PPSU

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

B.SC. CS (ARTIFICIAL INTELLIGENCE)

SYLLABUS BOOK

AY 2026-27

INSTITUTE VISION
To emerge as an Institute of Excellence by imparting value-based education aided with Research, Innovation and Entrepreneurial skills.

INSTITUTE MISSION	
1	To impart the holistic engineering education of highest quality & prepare socially responsible professionals with entrepreneurial skills.
2	To prepare value-aided engineering professionals to meet up global industry requirements by imparting cutting edge professional education.
3	To inculcate the attitude of research and innovation among the stake holders through experiential and project-based teaching-learning pedagogy.
4	To acquire global talent pool by providing world class amenities for teaching, learning & research.

Graduates will demonstrate ability to:

PEO No	PROGRAMME EDUCATIONAL OBJECTIVES
PEO 1	Apply software development skills and computing knowledge to design innovative applications that effectively and efficiently address business and societal challenges.
PEO 2	Build successful careers as application developers, software developer, system analysts, or entrepreneurs by leveraging strong programming, problem solving and analytical abilities.
PEO 3	Uphold ethical practices, demonstrate effective communication and teamwork, and contribute to the continuous advancement of knowledge in rapidly evolving fields.

PO No	PROGRAMME OUTCOMES
PO 1	**Foundational & Domain Knowledge:** Demonstrate a solid understanding of mathematical foundations, computing principles, and domain-specific theories to model and solve complex IT problems.
PO 2	**Problem Formulation & Analysis:** Decompose and critically analyse real-world IT problems using algorithmic thinking and computational reasoning to derive structured, well-justified solutions.
PO 3	**Design, Development & Innovation:** Design, develop, and deploy innovative IT solutions that satisfy functional and non-functional requirements while adhering to engineering best practices and user-centered design.
PO 4	**Research, Inquiry & Evidence-Based Thinking:** Investigate complex IT challenges through research methods, data analysis, and experimentation to reach evidence-based conclusions and actionable solutions.
PO 5	**Modern Tools & Emerging Technologies:** Select and apply modern tools, frameworks, and emerging technologies; including AI/ML, cloud, and DevOps to build efficient, industry-relevant IT solutions.
PO 6	**Communication, Leadership & Teamwork:** Convey technical concepts clearly and contribute effectively as a collaborator or leader within multidisciplinary teams in professional environments.
PO 7	**Ethics, Society & Professional Responsibility:** Apply ethical frameworks, legal standards, and professional norms in IT practice, with awareness of societal impact, data privacy, cybersecurity, and sustainability.
PO 8	**Lifelong Learning & Adaptability:** Demonstrate proactive commitment to continuous self-directed learning, staying current with technological advancements and evolving best practices throughout career.

PSO No	PROGRAMME SPECIFIC OUTCOMES (PSO)
PSO 1	Graduates will apply foundational concepts of computer science and artificial intelligence to design intelligent systems, algorithms, and domain-specific applications.
PSO 2	Graduates will demonstrate proficiency in AI tools, machine learning frameworks, and programming languages to address real world problems efficiently and ethically.
PSO 3	Graduates will exhibit research aptitude, critical thinking, and problem-solving capabilities essential for innovation, entrepreneurship, or advanced studies in artificial intelligence and related fields.

Credit Guidelines (General)

One (1) credit represents 30 hours of learning, comprising an appropriate combination of Theory, Practical, Tutorial, Project, Group Discussion, Case Study, Field Visit, Presentation, Assignment, Term Work, Self-Learning, and other curriculum-approved learning activities.

