Society for Computer Technology and Research's

Pune Institute of Computer Technology

Department of Computer Engineering

COURSE OUTCOMES

Third Year (2019 Pattern) Semester I

310241: Database Management Systems	
Students will be able to	
310241.1	To explain the basic concepts of data modelling and construct Entity-Relationship model for Bank/University database
310241.2	To explain and write relational database queries, programs using SQL and PL/SQL for Bank/University database
310241.3	To understand, identify and apply 1NF, 2NF, 3NF and BCNF normal forms to design Bank/University database
310241.4	To explain the concept of transaction processing and concurrency control concepts in banking application
310241.5	To explain and write NOSQL queries, aggregate and map reduce functions using MongoDB for Movie Reviews
310241.6	To explain complex data types
310242: Theory of Computation	
Students will be able to	
310242.1	Apply the knowledge of formal languages and design Finite Automata & its variants for problems on problems on strings problems on strings.
310242.2	Construct Regular Expressions to represent Regular language of three or four symbols and compare alternatives.
310242.3	Design Context Free Grammar (CFG) for string matching problems & language constructs.
310242.4	Design PDA for formal languages upto three variables.
310242.5	Design deterministic Turing Machine for formal languages
310242.6	To Demonstrate the understanding of key notions such as computability, decidability, undecidability, complexity, classes through examples.
310243: Systems Programming and Operating System	
Students will be able to	
310243.1	Analyze and synthesize basic System Software and its functionality
310243.2	Identify suitable data structures and Design & Implement various System Software
310243.3	Compare different loading schemes and contrast the working of linker and loader.
310243.4	Implement and Analyze the performance of process scheduling algorithms
310243.5	Identify the mechanism to deal with deadlock and concurrency issues
310243.6	Demonstrate memory organization and memory management policies

310244: Computer Networks and Security	
Students will be able to	
310244.1	Summarize fundamental concepts of Computer Networks, architectures, protocols and technologies.
310244.2	Illustrate the working and functions of data link layer.
310244.3	Compare and illustrate the working of different routing protocols and mechanisms.
310244.4	Write client-server applications using TCP and UDP sockets and Illustrate role of application layer with its protocols.
310244.5	Comprehend the fundamental concepts of Network Security and protocols.
310245B: Elective I- Human Computer Interface	
Students will be able to	
310245B.1	Design a prototype for effective Human-Computer-Interfaces like registration form design or other systems for all kinds of users
310245B.2	Apply the golden rules of interface design to make effective and useful systems
310245B.3	Evaluate the effectiveness or usefulness of a user-interface design with different evaluation techniques
310245B.4	Apply the principles and guidelines to model interactive designs for feasible data search and retrieval
310245B.5	Analyze the scope of HCI in various paradigms like ubiquitous computing, virtual reality, multi-media, and world wide web related environments.
310245B.6	Analyze the requirements for interface design of mobile and other handheld devices
310245C: Elective I- Distributed Systems	
Students will be able to	
310245C.1	Analyze distributed system types and architectural styles.
310245C.2	Apply communication mechanisms in distributed systems.
310245C.3	Use synchronization algorithms in distributed system applications.
310245C.4	Analyze components of distributed file systems.
310245C.5	Apply replication techniques and consistency models in distributed systems.
310245C.6	Understand a fault tolerant distributed system.
310246: Database Management Systems Laboratory	
Students will be able to	
310246.1	To design E-R model for given requirements using ERD Plus/ERWin tool and convert the same into database tables and apply normalization.
310246.2	To understand and implement the given schema, database queries and PL/SQL programs for 2-tier architecture using MySQL.

310246.3	To implement NoSQL queries, aggregate and map reduce functions for given requirements using MongoDB.
310246.4	To design and develop database application using database connectivity.
310247: Computer Networks and Security Laboratory	
Students will be able to	
310247.1	Analyze the requirements of network types, topology and transmission media
310247.2	Demonstrate error control, flow control techniques and protocols and analyze them
310247.3	Demonstrate the subnet formation with IP allocation mechanism and apply various routing algorithms
310247.4	Develop client - server architectures and prototypes
310247.5	Implement web applications and services using application layer protocols
310247.6	Use network security services and mechanisms
310248: Laboratory Practice I	
Students will be able to	
310248.1	Implement system software viz. assembler, macro processor for pseudo machine.
310248.2	Demonstrate the process management functionalities of an operating system by implementing FCFS (non-preemptive), SJF (preemptive), Round Robin (preemptive), Priority (non-preemptive) algorithms for process scheduling and synchronization by using mutex and semaphores (software solution).
310248.3	Demonstrate memory management functionalities by simulating best fit, first fit, next fit, worst fit memory placement scenarios and FIFO, LRU, Optimal page replacement policies.
310248.4	Implement IoT and embedded system-based application to detect obstacles. Design and implement interactive user interface for selected system or application. Demonstrate IPC and RPC in Distributed Systems.
310248.5	Develop IoT application based on cloud environment to display weather parameters. Analyze and evaluate the effectiveness of user interface design. Apply the principles of bully and ring election algorithm in Distributed Systems.
310248.6	Design, build and test application program on Distributed Systems.
310249: Seminar and Technical Communication	
Students will be able to	

