

J.P. COLLEGE OF ENGINEERING
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
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	II	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		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	CS3251	Programming in C	CO1: Demonstrate knowledge on C Programming constructs	
			CO2: Develop simple applications in C using basic constructs	
			CO3: Design and implement applications using arrays and strings	
			CO4: Develop and implement modular applications in C using functions.	
			CO5: Develop applications in C using structures and pointers.	

				CO6: Design applications using sequential and random access file processing.	
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			CS3352	Foundations of Data Science	CO1: Define the data science process
					CO2: Understand different types of data description for data science process
					CO3: Gain knowledge on relationships between data
					CO4: Use the Python Libraries for Data Wrangling
					CO5: Apply visualization Libraries in Python to interpret and explore data
15			CS3301	Data Structures	CO1: Define linear and non-linear data structures.
					CO2: Implement linear and non-linear data structure operations.
				CO3: Use appropriate linear/non-linear data structure operations for solving a given problem.	
				CO4: Apply appropriate graph algorithms for graph applications.	
				CO5: Analyze the various searching and sorting algorithms.	
16		CS3391	Object Oriented Programming	CO1:Apply the concepts of classes and objects to solve simple problems	
				CO2:Develop programs using inheritance, packages and interfaces	
				CO3:Make use of exception handling mechanisms and multithreaded model to solve real world problems	
				CO4:Build Java applications with I/O packages, string classes, Collections and generics concepts	
				CO5:Integrate the concepts of event handling and JavaFX components and controls for developing GUI based applications	
17		CS3452	Theory of Computation	CO1: Construct automata theory using Finite Automata	
				CO2: Write regular expressions for any pattern	
				CO3: Design context free grammar and Pushdown Automata	
				CO4: Design Turing machine for computational functions	
				CO5: Differentiate between decidable and undecidable problems	
				CO1: Use appropriate search algorithms for problem solving	
			Artificial Intelligence and	CO2: Apply reasoning under uncertainty	

18	IV	CS3491	Artificial Intelligence and Machine Learning	CO3: Build supervised learning models
				CO4: Build ensembling and unsupervised models
				CO5: Build deep learning neural network models
19		CS3492	Database Management Systems	CO1: Construct SQL Queries using relational algebra
				CO2: Design database using ER model and normalize the database
				CO3: Construct queries to handle transaction processing and maintain consistency of the database
				CO4: Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database
			CO5: Appraise how advanced databases differ from Relational Databases and find a suitable database for the given requirement	
20	CS3401	Algorithms	CO1: Analyze the efficiency of algorithms using various frameworks	
			CO2: Apply graph algorithms to solve problems and analyze their efficiency.	
			CO3: Make use of algorithm design techniques like divide and conquer, dynamic programming and greedy techniques to solve problems	
			CO4: Use the state space tree method for solving problems.	
			CO5: Solve problems using approximation algorithms and randomized algorithms	
21	CS3451	Introduction to 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.	
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	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	V	CS3501	Compiler Design	CO1: Understand the techniques in different phases of a compiler.
				CO2: Design a lexical analyser for a sample language and learn to use the LEX tool.
				CO3: Apply different parsing algorithms to develop a parser and learn to use YACC tool
				CO4: Understand semantics rules (SDT), intermediate code generation and run-time environment.
				CO5: Implement code generation and apply code optimization techniques.
25		CB3491	Cryptography and Cyber Security	CO1: Understand the fundamentals of networks security, security architecture, threats and vulnerabilities
				CO2: Apply the different cryptographic operations of symmetric cryptographic algorithms
				CO3: Apply the different cryptographic operations of public key cryptography
				CO4: Apply the various Authentication schemes to simulate different applications.
				CO5: Understand various cyber crimes and cyber security
26	CS3551	Distributed Computing	CO1: Explain the foundations of distributed systems	
			CO2: Solve synchronization and state consistency problems	
			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	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.	
28	CCS375	Web Technologies	CO1: Construct a basic website using HTML and Cascading Style Sheets	
			CO2: Build dynamic web page with validation using Java Script objects and by applying different event handling mechanisms.	
			CO3: Develop server side programs using Servlets and JSP.	
			CO4: Construct simple web pages in PHP and to represent data in XML format.	
			CO5: Develop interactive web applications.	
29	MX3084	Disaster Risk Reduction and Management	CO1: To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)	
			CO2: To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction	
			CO3: To develop disaster response skills by adopting relevant tools and technology	
			CO4: Enhance awareness of institutional processes for Disaster response in the country	
			CO5: Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity	
			CO1: Compare various Software Development Lifecycle Models	

30	VI	CCS356	Object Oriented Software Engineering	CO2: Evaluate project management approaches as well as cost and schedule estimation strategies.	
				CO3: Perform formal analysis on specifications.	
				CO4: Use UML diagrams for analysis and design.	
				CO5: Architect and design using architectural styles and design patterns, and test the system	
31			CS3691	Embedded Systems and IOT	CO1: Explain the architecture of embedded processors.
					CO2: Write embedded C programs.
					CO3: Design simple embedded applications.
				CO4: Compare the communication models in IOT	
				CO5: Design IoT applications using Arduino/Raspberry Pi /open platform.	
32		CCS364	Soft Computing	CO1: Understand the fundamentals of fuzzy logic operators and inference mechanisms	
				CO2: Understand neural network architecture for AI applications such as classification and clustering	
				CO3: Learn the functionality of Genetic Algorithms in Optimization problems	
				CO4: Use hybrid techniques involving Neural networks and Fuzzy logic	
				CO5: Apply soft computing techniques in real world applications	
33		CCS341	Data Warehousing	CO1: Design data warehouse architecture for various Problems	
				CO2: Apply the OLAP Technology	
				CO3: Analyse the partitioning strategy	
				CO4: Critically analyze the differentiation of various schema for given problem	
				CO5: Frame roles of process manager & system manager	
34		CCS354	Network Security	CO1: Classify the encryption techniques	
				CO2: Illustrate the key management technique and authentication.	
				CO3 Evaluate the security techniques applied to network and transport layer	
				CO4: Discuss the application layer security standards.	
				CO5: Apply security practices for real time applications.	
35		CCS371	Video Creation and Editing	CO1: Compare the strengths and limitations of Nonlinear editing.	
				CO2: Identify the infrastructure and significance of storytelling.	
				CO3: Apply suitable methods for recording to CDs and VCDs.	
				CO4: Address the core issues of advanced editing and training techniques.	
				CO5: Design and develop projects using AVID XPRESS DV 4	
36		MX3089	Industrial Safety	CO1: Understand the basic concept of safety.	
				CO2: Obtain knowledge of Statutory Regulations and standards.	
				CO3: Know about the safety Activities of the Working Place.	
				CO4: Analyze on the impact of Occupational Exposures and their Remedies	

				CO5:Obtain knowledge of Risk Assessment Techniques.
37	VII	GE3791	Human Values and Ethics	CO1: Identify the importance of democratic, secular and scientific values in harmonious functioning of social life
				CO2: Practice democratic and scientific values in both their personal and professional life.
				CO3: Find rational solutions to social problems.
				CO4: Behave in an ethical manner in society
				CO5: Practice critical thinking and the pursuit of truth.