Society for Computer Technology and Research's

Pune Institute of Computer Technology

Department of Computer Engineering

COURSE OUTCOMES

Second Year (2019 Pattern) Semester I

210241: Discrete Mathematics	
Students will be able to	
210241.1	Formulate problems precisely, solve the problems, apply formal proof techniques, and explain the reasoning clearly.
210241.2	Design and analyze relevant real world engineering problems by applying set theory, propositional logic and to construct proofs using mathematical induction.
210241.3	Analyze relations, construct, and use functions and apply these concepts to solve problems.
210241.4	Apply and Calculate permutations and combinations for problem solving.
210241.5	Model and solve problems like Travelling Salesperson, Minimum Spanning Tree, Shortest Path, Transport networks and Huffman coding using appropriate algorithms of Tree and Graph.
210241.6	Apply abstract algebra in coding theory by evaluating the algebraic structures using properties of binary operations.
210242: Fundamentals of Data Structures	
Students will be able to	
210242.1	Compare the Time and Space complexity of Algorithms in worst, best and average cases of solving problems.
210242.2	Demonstrate use of linear data structures- Array and Linked lists to store and process structured data.
210242.3	Analyze the performance of Linear search, Binary search, Fibonacci search, and Index sequential search, bubble sort, selection sort, insertion sort, Bucket sort, Shell sort.
210242.4	Apply the Algorithmic Strategies to solve problems such as multiplication of large number, knapsack problem, sorting methods (quick sort and merge sort)
210242.5	Compare static and dynamic data structure implementations to select suitable method to solve programming problems
210242.6	Apply principles of Stack and Queue Data Structures to solve Expression Conversion, Evaluation, and Job scheduling problem.
210243: Object Oriented Programming	
Students will be able to	

210243.1	To implement object-oriented programming paradigm for problem solving
210243.2	To apply OOP concepts inheritance and polymorphism to design programs
210243.3	To develop the application with the help of file handling and exception handling in C++
210243.4	To write the program with the use of exception handling and template in C++
210243.5	To apply C++ Standard Template Library in program design
210244: Computer Graphics	
Students will be able to	
210244.1	Understand the basics of computer graphics and demonstrate the line and circle algorithms.
210244.2	Illustrate the concept of windowing, clipping and apply various algorithms to clip and fill polygons
210244.3	Demonstrate and solve 2D, 3D transformations, Parallel & perspective projections.
210244.4	Illustrate the concepts of light, color, shading, and apply Z-buffer, Painter& Warnock algorithm to remove hidden surfaces
210244.5	Implement the B-Spline/Bezier curves, fractals, Hilbert Curve/Triadic curve.
210244.6	Design animation sequences using segments and compare gaming platforms.
210245:	**Digital Electronics and Logic Design**
210245.1	Solve Boolean Expressions using K Map
210245.2	Design and interpret the truth table of combinational circuits.
210245.3	Design and interpret the truth table of sequential circuits
210245.4	Illustrate and design simple real-world application like counting Lift floors, Digital locks using Algorithms State Machine and Programmable Logic Device
210245.5	Differentiate and choose appropriate logic families IC packages as per the given design specifications
210245.6	Illustate organization and architecture of computer system
210246: Data Structures Laboratory	
Students will be able to	
210246.1	Use algorithms on various linear data structure using sequential organization to solve real life problems
210246.2	Analyse problems to apply suitable searching and sorting algorithm to various applications

210246.3	Analyse problem to use variants of linked list and solve various real life problems
210246.4	Designing and implement data structures and algorithms for solving different kinds of problems
210247: OOP and Computer Graphics Laboratory	
Students will be able to	
210247.1	Implement the OOP concepts like encapsulation, inheritance, polymorphism, and generic structures- STL MAP, Vector- for implementing reusable program.
210247.2	Demonstrate file handling operations viz. open, close, read, write and append on file located on secondary storage.
210247.3	Implement DDA/Bresenham's line and circle drawing scan conversion algorithms to render 2D shapes and demonstrate 2D transformations with the help of object oriented programming concepts.
210247.4	Develop Cohen Sutherland line clipping algorithm and filling a concave polygon by using scan-line fill algorithm along with demonstration of Inheritance concept of OOP.
210247.5	Create fractals by using Koch/Hilbert curve.
210247.6	Demonstrate use of FOSS tools (OpenGL, Blender, and Maya etc.) for computer graphics by creating animation/gaming programs containing OOP concepts.
210248: Digital Electronics Laboratory	
Students will be able to	
210248.1	Illustrate the working of digital electronic circuits
210248.2	Apply the knowledge to appropriate IC as per the design specifications
210248.3	Design and implement sequential and combinational digital circuits as per the specifications
210249: Business Communication Skills	
Students will be able to	
210249.1	Demonstrate effectively through verbal/oral communication through self assessment activities for overall personality development.
210249.2	Write an abstract & summarize the scene effectively as reports and technical documents using open source documents and presentation tables.
210249.3	Prepare for group discussion / meetings / interviews and deliver presentations on a given topic in a given time frame and design resume template.
210249.4	Develop and motivate as a leader with creative thinking to achieve goal/target setting with the team to meet game objectives using opportunity selection and