CO-PO Mapping Guidelines

Mapping Level	%age Mapping	Indicator
0	0	No Mapping
1	0-33	Low Level (Slightly Mapped)
2	33-66	Medium Level (Moderately Mapped)
3	>66	High Level (Strongly Mapped)

Syllabus Book

P P Savani University

School of Engineering

Effective From: 2026-27

Authored by: P P Savani University

CONTENT

PPSU
P P SAVANI UNIVERSITY
NAAC ACCREDITED A+ GRADE

Institute of
Computer Science &
Application

FIRST YEAR B.SC CS (AI) (2026-27)

P P SAVANI UNIVERSITY

INSTITUTE OF COMPUTER SCIENCE & APPLICATION

TEACHING & EXAMINATION SCHEME FOR FIRST YEAR BSc. CS (Artificial Intelligence) PROGRAMME AY: 2026-27

Sem	Course Code	Course Title	Offered By	Teaching Scheme										Examination Scheme								
				Direct Contact Hours			Indirect Contact Hours					Total	Credit	Theory	Practical	Tutorial	Project	GD/CS/FV/PPT	Assignment	Term Work	Self Learning	Total
				Theory	Practical	Tutorial	Project	GD/CS/FV/PPT	Assignment	Term Work	Self Learning			CE/ESE	CE/ESE	CE/ESE	CE/ESE	CE/ESE	CE/ESE	CE/ESE	CE/ESE	CE/ESE
1	ICASH1010	Basic Mathematics for Computing	S & H	45	0	30	0	0	30	0	15	120	04	30 50	0	30 50	0	0	20 00	0	20 00	100 100
	ICAIT1010	Computer Organization	IT	45	30	0	0	0	30	0	15	120	04	30 50	30 50	0	0	0	20 00	0	20 00	100 100
	ICACA1020	UI/UX Design and Human Psychology	CA	30	30	0	30	0	30	0	0	120	04	30 50	30 50	0	20 00	0	20 00	0	0	100 100
	ICACS1010	Programming Fundamentals with C	CS	45	60	0	0	0	15	0	0	120	04	30 50	30 50	0	0	0	40 00	0	0	100 100
	ICACS1030	Prompt Engineering	CS	30	30	0	0	0	0	30	30	120	04	30 50	30 50	0	0	0	0	20 00	20 00	100 100
	CLSC2090	Constitutional Empowerment	CLSC	30	0	0	0	0	30	0	0	60	0	100 00	0	0	0	0	0	0	0	100 00
											Total	**660**	**22**									**1100**
2																						
	ICASH1020	Applied Statistics	S & H	45	0	30	0	0	30	0	15	120	04	30 50	0	30 50	0	0	20 00	0	20 00	100 100
	ICAIT1020	Introduction to Database Concepts	IT	45	30	0	0	0	25	20	0	120	04	30 50	30 50	0	0	0	20 00	20 00	0	100 100
	ICACA1010	Basics of Web Designing	CA	30	45	0	30	0	0	0	15	120	04	30 50	30 50	0	20 00	0	0	0	20 00	100 100
	ICACS1020	Fundamentals of Python Programming	CS	30	45	0	0	0	25	0	20	120	04	30 50	30 50	0	0	0	20 00	0	20 00	100 100
	ICAIT1030	Digital Literacy	IT	30	30	0	0	0	30	0	0	90	03	30 50	30 50	0	0	0	40 00	0	0	100 100
	CFLS2130	Intermediate Communicative English	CFLS	45	0	0	0	0	45	0	0	90	3	100 00	0	0	0	0	0	0	0	100 00
											Total	**660**	**22**									**1100**

P P Savani University

School of Engineering

Offered by: Department of Science & Humanities

COURSE DETAILS:

Course Code	ICASH1010
Course Name	Basic Mathematics for Computing
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	120	45	0	30	0	0	30	0	15

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	0		30	50	0		0		20	00	0		20	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Provide a strong foundation in number systems, data representation, and binary arithmetic used in computer systems.
- Develop logical reasoning skills using mathematical logic, predicates, and quantifiers for computational problem-solving.
- Apply combinatorial techniques, mathematical induction, matrices, and determinants to solve mathematical and computational problems.
- Recognize and analyze the applications of matrices, determinants, and other mathematical concepts in computer science and related domains.
- Understand and apply analytical geometry concepts to model and solve geometric problems in computational and engineering contexts.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Number System:** Introduction to Number System, Base, Types of Number Systems, Conversion Between Number Bases, Arithmetic Operations - Addition, Subtraction, Multiplication and Division for Binary, Octal, Hexadecimal Systems, Signed Unsigned Numbers, Binary Coding - BCD, ASCII, EBCDIC, Floating Point Representation of Numbers and Arithmetic	08	18

