of engineering.
C301.5	Use the effective mathematical tools for the solutions of partial differential equations by using Z transform techniques for discrete time systems

C302/ME3351-ENGINEERING MECHANICS	
C302.1	Illustrate the vector and scalar representation of forces and moments
C302.2	Analyze the rigid body in equilibrium
C302.3	Evaluate the properties of distributed forces
C302.4	Determine the friction and the effects by the laws of friction
C302.5	Calculate dynamic forces exerted in rigid body

C303/ME3391-ENGINEERING THERMODYNAMICS	
C303.1	Apply the zeroth and first law of thermodynamics by formulating temperature scales and calculating the property changes in closed and open engineering systems.
C303.2	Apply the second law of thermodynamics in analyzing the performance of thermaldevices through energy and entropy calculations.
C303.3	Apply the second law of thermodynamics in evaluating the various properties of steam through steam tables and Mollier chart
C303.4	Apply the properties of pure substance in computing the macroscopic properties of ideal and real gases using gas laws and appropriate thermodynamic relations.
C303.5	Apply the properties of gas mixtures in calculating the properties of gas mixtures and applying various thermodynamic relations to calculate property changes.

C304/CE3391-FLUID MECHANICS AND MACHINERY	
C304.1	Understand the properties and behaviour in static conditions. Also, to understand the conservation laws applicable to fluids and its application through fluid kinematics and dynamics
C304.2	Estimate losses in pipelines for both laminar and turbulent conditions and analysis ofpipes connected in series and parallel. Also, to understand the concept of boundary layer and its thickness on the

	flat solid surface.
C304.3	Formulate the relationship among the parameters involved in the given fluid phenomenon and to predict the performances of prototype by model studies
C304.4	Explain the working principles of various turbines and design the various types of turbines.
C304.5	Explain the working principles of centrifugal, reciprocating and rotary pumps and design the centrifugal and reciprocating pumps

C305/ME3392-ENGINEERING MATERIALS AND METALLURGY	
C305.1	Explain alloys and phase diagram, Iron-Iron carbon diagram and steel classification.
C305.2	Explain isothermal transformation, continuous cooling diagrams and different heattreatment processes.
C305.3	Clarify the effect of alloying elements on ferrous and non-ferrous metals.
C305.4	Summarize the properties and applications of non-metallic materials.
C305.5	Explain the testing of mechanical properties.

C306/ME3393-MANUFACTURING PROCESSES	
C306.1	Explain the principle of different metal casting processes.
C306.2	Describe the various metal joining processes.
C306.3	Illustrate the different bulk deformation processes.
C306.4	Apply the various sheet metal forming process.
C306.5	Apply suitable molding technique for manufacturing of plastics components.

C307/ME3381-COMPUTER AIDED MACHINE DRAWING	
C307.1	Prepare standard drawing layout for modelled assemblies with BoM.
C307.2	Model orthogonal views of machine components.
C307.3	Prepare standard drawing layout for modelled parts

C308/ME3382-MANUFACTURING TECHNOLOGYLABORATORY

C308.1	Demonstrate the safety precautions exercised in the mechanical workshop and jointwo metals using GMAW.
C308.2	The students able to make the work piece as per given shape and size using machining process such as rolling, drawing, turning, shaping, drilling and milling.
C308.3	The students become make the gears using gear making machines and analyze the defects in the cast and machined components

YEAR/SEMESTER: II/III	
C301/ MA3354-DISCRETE MATHEMATICS	
C301.1	Have knowledge of the concepts needed to test the logic of a program
C301.2	Have an understanding in identifying structures on many levels
C301.3	Be aware of a class of functions which transform a finite set into another finite set which relatesto input and output functions in computer science.
C301.4	Be aware of the counting principles
C301.5	Be exposed to concepts and properties of algebraic structures such as groups, rings andfields.

C302/CS3352 - DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION	
C302.1	Design various combinational digital circuits using logic gates
C302.2	Design sequential circuits and analyze the design procedures
C302.3	State the fundamentals of computer systems and analyze the execution of an instruction
C302.4	Analyze different types of control design and identify hazards
C302.5	Identify the characteristics of various memory systems and I/O communication

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C303/ AD3391- DATABASE DESIGN AND MANAGEMENT	
C303.1	Understand the database development life cycle and apply conceptual modeling
C303.2	Apply SQL and programming in SQL to create, manipulate and query the database
C303.3	Apply the conceptual-to-relational mapping and normalization to design relational database
C303.4	Determine the serializability of any non-serial schedule using concurrency techniques
C303.5	Apply the data model and querying in Object-relational and No-SQL databases