310249.1	Explain the emerging trends in selected domain using oral presentation
310249.2	Compare the efforts taken by other researchers to solve the problem and summarize it in the form of short written survey
310249.3	Apply the technical writing in the form of a report for the purpose of technical communication.
310249.4	Author/Create a presentation on selected topics and demonstrate the technical communication skill by oral communication.
310250A: Audit Course 5 (Cyber Security)	
Students will be able to	
310250A.1	Understand and classify various cybercrimes
310250A.2	Understand how criminals plan for the cybercrimes
310250A.3	Apply tools and methods used in cybercrime
310250A.4	Analyze the examples of few case studies of cybercrimes
310250B: Audit Course 5 (Professional Ethics and Etiquettes)	
Students will be able to	
310250B.1	Summarize the principles of proper courtesy as they are practiced in the workplace.
310250B.2	Apply proper courtesy in different professional situations.
310250B.3	Practice and apply appropriate etiquettes in the working environment and day to day life.
310250B.4	Build proper practices personal and business communications of Ethics and Etiquettes.
310250C: Audit Course 5 (Learn New Skills- Full Stack Developer)	
Students will be able to	
310250C.1	Design and develop web application using frontend and backend technologies.
310250C.2	Design and develop dynamic and scalable web applications
310250C.3	Develop server side scripts
310250C.4	Design and develop projects applying various database techniques
310250D: Audit Course 5 (Engineering Economics)	
Students will be able to	
310250D.1	Understand economics, the cost money and management in engineering
310250D.2	Analyze business economics and engineering assets evaluation
310250D.3	Evaluate project cost and its elements for business

310250D.4	Develop financial statements and make business decisions
310250E: Audit Course 5 (Foreign Language (Japanese)-Module 3)	
Students will be able to	
310250E.1	Apply language to communicate confidently and clearly in the Japanese language
310250E.2	Understand and use Japanese script to read and write
310250E.3	Apply knowledge for next advance level reading, writing and listening skills
310250E.4	Develop interest to pursue further study, work and leisure

Third Year (2015 Pattern) Semester II

310251: Data Science and Big Data Analytics	
Students will be able to	
310251.1	Analyze needs and challenges of Data Science and Big Data Analytics
310251.2	Apply statistics for data analytics.
310251.3	Apply the lifecycle of Big Data analytics to real world problems.
310251.4	Analyze big data using predictive algorithms.
310251.5	Evaluate different prediction models with the help of parameters tuning.
310251.6	Design and visualize big data applications using Hadoop MapReduce, ecosystem and tools.
310252: Web Technology	
Students will be able to	
310252.1	Design and analyze behavior of web pages using HTML and CSS
310252.2	Apply the client side technologies for web development
310252.3	Apply the server side technologies for web development and compare technical differences between Servlet & JSP
310252.4	Understand the use of web services and frameworks
310252.5	Understand the latest web development platform
310253: Artificial Intelligence	
Students will be able to	
310253.1	Identify and apply suitable intelligent agents for AI applications.
310253.2	Analyze Problem Solving Agent and searching techniques
310253.3	Solve gaming problem using adversarial search algorithm.
310253.4	Apply knowledge base agent to solve substitution problem.

310253.5	Evaluate knowledge associated with reasoning.
310253.6	Analyze planning approaches to solve non-deterministic problem.
310254A: Elective II- Information Security	
Students will be able to	
310254A.1	Model the cyber security threats and apply formal procedures to defend the attacks
310254A.2	Apply appropriate cryptographic techniques by learning symmetric and asymmetric key cryptography
310254A.3	Design and analyze web security solutions by deploying various cryptographic techniques along with data integrity algorithms
310254A.4	Identify and evaluate information security threats and vulnerabilities in information systems and apply security measures
310254A.5	Demonstrate the use of standards and cyber laws to enhance cyber security
310254B: Elective II- Augmented & Virtual Reality	
Students will be able to	
310254B.1	Understand the basics of Augmented and Virtual reality systems and list it's applications
310254B.2	Describe interface to the Virtual World with the help of input and output devices
310254B.3	Explain representation of visual, aural and haptic rendering systems in the context of Virtual Reality
310254B.4	Differentiate between manipulation, navigation and interaction of elements in the virtual world experience
310254B.5	Summarize the basic concepts, ingredients and hardware of Augmented & Virtual Reality Experience in gaming or entertainment.
310254B.6	Identify Augmented Reality software, tools, and techniques used to create Mobile Augmented Reality
310254C: Elective II- Cloud Computing	
Students will be able to	
310254C.1	Student will be able to select appropriate cloud service model such as Saas, PaaS and IaaS for running various application effectively.
310254C.2	Student will be able to explain data storage and cloud storage concept for transition from LAN-based to WAN-based cloud storage solution.
310254C.3	Student will be able to analyze virtualization technology using – XEN and VMWare to e.
310254C.4	Student will be able to apply cloud platforms such as AWS, AZURE and Google Cloud for cloud-based application.
310254C.5	Student will be able to explain risk management strategies for security to ensure confidentiality, integrity and availability.
310254C.6	Student will be able to design efficient architecture for DevOps application using advanced tools and techniques such as docker, container, Kubernetes.
310255: Internship	