	Operation with Normalized Floating-Point Numbers.		
2	**Mathematical Logic:** Propositional Logic, Propositional Equivalences, Predicates and Quantifiers, Nested Quantifiers.	07	16
3	**Elementary Combinatorics:** Introduction, Basic Counting Principles, Permutation and Combination, Mathematical Induction.	07	16
4	**Matrix Algebra:** Introduction, Types of Matrices, Operations of Matrices, Adjoint Matrices, Solution of System of Equations by Matrix Inversion Method, Applications of Matrix.	07	16
5	**Determinants:** Formation of Determinants, Minors and Cofactors of the Elements of a Determinant, Properties of Determinants, Applications of Determinants in Computer Science, Cramer's Rule.	08	17
6	**Analytical Geometry:** Introduction to Cartesian coordinate system, Straight line, Slope of Straight line, Intersection of two straight lines, Equation of circle, Centre and Radius, Tangent, Equation of Parabola, Hyperbola and Ellipse.	08	17
	TOTAL	**45**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Number System-1	02
2	Number System-2	04
3	Mathematical Logic	04
4	Elementary Combinatorics	04
5	Matrix Algebra-1	02
6	Matrix Algebra-2	04
7	Determinants-1	02
8	Determinants-2	04
9	Analytical Geometry-1	02
10	Analytical Geometry-2	02
	TOTAL	**30**

SELF-LEARNING ONLINE RESOURCES:

Sr. No	Link / Description	Self-Learning Hours
1	https://www.youtube.com/watch?v=xpy5NXiBFvA What is Binary Number System? Decimal to Binary Conversion, Code for Decimal to Binary conversion, Binary to Decimal conversion	05
2	https://www.youtube.com/watch?v=r8yK3h3DLdA Logic and Methods of proofs	05
3	https://www.youtube.com/watch?v=q9PONAeOoLI	05

	How to find the determinant of a 2x2 or a 3x3 matrix. Solving a system of equations using Cramer's Rule.	

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of tutorial which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz – 25Marks External Viva Voce – 25 Marks	50	20
Asignment	CE	A single assignment comprising 30 questions covers all six modules.	20	00
Self Learning	CE	20 MCQ questions based on self-study resources and online learning | 1 marks per question | Total = 20 marks	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Discrete Mathematics	T. Veerarajan	Tata McGraw Hill

REFERENCE BOOK(S):

Title	Author/s	Publication
Discrete Mathematics and its Applications	Kenneth H. Rosen	Tata McGraw Hill
Discrete Mathematical Structures with Applications to Computer Science	J. P. TremblayR. Manohar	Tata McGraw Hill
Analytical Geometry: 2D and 3D	P R Vittal	Pearson
Introduction to Computer Science	ITL ESL	Pearson

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICASH1010	Basic Mathematics for Computing
CO 1	Convert decimal to binary, octal, hexadecimal for data representation and calculate arithmetic operations.
CO 2	Compute permutations and combinations on a given set of data.
CO 3	Apply matrix algebra to perform matrix operations and solve systems of linear equations.
CO 4	Evaluate the solution of system if linear equations through elimination method.

CO 5	Discuss the equation of straight line in different forms and related properties.

MAPPING OF CO WITH PO:

ICASH1010	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	2	2	1	1	0	0	0	0
CO 2	2	2	1	1	0	0	0	0
CO 3	2	2	1	1	0	0	0	0
CO 4	2	2	1	1	0	0	0	0
CO 5	2	2	1	1	0	0	0	0

MAPPING OF CO WITH PSO:

ICASH1010	PSO1	PSO2	PSO3
CO 1	1	1	0
CO 2	1	1	0
CO 3	1	1	0
CO 4	1	1	0
CO 5	1	1	0

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Number System	1,2,3,5
2	Mathematical Logic	1,2,4,6
3	Elementary Combinatorics	1,2,3,5
4	Matrix Algebra	1,2,3,5
5	Determinants	1,2,3,5
6	Analytical Geometry	1,2,3,5

