

Department of Computer Engineering

Second Year, Third Year and Final Year 2019 Pattern

Second Year of Computer Engineering (2019 Course) (With effect from 2020-21)

Term-I

Course Outcomes

210241	Discrete Mathematics	CO1	Apply set theory and propositional logic to real world problems.
		CO2	Analyze functions and relations along with its properties.
		CO3	Apply permutations and combinations for problem solving.
		CO4	Solve problems using different types of graphs
		CO5	Apply data structure, like trees, and the algorithms that build and manipulate them.
		CO6	Apply the concepts of isomorphism and homomorphism for groups and rings.
210242	Fundamentals of Data Structures	CO1	To demonstrate a detailed understanding of behaviour of data structures like array, linked list, stack, and queue by developing programs.
		CO2	To use appropriate algorithmic strategy for better efficiency
		CO3	To summarize data searching and sorting techniques
		CO4	To discriminate the usage of various structures in approaching the problem solution.
		CO5	To analyze and use effective and efficient data structures in solving various Computer Engineering domain problems.
		CO6	To design the algorithms to solve the programming problems.
210243	Object Oriented Programming	CO1	Enlist and recognize different features of Object-Oriented programming.
		CO2	Identify and Demonstrate different types of Inheritances in C++
		CO3	Use virtual and pure virtual function and complex programming situations
		CO4	Integrate different types of streams in C++ to develop software application.
		CO5	Assess power of Exception Handling and templates in C++
		CO6	Develop the application using object oriented programming language(C++).

210244	Computer Graphics	CO1	implement the basic primitives of Computer Graphics
		CO2	use polygon filling and clipping algorithms in a given object..
		CO3	apply the transformations and projections in Computer Graphics.
		CO4	compare the different color models
		CO5	distinguish between different illumination model and shading algorithms.
		CO6	design different objects using fractals and Bezier curve.

210245	Digital Electronics and Logic Design	CO1	Students will be able to Simplify Boolean Expressions using K Map.
		CO2	Students will be able to Design and implement combinational circuits.
		CO3	Students will be able to Design and implement sequential circuits.
		CO4	Students will be able to Develop simple real-world application using ASM and PLD.
		CO5	Students will be able to Differentiate and Choose appropriate logic families IC packages as per the given design specifications.
		CO6	Students will be able to Explain organization and architecture of computer system

210246	Humanity & Social Science	CO1	Aware of the various issues concerning humans and society
		CO2	Aware about their responsibilities towards society
		CO3	Sensitized about broader issues regarding the social, cultural, economic and human aspects, involved in social changes
		CO4	Able to understand the nature of the individual and the relationship between self and the community
		CO5	Able to understand major ideas, values, beliefs, and experiences that have shaped human history and cultures
		CO6	To be accountable as social contributors and bring about some change in the lives of the young students

Term-II Course Outcomes

210252	Mathematics III	CO1	Learner will able to Solve Linear differential equations, essential in modelling and design of computer-based systems.
		CO2	Learner will able to Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.
		CO3	Learner will able to Apply Statistical methods like correlation and regression analysis and probability theory for data analysis and predictions in machine learning
		CO4	Learner will able to Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques
		CO5	Learner will able to Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.
210253	Data Structures & Algorithms	CO1	Identify and articulate the complexity goals and benefits of a good hashing scheme for real- world applications
		CO2	Apply non-linear data structures for solving problems of various domain
		CO3	Design and specify the operations of a nonlinear-based abstract data type and implement them in a high-level programming language
		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
210254	Software Engineering	CO1	Analyze software requirements and formulate design solution for a software.
		CO2	Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.
		CO3	Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.
		CO4	Model and design User interface and component-level.
		CO5	Identify and handle risk management and software configuration management.
		CO6	Utilize knowledge of software testing approaches, approaches to verification and validation
		CO7	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

210255	Microprocessor	CO1	Classify processor architectures and exhibit skill of assembly language programming for application.
		CO2	Illustrate advanced features of 80386 microprocessor.
		CO3	Compare and contrast different processor modes.
		CO4	Use interrupt mechanism in applications.
		CO5	Differentiate between microprocessor and micro controllers.
		CO6	Identify and analyze the tools and techniques used to design, implement and debug microprocessor based system.

