

PVP SIDDHARTHA INSTITUTE OF TECHNOLOGY (AUTONOMOUS)
DEPARTMENT OF INFORMATION TECHNOLOGY
COURSE OUTCOMES (2020-2021)

Year	Subject Code	Subject Name	CO-I	CO-II	CO-III	CO-IV	CO-V
II-I	19BS1302	Engineering Mathematics III (Discrete Mathematical Structures)	Interpret the logical sentences using connectives and predicates.	Apply rules of inference and methods of proof on Mathematical Logic and Predicate Calculus.	Apply recurrence relations to solve problems in different domains.	Construct Hasse diagram and various lattices from Partial Ordered Sets.	Apply the concepts of trees and graphs for solving problems
II-I	19ES1301	AI Tools	Understand the Fundamentals of Artificial Intelligence and its Applications.	Summarize various machine learning methods.	Identify different machine learning applications.	Compare Machine Learning & Deep Learning and Outline basic Deep Learning Algorithm.	Make use of Deep Learning Concepts for various Applications.
II-I	19ES1302	Design Thinking & Product Innovation	Explain the principles of design thinking and its approaches	Identify the empathy, define phases in human centered design problems.	Develop an idea, build a prototype and test in design thinking context.	Apply design thinking techniques for product innovation.	Implement design thinking in business process models.
II-I	19IT3301	Fundamentals of Digital Logic Design	Understand various types of number systems and their conversions.	Apply different methods to simplify Boolean functions.	Design Combinational logic circuits.	Design sequential circuits using flip-flops.	Construct Registers and Counters using flip-flops.
II-I	19IT3302	Object Oriented Programming using C++	Illustrate general principles and basics of C++.	Outline the features of OOP	Make use of arrays, pointers and polymorphism in writing programs.	Develop programs using files and generic programming concepts.	Identify programs using string functions and exception handling mechanism
II-I	19IT3303	Data Structures	Understand the concept of Recursion & Iteration with examples.	Select appropriate sorting and searching algorithms for various applications.	Apply appropriate linear data structures to solve problems.	Solve problems using suitable nonlinear data structures.	

II-I	19ES1351	AI Tools Lab	Apply various preprocessing techniques on different datasets.	Construct Machine learning programs for Supervised, Unsupervised and Semi supervised learning models.	Develop Deep learning programs for Supervised & Unsupervised learning models.	Identify and Apply Artificial Intelligence concepts to solve real world problems.	
II-I	19ES1352	Design Thinking Lab	Develop a mind maps for design thinking process	Prepare empathy maps and journey maps for problems.	Construct mock-up models through ideation and innovation techniques	Use software for design thinking problems	
II-I	19IT3351	Object Oriented Programming using C++ Lab	Implement the programs using basic concepts in C++	Construct programs using the concepts of class, inheritance and polymorphism.	Implement programs with streams and pointers	Develop applications using template programming.	Develop programs using strings and exception handling mechanism
II-I	19IT3352	Data Structures Lab	Demonstrate the concept of Recursion for solving a problem	Develop programs for searching and sorting algorithms. L	Choose and implement linear data structure to solve problems.	Select and implement suitable nonlinear data structure for solving a problem.	
II-II	19BS1403	Engineering Mathematics- IV (Number Theory and Cryptography)	Understand the concepts of number theory to design Cryptographic algorithms.	Compare different Symmetric key algorithms.	Apply principles of Public-Key Cryptography.	Make use of Hash functions for Authentication.	
II-II	19BS1404	Life Sciences for Engineers	Understand the concepts of biology to create tangible and economically viable engineering goods	Analyse the mechanism of energy transfer between cells	Apply the knowledge of biology to improve the living standards of societies.	Apply the basic knowledge of genetics and DNA technology for disease diagnostics and therapy.	Analyse new technologies in biotechnology, pharmaceutical, medical and agricultural fields from the knowledge gained from DNA technology