	related constraints.
210249.5	Operate effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Interpersonal relationships, conflict management and leadership qualities.
210250: Humanity and Social Science	
Students will be able to	
210250.1	Express effectively on current affairs which will improve general knowledge and communication skills
210250.2	Explore about cultural difference in society, enhance exploratory skills and learn how to present using technological tools
210250.3	Analyze and respond to broader issues regarding the social, cultural, economic and human aspects, involved in social changes
210250.4	Encompass the areas of improvement for appreciating human nature and behavior in the society.
210250.5	Operate effectively in multi-disciplinary and heterogeneous society, to understand major ideas ,values, beliefs, and experiences that have shaped human history and cultures.
210251: Audit Course 3(AC3-I: Green Construction and Design)	
Students will be able to	
210251.1	Understand the importance of environment friendly society.
210251.2	Apply primary measures to reduce carbon emissions from their surroundings.
210251.3	Learn role of IT solutions in design of green buildings.
210251.4	Understand the use of software systems to complete statutory compliances involved in the design of a new home or office building through green construction.
210251: Audit Course 3(AC3-II: Social Awareness and Governance Program)	
Students will be able to	
210251.1	Understand social issues and responsibilities as member of society.
210251.2	Apply social values and ethics in decision making at social or organizational level
210251.3	Promote obstacles in national integration and role of youth for National Integration
210251.4	Demonstrate basic features of Indian Constitution.
210251: Audit Course 3(AC3-III: Environmental Studies)	
Students will be able to	

210251.1	Comprehend the importance of ecosystem and biodiversity
210251.2	Correlate the human population growth and its trend to the environmental degradation and develop the awareness about his/her role towards environmental protection and prevention
210251.3	Identify different types of environmental pollution and control measures
210251.4	Correlate the exploitation and utilization of conventional and non-conventional resources
210251: Audit Course 3(AC3-IV: Smart Cities)	
Students will be able to	
210251.1	Understand the dynamic behavior of the urban system by going beyond the physical appearance and by focusing on representations, properties and impact factors
210251.2	Explore the city as the most complex human-made organism with a metabolism that can be modeled in terms of stocks and flows
210251.3	Knowledge about data-informed approaches for the development of the future city, based on crowd sourcing and sensing
210251.4	Knowledge about the latest research results in for the development and management of future cities
210251.5	Understand how citizens can benefit from data-informed design to develop smart and responsive cities
210251: Audit Course 3(AC3-V: Foreign Language)	
Students will be able to	
210251.1	Will have ability of basic communication.
210251.2	Will have the knowledge of foreign language script.
210251.3	Will get introduced to reading, writing and listening skills
210251.4	Will develop interest to pursue professional foreign Language course.

Second Year (2019 Pattern) Semester II

207003: Engineering Mathematics III	
Students will be able to	
207003.1	Solve linear differential equations, essential in modeling and design of computer-based systems.
207003.2	Obtain Fourier Transform of continuous and discrete functions which are useful in Signal processing. Find Z-Transform of discrete functions which are involved in image processing.
207003.3	Explain statistical methods like measures of central tendency, correlation, and regression analysis for data interpretation and data analysis in Machine Learning.
207003.4	Discuss probability theory for analysis and prediction of a given data.
207003.5	Solve algebraic and transcendental equations and systems of linear equations using Numerical techniques.
207003.6	Compute interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.
210252: Data Structures and Algorithms	
Students will be able to	
210252.1	Analyze different hash functions-multiplication, division, mid-square, folding and collision resolution strategies- open addressing, separate chaining and extendible hashing.
210252.2	Apply suitable nonlinear data structure tree for solving problems.
210252.3	Solve the problem by using Graph as a Data Structure and its algorithms
210252.4	Construct balanced search trees and illustrate its usage in application.
210252.5	Apply efficient indexing methods and multiway search techniques to store and maintain data.
210252.6	Illustrate relevant file organization techniques.
210253: Software Engineering	
Students will be able to	
210253.1	Apply software engineering principles to develop a software.
210253.2	Analyze software requirements and formulate design solutions for a software.
210253.3	Explain concepts of project estimation, planning and scheduling.
210253.4	Identify risks associated with a software development process and apply appropriate risk, software configuration management strategy.
210253.5	Explain various types of software testing.
210254: Microprocessor	
Students will be able to	
210254.1	Explain instruction set of 80386
210254.2	Identify various suitable control signals for bus cycle