210256	Principles of Programming Language	CO1	Ability to understand syntax and semantics of programming languages using phases of compiler
		CO2	Ability to understand syntax and semantics of programming languages using phases of compiler
		CO3	To inculcate the principles underlying the programming languages enabling to learn new programming languages
		CO4	To grasp different programming paradigms
		CO5	To use the programming paradigms effectively in application development
		CO6	Ability to understand basic concepts & broad principles of object oriented programming using JAVA

210259:	Code of Conduct	CO1	Understand the basic perception of profession, professional ethics, various moral and social issues, industrial standards, code of ethics and role of professional ethics in engineering field.
		CO2	Aware of professional rights and responsibilities of an engineer, responsibilities of an engineer for safety and risk benefit analysis
		CO3	Understand the impact of the professional Engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development
		CO4	Acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives.

210260	Project Based Learning	CO1	Identify the real life problem from societal need point of view
		CO2	Choose and compare alternative approaches to select most feasible one
		CO3	Analyze and synthesize the identified problem from technological perspective
		CO4	Design the reliable and scalable solution to meet challenges

		CO5	Evaluate the solution based on the criteria specified
		CO6	Inculcate long life learning attitude towards the societal problems

Third Year of Computer Engineering (2019 Course) (With effect from 2021-22)

Term-I Course Outcomes

310241	Database Management Systems	CO1	Identify 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.

310242	Theory of Computation	CO1	Understand formal language, translation logic, essentials of translation, alphabets, language representation and apply it to design Finite Automata and its variants
		CO2	Construct regular expression to present regular language and understand pumping lemma for
		CO3	Design Context Free Grammars and learn to simplify the grammar
		CO4	Construct Pushdown Automaton model for the Context Free Language
		CO5	computer science
		CO6	Analyze different classes of problems, and study concepts of NP completeness

310243	Systems Programming and Operating	CO1	Analyze and synthesize basic System Software and its functionality.
		CO2	Identify suitable data structures and Design & Implement various System Software
		CO3	Compare different loading schemes and analyze the performance of linker and loader
		CO4	Implement and Analyze the performance of process scheduling algorithms
		CO5	Identify the mechanism to deal with deadlock and concurrency issues
		CO6	Demonstrate memory organization and memory management policies

		CO1	protocols and technologies
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310244:	Computer Networks and Security	CO2	Illustrate the working and functions of data link layer
		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	Illustrate role of application layer with its protocols, client-server architectures

310245(A)	Internet of Things and Embedded Sys	CO1	EDF and RM Algorithm and Recognize and discriminate IoT communication models, IoT
		CO2	designs based on theoretical frameworks and methodological approaches.
		CO3	efficiently for intended users.
		CO4	of IoT Protocol standardization.
		CO5	Impart fundamental concepts in the area of cloud computing and IoT Interfacing.
		CO6	Design & Synthesize Storage as a service using Xively Cloud for IoT Implementation.

310249	Seminar and Technical Communicat	CO1	Analyze a latest topic of professional interest
		CO2	Enhance technical writing skills
		CO3	Identify an engineering problem, analyze it and propose a work plan to solve it
		CO4	Communicate with professional technical presentation skills

Term-II

Course Outcomes

310251	: Data Science and Big Data Analytics	CO1	Analyze needs and challenges for Data Science Big Data Analytics
		CO2	Apply statistics for Big Data Analytics
		CO3	Apply the lifecycle of Big Data analytics to real world problems
		CO4	Implement Big 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

		CO1	Implement and analyze behavior of web pages using HTML and CSS.
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310252:	Web Technology	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 development.
		CO6	Create the effective web applications for business functionalities using latest web development platforms.

310253 :	Artificial Intelligence	CO1	To retrieve the concept of rational agent and history of Artificial Intelligence
		CO2	To compare different types of searching algorithms.
		CO3	To apply different game theory in AI
		CO4	To distinguish propositional and predicate logic with suitable example.
		CO5	To review type of inference engine.
		CO6	To simulate an air cargo transportation planning problem using PDDL.