II-II	19IT3401	Computer Organization and Architecture	Understand the functionality of central processing unit?	Illustrate the processing of instructions?	Summarize various types of Memories?	Outline different Input/output data transfer methods?	
II-II	19IT3402	Operating Systems	Outline the structure and functionalities of operating systems.	Illustrate various methods for process scheduling, process synchronization and deadlock handling.	Demonstrate various memory management approaches	Summarize file system and mass storage handling.	
II-II	19IT3403	Software Engineering Paradigms	Understand the process of software engineering and various process models	Design the requirements of software system	Use various design elements to prepare software system.	Analyze various testing techniques	
II-II	19IT3404	Design and Analysis of Algorithms	Understand the fundamental concepts of algorithm analysis and design techniques.	Apply various algorithm design techniques for solving problems	Analyze the performance of different algorithms in divide and conquer.	Analyze the feasible solutions to find optimal one for the given problem.	
II-II	19IT3405	Programming with JAVA	Illustrate the need, principles and basics of JAVA.	Apply the knowledge of Java constructs to develop applications	Analyze the behavior of programs involving fundamental programming concepts in JAVA.	Apply object-oriented concepts to design, code and debug simple programs	Apply the use of Java in a variety of technologies and on different platforms
II-II	19MC1401	Environmental Sciences	Apply advanced solutions to measure the threats and hazards in environment to link with human natural systems	Analyze the ethical ,cultural and historical interactions between man and environment	Analyze various environmental assets and record for better management	Analyze global issues to design and evaluate policies	Apply system concepts to methodological social and environmental issues.

II-II	19BS1451	Life Sciences for Engineers Lab	Apply techniques/procedures of life sciences principles to solve problems	Analyze the result of the conducted experiment for a given Sample	Conduct experiments as a team / individual by using equipment available in the laboratory	Infer an effective report based on experiments	
II-II	19IT3451	Design and Analysis of Algorithms Lab	Apply different algorithm design techniques for solving problems.	Implement various experiments as an individual or team member	Develop an effective report based on various programs implemented	Apply technical knowledge for a given problem and express with an effective oral communication	Analyze outputs generated using C programming
II-II	19IT3452	Programming with JAVA Lab	Implement the programs using basics and fundamental concepts of JAVA.	Analyze the given Java program to identify bugs and write correct code.	Use APIs (Application Programmer Interfaces) to develop applications in Java.		
III-I	IT5T1	Unix	Understand the structure of UNIX environment and its accessing using basic commands.	Learn the Shell programming and employ Shell Scripts.	Understand the File structure, Directories and their associated system calls with examples.	Gain the knowledge on Unix Process.	Understand the concept of signals and Inter process communication.
III-I	IT5T2	Design Methods and Analysis of Algorithms	Design an algorithm and analyze its efficiency.	Apply Brute Force techniques and perform various searching and sorting methods.	Understand the different techniques like Divide & Conquer, Decrease & Conquer and Transform & Conquer.	Know a variety of greedy algorithms, dynamic programming approaches used to test for optimality.	Understand the Backtracking, Branch and Bound techniques and the basics of P and NP problems

III-I	IT5T3	Data Communications and Computer Networks	Understand the various standard network models, types of networks and network topologies.	Implement the techniques include framing, error correction, error detection and flow control protocols.	Understand the various Internet Protocol Versions and classification of addressing.	Implement various Routing algorithms.	Understand the Transport layer Services and Transfer protocols TCP, UDP and their use in Real Time Scenarios.
III-I	IT5T4	Web Technologies	Develop advanced HTML pages with the help of tags, CSS and scripting language.	Develop user defined tags to exchange the data and object communication using Java beans.	Understand the concepts of 3 Tier architecture using JDBC and servlets.	Get acquaintance on client server communication using cookies and session Management.	Understand the dynamic content by using JSP architecture and its application model.
III-I	IT5T5	Microprocessors and Micro Controllers	Interface 8086 microprocessor with the external memory chips	Develop programs using different class of instructions for 8086 microprocessor and 8051 microcontroller.	Design and develop real time application modules using ARM microcontroller.		
III-I	IT5L1	Unix Lab	Implement the basic commands and file system utilities in unix environment.	Develop programs using shell scripting.	Implement various commands using system calls.	Develop programs using Inter process communication mechanisms	
III-I	IT5L2	Microprocessors and Micro Controllers Lab	Apply knowledge of the microprocessor's internal registers and operations by use of a PC based microprocessor simulator.	Design electrical circuitry to the Microprocessor I/O ports in order to interface the processor to external devices.	Develop assembly language programs and download the machine code that will provide solutions such as fluid level control, temperature control, and batch processes.		