P P Savani University

School of Engineering

Offered by: Department of Information Technology

COURSE DETAILS:

Course Code	ICAIT1010
Course Name	Computer Organization
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	120	45	30	00	00	00	30	00	15

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	00	00	00	00	20	00	00	00	20	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Understand the fundamental concepts of computer organization and architecture.
- Apply number systems, data representation techniques, and Boolean algebra in digital systems.
- Analyse processor organization, instruction execution cycles, and control unit operations.
- Evaluate memory hierarchy, storage systems, and input/output mechanisms.
- Develop problem-solving skills related to computer hardware organization and performance analysis.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Overview of Computer Systems: :** Definition, components and classifications (desktop, server, embedded systems). Difference between Computer Organization and Computer Architecture. Basic functional units: Input Unit, Output Unit, Memory Unit, Arithmetic and Logic Unit (ALU), Control Unit (CU). Instruction Execution Cycle: Fetch, Decode, Execute.	09	22
2	**Basic Computer Organization and Data Representation: :** Instruction Codes and Computer Registers; Instruction Cycle and Timing; Input-Output Basics and Interrupt Handling. Decimal, Binary, Octal and Hexadecimal Numbers; Number System Conversions; Fixed Point Representation; Signed	10	22

	Magnitude; 1's and 2's Complement Representation; Addition, Subtraction and Basic Logical Operations.		
3	**Boolean Algebra and Logic Gates: :** Boolean Operations (AND, OR, NOT, NAND, NOR, XOR, XNOR); Laws of Boolean Algebra; De Morgan's Theorem; Karnaugh Maps (up to 4 variables); Digital Logic Gates and Truth Tables; Combinational Circuits; Encoder and Decoder Design and Implementation.	06	15
4	**Processor and Control Unit: :** Introduction to Microprocessors; Basic Components of Processor (Registers, ALU, CU); Clock Speed, Instruction Set and Processing Modes; Hardwired Control; Microprogrammed Control; Basics of RISC and CISC Architectures.	06	13
5	**Memory Organization: Primary Memory: :** RAM (Static and Dynamic), ROM (PROM, EPROM, EEPROM); Secondary Memory: Hard Drives and SSDs; Cache Memory (L1, L2, L3); Virtual Memory and Paging; Memory Hierarchy; Memory Access Time and Performance.	07	14
6	**Input/Output Systems and Storage Devices: :** Basics of Input/Output Operations; I/O Devices; Programmed I/O; Interrupt-driven I/O; Direct Memory Access (DMA); Storage Devices: Magnetic, Optical and Solid-State Storage; RAID; Peripheral Devices including Monitors, Projectors and External Storage Devices.	07	14
	TOTAL	**45**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Study of Computer Hardware Components and Functional Units	02
2	Number System Conversion (Decimal, Binary, Octal and Hexadecimal)	02
3	Binary Arithmetic Operations	02
4	1's and 2's Complement Arithmetic	02
5	Verification of Boolean Algebra Laws	02
6	Implementation of Logic Gates and Truth Tables	02
7	Karnaugh Map Simplification (up to 4 Variables)	02
8	Design and Implementation of Encoder Circuits	02
9	Design and Implementation of Decoder Circuits	02
10	Simulation of Fetch-Decode-Execute Cycle	02
11	Study of Processor Registers and Instruction Execution	02
12	Demonstration of Interrupt Handling	02
13	DMA Transfer Simulation	02
14	Cache Memory and Virtual Memory Demonstration	02
15	Comparative Study of HDD, SSD and RAID Configurations	02
	TOTAL	**30**

SELF-LEARNING ONLINE RESOURCES:

Sr. No	Link / Description	Self-Learning

		Hours
1	NPTEL - https://nptel.ac.in/courses/106105163 – Computer Organization & Architecture	03
2	Neso Academy (YouTube) - Computer Organization and Architecture Playlist-nptel.ac.in/courses/106105163	03
3	Gate Smashers (YouTube) - Computer Organization Tutorials-youtube.com/@NesoAcademy	03
4	Intel Product Specifications - Processor Architecture and Memory Systems - youtube.com/@GateSmashers	03
5	EE282 Computer Systems Architecture - Recorded Architecture Lectures - intel.com/processors	03

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Assignment	CE	Assignment Evaluation Rubrics: Understanding of Concept – 5 Marks, Technical Accuracy – 5 Marks, Problem Solving Approach – 5 Marks, Presentation & Documentation – 5 Marks. Perform storage performance comparison between HDD and SSD using benchmarking tools.	20	00
Self Learning	CE	40 MCQ questions based on self-study resources and online learning | 0.5 marks per question | Total = 20 marks	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Computer System Architecture	M. Morris Mano	Pearson

REFERENCE BOOK(S):

Title	Author/s	Publication
Computer Architecture and Organization	Subrata Ghoshal	Pearson
Computer Architecture & Organization	M. Murdocca & V. Heuring	Wiley

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICAIT1010	Computer Organization
CO 1	Explain computer system organization, functional units, and instruction execution cycles.
CO 2	Apply number systems, data representation techniques, and Boolean algebra concepts in digital systems.
CO 3	Analyze processor architecture, registers, instruction execution, and control unit operations.
CO 4	Evaluate memory hierarchy, cache memory, virtual memory, and storage technologies.
CO 5	Explain input/output systems, DMA, interrupt handling, and peripheral device operations.

MAPPING OF CO WITH PO:

ICAIT1010	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	2	1	0	1	0	0	2
CO 2	3	3	2	0	2	0	0	1
CO 3	2	3	3	2	2	1	0	2
CO 4	2	2	2	2	3	0	1	0
CO 5	2	2	1	1	2	1	2	1

MAPPING OF CO WITH PSO:

ICAIT1010	PSO1	PSO2	PSO3
CO 1	3	1	0
CO 2	3	1	1
CO 3	3	1	2
CO 4	2	2	2
CO 5	2	2	2

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Overview of Computer Systems	1,2
2	Basic Computer Organization and Data Representation	2,3
3	Boolean Algebra and Logic Gates	3,4
4	Processor and Control Unit	4
5	Memory Organization	4,5
6	Input/Output Systems and Storage Devices	3,5

P P Savani University

School of Engineering

Offered by: Department of Computer Application

COURSE DETAILS:

Course Code	ICACA1020
Course Name	UI/UX Design and Human Psychology
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	120	30	30	00	30	00	30	00	00

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	20	00	00	00	20	00	00	00	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Develop a strong understanding of UI/UX design principles, Design Thinking, and User-Centered Design for creating intuitive and user-friendly digital experiences.
- Apply visual design principles, including layout, typography, color theory, whitespace, and responsive design, to build aesthetically appealing user interfaces.
- Gain practical proficiency in using Figma to create wireframes, responsive layouts, and interactive prototypes for web and mobile applications.
- Analyze user needs and behavior through human psychology, user research, personas, empathy maps, and user journey mapping to design user-centric solutions.
- Design, prototype, and evaluate interactive applications by integrating usability testing and iterative design practices to address real-world design challenges.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Introduction to UI/UX and Design Thinking:** Detailed UI vs. UX dichotomies; Evolution of platforms. Step by step problem solving for design. Principles of User-Centered Design (UCD). Real World Example.	05	16
2	**Visual Design Fundamentals:** Basic UI layouts: Grids, layout column metrics, advanced Typography scales, and functional Color Theory, White Space,	05	16