Students will be able to	
310255.1	To demonstrate professional competence through industry internship.
310255.2	To apply knowledge gained through internships to complete academic activities in a professional manner
310255.3	To choose appropriate technology and tools to solve given problem
310255.4	To demonstrate abilities of responsible professional and use ethical practices in day to day life.
310255.5	Creating network and social circle and developing relationships with industry people.
310255.6	To analyze various carrier opportunities and decide career goals.
310256: Data Science and Big Data Analytics Laboratory	
Students will be able to	
310256.1	Apply principles of Data Science for the analysis of real time problems
310256.2	Implement data representation using statistical methods
310256.3	Implement and evaluate data analytics algorithms
310256.4	Perform text preprocessing
310256.5	Implement data visualization techniques
310256.6	Use cutting edge tools and technologies to analyse Big Data
310257: Web Technology Laboratory	
Students will be able to	
310257.1	Understand the importance of website planning website design issues
310257.2	Apply the client side and server side technologies for web application development
310257.3	Analyze the web technology languages, frameworks and services
310257.4	Create three tier web based applications
310258: Laboratory Practice II	
Students will be able to	
310258.1	Demonstrate proficiency in implementing and understanding fundamental AI algorithms, such as graph search techniques (DFS, BFS), heuristic search (A*), and greedy algorithms.
310258.2	Develop and evaluate heuristic and optimization algorithms including Greedy, Branch and Bound, and backtracking techniques to address complex computational problems like scheduling, graph colouring n queens, and constraint satisfaction.
310258.3	Design and implement AI-based decision support systems such as expert.

	systems or chatbots, integrating knowledge representations and interaction modules to simulate real-world application scenarios.
310258.4 IS	Use tools and techniques in the area of Information Security.
310258.5 IS	Use the knowledge of security for problem solving.
310258.6 IS	Apply the concepts of Information Security to design and develop applications.
310258.4 DS	Use tools and techniques in the area of Cloud Computing.
310258.5 DS	Use the knowledge of Cloud Computing for problem solving.
310258.6 DS	Apply the concepts Cloud Computing to design and develop applications.
310259A: Audit Course (Digital and Social Media Marketing)	
Students will be able to	
310259A.1	Understand the fundamentals and importance of digital marketing
310259A.2	Use the power of social media for business marketing
310259A.3	Analyze the effectiveness of digital marketing and social media over traditional
310259B: Audit Course (Sustainable Energy Systems)	
Students will be able to	
310259B.1	Comprehend the importance of Sustainable Energy Systems
310259B.2	Correlate the human population growth and its trend to the natural resource degradation and develop the awareness about his/her role towards Sustainable Energy Systems protection
310259B.3	Identify different types of natural resource pollution and control measures
310259B.4	Correlate the exploitation and utilization of conventional and non-conventional resources
310259C: Audit Course (Leadership and Personality Development)	
Students will be able to	
310259C.1	Express effectively through communication and improve listening skills
310259C.2	Develop effective team leadership abilities.
310259C.3	Explore self-motivation and practicing creative/new age thinking.
310259C.4	Operate effectively in heterogeneous teams through the knowledge of team work, people skills and leadership qualities
310259D: Audit Course (Foreign Language (Japanese) Module 4)	
Students will be able to	

310259D.1	Express effectively through communication and improve listening skills
310259D.2	Develop effective team leadership abilities.
310259D.3	Explore self-motivation and practicing creative/new age thinking.
310259D.4	Operate effectively in heterogeneous teams through the knowledge of team work, people skills and leadership qualities
310259E: Audit Course (Learn New Skill- Software Development Using Agility Approach)	
Students will be able to	
310259E.1	Illustrate the agility and principles
310259E.2	Understand the software development using agile methodology
310259E.3	Apply Dev Ops for the software product development
310259E.4	Develop software products for early delivery through continual feedback and learning