310254(C):	Cloud Computing	CO1	Ability to describe different Cloud Computing environment
		CO2	Ability to classify appropriate data storage technique on Cloud, based on Cloud Application
		CO3	Ability to appraise virtualization technology in Cloud Computing
		CO4	Ability to Develop and deploy applications on Cloud
		CO5	Ability to Apply security in cloud applications
		CO6	Ability to Use advance techniques in Cloud Computing

Fourth Year of Computer Engineering 2019 Course (With effect from 2022-23)

Term-I

Course Outcomes

	CO1	Student will be able to Formulate the problem
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410241 : Design and Analysis of Algorithm	CO2	Student will be able to Analyze the asymptotic performance of algorithms
	CO3	Student will be able to Decide and apply algorithmic strategies to solve given problem
	CO4	Student will be able to Find optimal solution by applying various methods
	CO5	Student will be able to Analyze and Apply Scheduling and Sorting Algorithms
	CO6	Student will be able to Solve problems for multi-core or distributed or concurrent environments

410242: Machine Learning	CO1	Identify the needs and challenges of machine learning for real time applications
	CO2	Apply various data pre-processing techniques to simplify and speed up machine learning algorithms.
	CO3	Select and apply appropriately supervised machine learning algorithms for real time applications
	CO4	Implement variants of multi-class classifier and measure its performance
	CO5	Compare and contrast different clustering algorithms
	CO6	Design a neural network for solving engineering problems.

410243: Blockchain Technology	CO1	student will be able to interpret the fundamentals and basic concepts in Blockchain
	CO2	student will be able to compare the working of different blockchain platforms
	CO3	student will be able to use Crypto wallet for cryptocurrency based transactions
	CO4	student will be able to analyze the importance of blockchain in finding the solution to the real-world problems.
	CO5	student will be able to illustrate the Ethereum public block chain platform
	CO6	student will be able to identify relative application where block chain technology can be effectively used and implemented.

410244 D: Object Oriented Modelling and Design	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

		CO4	To Analyze applications, architectural Styles & software control strategies
		CO5	To develop Class design Models & choose Legacy Systems
		CO6	To Understand Design Patterns

410245(D):	Software Tesing and Quality Assuran	CO1	Describe fundamental concepts in software testing such as manual testing, automation testing, and software quality assurance
		CO2	Design project test plan, design test cases, test data, and conduct test operations
		CO3	Apply recent automation tool for various software testing
		CO4	Apply different approaches to quality management, assurance, and quality standard to software system
		CO5	Apply and analyze the effectiveness of Software Quality Tools.
		CO6	: Apply tools necessary for an efficient testing framework.

Term-II

Course Outcomes

410250:	High Performance Computing	CO1	Understand various Parallel Paradigm
		CO2	Summarize various parallel Architecture
		CO3	Illustrate data communication operations on various parallel architecture
		CO4	Analyze and measure the performance of modern parallel computing systems
		CO5	Apply CUDA architecture for parallel programming
		CO6	Design and Develop an efficient parallel algorithm

		CO1	student will be able to understand the basics of Deep Learning and apply the tools to implement deep learning applications
		CO2	student will be able to evaluate the performance of deep learning models (e.g., with respect to the bias-variance trade- off, overfitting and underfitting, estimation of test error).

410251:	Deep Learning		student will be able to apply the technique of Convolution (CNN) and Recurrent Neural Network (RNN) for implementing Deep Learning models
		CO3	
		CO4	student will be able to implement and apply deep generative models.
		CO5	student will be able to construct and apply on-policy reinforcement learning algorithms
		CO6	student will be able to understand Reinforcement Learning Process

410252A:	Natural Language Processing	CO1	Describe the fundamental concepts of NLP, challenges and issues in NLP
		CO2	Analyze Natural languages morphologically, syntactical and semantically OR Describe the concepts of morphology, syntax, semantics of natural language
		CO3	Illustrate various language modelling techniques
		CO4	Integrate the NLP techniques for the information retrieval task
		CO5	Demonstrate the use of NLP tools and techniques for text-based processing of natural languages
		CO6	Develop real world NLP applications

410254C:	Business Intelligence	CO1	Differentiate the concepts of Decision Support System & Business Intelligence
		CO2	Use Data Warehouse & Business Architecture to design a BI system.
		CO3	Build graphical reports
		CO4	Apply different data preprocessing techniques on dataset
		CO5	Implement machine learning algorithms as per business needs
		CO6	Identify role of BI in marketing, logistics, and finance and telecommunication sector