III-I	IT5L3	Web Technologies Lab	Develop static / dynamic web pages using HTML, CSS and java script.	Populate XML data using XML schema.	Perform SQL operations on data using JDBC and Servlets.	Generate the dynamic content using JSP.	
III-I	IT5L4	Advanced English Language Communication Skills Lab	Improve their Communicative competence.	Acquire Leadership qualities.	Develop Presentation Skills.	Acquire Interview Skills.	Develop Vocabulary and writing skills.
III-II	IT6T1	Software Engineering	Acquire knowledge of basic Software engineering principles and its applications.	Understand the different software process models.	Prepare effective Software Requirement Specification document.	Understand the importance of project management.	Understand different testing approaches and to ensure quality of software.
III-II	IT6T2	Computer Graphics and Algorithms	Develop and build an interactive graphics program using the OpenGL application programming interface.	Design menus and display lists by using various input devices.	Develop and differentiate 2D and 3D transformations.	Understand different types of projections.	Understand different types of the clipping algorithms and rasterization techniques.
III-II	IT6T3	Object Oriented Analysis and Design	Understand the importance and basic concepts of modeling.	Analyze problems and develop structural diagrams.	Construct various UML diagrams to model the behavior of the system.	Construct various UML diagrams to model reactive systems.	Become familiar with architectural modeling and practice various models for a given application.
III-II	IT6T4	Data Mining and Data Warehousing	Understand the basic principles of Data Mining and data preprocessing.	Differentiate the concepts of data warehousing and OLTP.	Relate the learned algorithms in association and pattern mining to the practical issues.	Describe and utilize a range of techniques for classifying the data and accuracy improvements.	Analyze the data and develop some clustering and outlier methods.

III-II	EE6T6FE1	MATLAB Programming & Applications	Write MATLAB programs for engineering problems	Handle graphics and draw plots	Interpolate the data do curve fitting for the given data points	Work with arrays, matrices and character strings	
III-II	ME6T6FE4	Industrial Engineering & Entrepreneurship	Describe the role and responsibilities of management and the organizational Structures	List the different organizational structures and leadership qualities	Implement different quality control techniques.	Explain PERT and CPM techniques regarding project management	List the significance of entrepreneurship and its startup procedures
III-II	IT6L1	OOAD Lab	Analyze and design structural diagrams.	Construct UML diagrams to model the behavioral aspects (Use case, Activity, Sequence and Collaboration Diagrams) for a given problem.	Construct UML diagrams to model the dynamic behavior of system.	Design the architectural aspects of a system.	
III-II	IT6L2	DM Lab	Perform various operations on data preprocessing.	Implement association rule mining algorithms.	Apply different classification techniques.	Analyze data using clustering techniques.	
III-II	IT6L3	Computer Graphics and Algorithms Lab	Implement different types of interactive graphics programs using OpenGL.	Develop various transformations in graphics.	Build an interactive graphics program to perform various clipping algorithms.	Implement an interactive graphics program to perform polygon filling.	
III-II	IT6L4	Personality Development Course	Understand the fundamentals of various aspects of personality traits	Apply various aspects of soft skills and personality development	Analyse the various techniques of stress management.	Acquire the significant factors of affecting attitudes.	Develop Interpersonal communication.
III-II	IT6L5	Seminar	Apply domain knowledge to choose recent advancements and technologies in IT and ITES for seminar topic.	Demonstrate effective verbal communication skills.	Show the integrity and ethical behavior while preparing the presentation & documentation.	Complete the task independently and submit the report within the appropriate time.	