210254.3	Compare and Explain Segmentation and Paging with various protection Mechanism
210254.4	Illustrate Multitasking in 80386 processor
210254.5	Differentiate between Microprocessors and Microcontrollers
210255: Principles of Programming Languages	
Students will be able to	
210255.1	To illustrate the principles underlying the programming paradigms.
210255.2	To demonstrate a program with data representation and computations.
210255.3	To apply object oriented programming concepts for solving selective functionalities of banking system using Java.
210255.4	To demonstrate multithreading for banking/gaming system and to understand web based application using JavaScript
210255.5	To understand functional and logic programming paradigm and develop a program using LISP and Prolog.
210256: Data Structures and Algorithms Laboratory	
Students will be able to	
210256.1	Understand and write the ADT for nonlinear data structures.
210256.2	Analyze the most appropriate nonlinear data structures to solve problems for an efficient solution with respect to space and time.
210256.3	Implement appropriate nonlinear data structures to solve real world complex problems.
210256.4	Demonstrate implementation of algorithmic strategies/techniques such as Greedy method, Dynamic programming to solve the problem efficiently.
210256.5	Implement appropriate file representation method to maintain the data.
210256.6	Apply acquired knowledge for mini project/case study development using modern FOSS tools.
210257: Microprocessor Laboratory	
Students will be able to	
210257.1	Understand and apply various addressing modes and instruction set to implement 64-bits assembly language programs using FOSS
210257.2	Apply logic to implement code conversion
210257.3	Analyse and apply logic to demonstrate processor mode of operation
210257.4	Analyse and apply ALP to demonstrate segment descriptors and descriptor tables, stack manipulation operations
210258: Project Based Learning II	

Students will be able to	
210258.1	Identify the real life problem preferably from societal need point of view
210258.2	Compare alternative approaches suitable for the selected problem
210258.3	Select the identified approaches from technological perspective
210258.4	Design the reliable and scalable solution to meet challenges
210258.5	Evaluate the solution based on the test cases
210258.6	Develop lifelong learning attitude towards the societal problems
210259: Code of Conduct	
Students will be able to	
210259.1	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.
210259.2	Aware of professional rights and responsibilities of an engineer, responsibilities of an engineer for safety and risk benefit analysis.
210259.3	Understand the impact of the professional Engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
210259.4	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: Audit Course 4(AC4-I: Water Management)	
Students will be able to	
210260.1	Understand the global water cycle and its various processes
210260.2	Understand climate change and their effects on water systems
210260.3	Understand Drinking treatment and quality of groundwater and surface water
210260.4	Understand the Physical, chemical, and biological processes involved in water treatment and distribution.
210260: Audit Course 4(AC4-II: Intellectual Property Rights and Patents)	
Students will be able to	
210260.1	Understand the fundamental legal principles related to confidential information, copyright, patents, designs, trademarks and unfair competition
210260.2	Identify, apply and assess principles of law relating to each of these areas of intellectual property
210260.3	Apply the appropriate ownership rules to intellectual property you have been involved in creating

210260: Audit Course 4(AC4-III: The Science of Happiness)	
Students will be able to	
210260.1	Understand what happiness is and why it matters to you
210260.2	Learn how to increase your own happiness
210260.3	Understand of the power of social connections and the science of empathy
210260.4	Understand what is mindfulness and its real world applications
210260: Audit Course 4(AC4-IV: Yoga and Meditation)	
Students will be able to	
210260.1	Understand philosophy and religion as well as daily life issues will be challenged and enhanced.
210260.2	Enhances the immune system
210260.3	Intellectual and philosophical understanding of the theory of yoga and basic related Hindu scriptures will be developed
210260.4	Powers of concentration, focus, and awareness will be heightened.
210260: Audit Course 4(AC4-V: Foreign Language)	
Students will be able to	
210260.1	have ability of basic communication.
210260.2	have the knowledge of foreign language script.
210260.3	get introduced to reading, writing and listening skills
210260.4	develop interest to pursue professional foreign Language course