C304/ AD3351- DESIGN AND ANALYSIS OF ALGORITHMS	
C304.1	Analyze the efficiency of recursive and non-recursive algorithms mathematically
C304.2	Analyze the efficiency of brute force, divide and conquer, decrease and conquer, Transformand conquer algorithmic techniques
C304.3	Implement and analyze the problems using dynamic programming and greedy algorithmictechniques.
C304.4	Solve the problems using iterative improvement techniques for optimization.
C304.5	Compute the limitations of algorithmic power and solve the problems using backtracking andbranch and bound techniques

C305/ AD3301 DATA EXPLORATION AND VISUALIZATION	
C305.1	Understand the fundamentals of exploratory data analysis
C305.2	Implement the data visualization using Matplotlib.
C305.3	Perform univariate data exploration and analysis.
C305.4	Apply bivariate data exploration and analysis
C305.5	Use Data exploration and visualization techniques for multivariate and time series data

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C306/ AL3391- ARTIFICIAL INTELLIGENCE	
C306.1	Explain intelligent agent frameworks
C306.2	Apply problem solving techniques
C306.3	Apply game playing and CSP techniques
C306.4	Perform logical reasoning
C306.5	Perform probabilistic reasoning under uncertainty

C307/ AD3381- DATABASE DESIGN ANDMANAGEMENT LABORATORY	
C307.1	Understand the database development life cycle
C307.2	Design relational database using conceptual-to-relational mapping, Normalization
C307.3	Apply SQL for creation, manipulation and retrieval of data
C307.4	Develop a database applications for real-time problems
C307.5	Design and query object-relational databases

C308/ AD3311- ARTIFICIAL INTELLIGENCE LABORATORY	
C308.1	Design and implement search strategies
C308.2	Implement game playing and CSP techniques
C308.3	Develop logical reasoning
C308.4	Develop probabilistic reasoning systems
C308.4	Apply the various Authentication schemes to simulate different applications.
C308.5	Understand various Security practices and System security standards

YEAR/SEMESTER: II/IV	
C401/ MA3391 - PROBABILITY AND STATISTICS	
C401.1	Understand the fundamental knowledge of the concepts of

	probability and have knowledge of standard distributions which can describe real life phenomenon.
C401.2	Understand the basic concepts of one and two dimensional random variables and apply in engineering applications.
C401.3	Apply the concept of testing of hypothesis for small and large samples in real life problems.
C401.4	Apply the basic concepts of classifications of design of experiments in the field of agriculture and statistical quality control
C401.5	Have the notion of sampling distributions and statistical techniques used in engineering and management problems.

C402/AL3452 - OPERATING SYSTEMS	
C402.1	Analyze various scheduling algorithms and process synchronization.
C402.2	Explain deadlock, prevention and avoidance algorithms
C402.3	Compare and contrast various memory management schemes
C402.4	Explain the functionality of file systems I/O systems, and Virtualization
C402.5	Compare iOS and Android Operating Systems.

C403/ AL3451 - MACHINE LEARNING	
C403.1	Explain the basic concepts of machine learning.
C403.2	Construct supervised learning models
C403.3	Construct unsupervised learning algorithms
C403.4	Evaluate and compare different models

C404/ AD3491 - FUNDAMENTALS OF DATA SCIENCE AND ANALYTICS	
C404.1	Explain the data analytics pipeline
C404.2	Describe and visualize data
C404.3	Perform statistical inferences from data
C404.4	Analyze the variance in the data
C404.5	Build models for predictive analytics

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C405/ CS3591 - COMPUTER NETWORKS	
C405.1	Explain the basic layers and its functions in computer networks
C405.2	Understand the basics of how data flows from one node to another.
C405.3	Analyze routing algorithms.
C405.4	Describe protocols for various functions in the network.
C405.5	Analyze the working of various application layer protocols.

C406/ GE3451 - ENVIRONMENTAL SCIENCES AND SUSTAINABILITY	
C406.1	Study the scope and importance of the environment and biodiversity.
C406.2	Gain knowledge on causes, effects, and preventive measures for environmental pollution and environmental protection.
C406.3	Apply the concepts of energy management and conservation using renewable sources of energy.
C406.4	Develop practices for sustainable development and climate change mitigation.
C406.5	Plan an environmental impact assessment and apply green engineering concepts for environmental management.

C407/ AD3411 - DATA SCIENCE AND ANALYTICS LABORATORY	
C407.1	Write python programs to handle data using Numpy and Pandas
C407.2	Perform descriptive analytics
C407.3	Perform data exploration using Matplotlib
C407.4	Perform inferential data analytics
C407.5	Build models of predictive analytics

C408/ AL3461 - MACHINE LEARNING LABORATORY	
C408.1	Apply suitable algorithms for selecting the appropriate features for analysis
C408.2	Implement supervised machine learning algorithms on standard datasets and evaluate the performance
C408.3	Apply unsupervised machine learning algorithms on standard datasets

	and evaluate the performance.
C408.4	Build the graph-based learning models for standard data sets
C408.5	Assess and compare the performance of different ML algorithms and select the suitable one based on the application.