IV-I	IT7T1	Managerial Economics and Financial Accountancy	Aware of various aspects of managerial economics, production & cost analysis, markets & pricing strategies.	Develop an ability to identify, formulate, and solve engineering problems by applying the subject knowledge of Managerial economics.	Apply capital budgeting, financial analysis techniques in evaluating various investment opportunities	Enhance their capabilities in the interpretation of balance sheets are followed in industries, organizations & institutes.	
IV-I	IT7T2	Software Testing	Understand the importance of testing and debugging.	Interpret a model for testing and understand the process of testing and its limitations.	Understand the path testing, transaction flow and data flow in a software system and selection criteria and their limitations.	Understand the domain testing strategy for different dimension domains and concept of Logic based testing.	Apply KV Charts, State Graphs, Transition testing and Graph Matrices.
IV-I	IT7T3	Mobile Computing	Understand the architecture of mobile computing and GSM system.	Understand the services provided by various layers in mobile computing architecture.	Analyze the concepts of synchronization in mobile computing systems.	Describe the MANET architecture, applications and properties.	Know the concepts of Mobile internet using WLAN.
IV-I	IT7T4	Distributed Object Technologies	Understand the basic operations on data.	Implement conditional, control statements and functions.	Perform operations on arrays and files.	Understand and perform database operations.	Understand the concepts of AJAX with XML and database.
IV-I	IT7T5C	Elements of Software Project Management	Understand the concepts of conventional software management and software economics.	Gain the knowledge on software development lifecycle and artifacts.	Understand the process workflows and milestones.	Analyze the concepts of work break down structure, cost estimation and process automation.	Understand the importance of software metrics and quality indicators.
IV-I	IT7T6A	Human Computer Interaction	Understand the GUI design and its characteristics.	Analyze human physical and mental limitations to use computers and provide solutions.	Understand the techniques of presentation of screen design components.	Gain knowledge on the concepts of windows.	Understand the selection of various screen design components.

IV-I	IT7L1	Mobile Computing Lab	Implement the operations perform on data using emulator.	Develop MIDlet's which are used in mobile applications.	Describe the components and structure of a mobile development frameworks.	Develop .apk files(mobile apps) which is installed in android mobiles.	
IV-I	IT7L2	Distributed Object Technologies Lab	Create a pure dynamic webpage like forum.	Develop a web page and apply effects.	Perform operations over database like inserting images and submitting data.	Build authentication on applications by using cookies.	Create and maintain sessions to the users
IV-I	IT7L3	Mini Project/Term Paper and Seminar	Analyze a real world problem and identify its requirements.	Design and document technical ideas, strategies and methodologies.	Use tools, algorithms and/or techniques that contribute to the development of the project.	Role-Play as a member and/or leader of a team to present the project.	
IV-II	IT8T1	Biometrics	Understand Finger Scan Technology and Accuracy of Biometrics.	Understand Facial Scan and Iris Scan Technologies.	Understand Voice Scan, other physiological Biometrics and Behavioral Biometrics.	Identify Different Biometric Applications.	Apply Biometrics for Network Security.
IV-II	IT8T2D	Big Data Analytics	Understand the fundamentals of Big cloud and data architectures.	Learn the concepts of HDFS file systems and interfaces and able to keep HDFS cluster balanced	Familiarize with map reduce classes, combiner functions and can run map reduce job.	Aware of classic map reduce and able to apply shuffle and sort on map reducer side.	Understand The Hive Shell.
IV-II	IT8T3A	Artificial Intelligence	Know the challenges and concepts of AI.	Solve problems using heuristics search algorithms	Transform knowledge into rules.	Demonstrate Symbolic reasoning under uncertainty	Acquainted with expert systems.
IV-II	IT8PW	Project	Formulate a real world problem and identify its requirements.	Design and document technical ideas, strategies and methodologies.	Use tools, algorithms and/or techniques that contribute to the development of the project.	Role play as a member and/or leader of a team in project development	

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