	CRAP Principles (Contrast, Repetition, Alignment, Proximity)		
3	**Basics of Figma tool:** Beginner Figma tools: frames, shapes, text, auto layout, icons, images. Calculators, dashboards, and registration forms.	05	16
4	**Wireframing & Responsive Design:** Low-Fidelity analog paper layout (Paper Sketches); transitioning to Mid-Fidelity digital wireframes. Responsive breakpoint designs for Mobile, Tablet, and Desktop web environments.	05	16
5	**Human Psychology and User Research:** Gestalt Principles. Architecture of Human Processing: Short-term memory constraints, recognition vs. recall benchmarks. Simple design rules: grouping, alignment, and balance. Color Psychology. User Research approaches: Qualitative interviews vs. quantitative surveys. Designing structural User Personas and Empathy Maps. User Journey Mapping (UJM) and interactive User Flows.	06	20
6	**Prototyping and Mini Project:** Clickable prototypes for screen navigation. Basic navigation menus and simple site maps. Usability Testing (basic), Mini Application Design.	04	16
	TOTAL	**30**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Introduction to Figma: Explore the Figma interface, frames, shapes, text, icons, images, layers, and basic properties. Create a simple profile card or business card.	03
2	UI Analysis Activity: Analyze the UI of two popular mobile applications (e.g., WhatsApp, Instagram, Gmail). Identify good and poor UI design practices based on layout, typography, colors, spacing, and consistency.	03
3	Basic Interface Design: Design simple interfaces such as a Login Page, Registration Form, Calculator, and Student Information Form in Figma.	03
4	Paper Wireframing: Create low-fidelity paper wireframes for a simple application (Library, Canteen, Bus Tracking, Attendance, etc.) and identify navigation between screens.	03
5	Digital Wireframing: Convert the paper wireframes into digital wireframes using Figma. Apply grids, spacing, typography, and color styles.	03
6	User Research Activity: Conduct a simple classroom survey or interview for the selected application. Prepare one User Persona and one Empathy Map based on collected responses.	03
7	User Flow & Responsive Design: Develop a basic user flow and create responsive layouts for Mobile, Tablet, and Desktop screens using Auto Layout and constraints.	03
8	Reusable Components: Create a simple design system containing reusable buttons, text styles, input fields, cards, navigation bars, and color styles.	03
9	Interactive Prototype: Build a clickable prototype using Figma with basic navigation between screens. Perform a simple usability test with classmates and incorporate feedback.	03
10	Mini UI/UX Project: Design a complete UI prototype for one application such as a	03

	Library Management System, Restaurant Ordering App, College Event Registration App, Student Attendance System, or Personal Portfolio. Submit the prototype along with user persona, wireframes, and prototype.	
	TOTAL	**30**

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Project	CE	Project Evaluation Rubrics: • Problem Statement & Requirement Analysis – 5 Marks • Design, Architecture & Tool Usage – 5 Marks • Implementation & Functionality – 5 Marks • Project Demonstration & Viva-Voce – 5 Marks	20	00
Assignment	CE	Assignment Questions: UI Analysis & Redesign Objective: Understand good vs. poor UI practices and apply design principles. Representation: Students should present their redesign with before vs. after comparison, highlighting improvements. User Persona & Empathy Map Objective: Connect human psychology with design decisions. Representation: Students should submit diagrams and flowcharts with clear labels, ensuring beginner-friendly clarity. Assignment Evaluation Scheme • Conceptual Clarity & Accuracy – 5 Marks • Critical Thinking & Originality – 5 Marks • Structure & Task Completion – 5 Marks Timely Submission & Formatting – 5 Marks	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication

UX Design Redefined: A Practical Guide to User Experience and Human Behavior.	Pradeep, S.	Technical Publications India. (2021)

REFERENCE BOOK(S):

Title	Author/s	Publication
The Design of Everyday Things	Norman, D.	Basic Books. (2013)
Laws of UX: Using Psychology to Design Better Products and Services.	Yablonski, J.	O'Reilly Media. (2020)
Don't Make Me Think, Revisited: A Common Sense Approach to Web Usability.	Krug, S.	New Riders.

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICACA1020	UI/UX Design and Human Psychology
CO 1	Explain the fundamental concepts of UI, UX, Design Thinking, User-Centered Design, and visual design principles for developing effective user interfaces
CO 2	Apply visual design principles and Figma tools to create wireframes, layouts, and responsive user interface designs for digital applications.
CO 3	Analyze user requirements using human psychology, user research techniques, personas, empathy maps, and user journey mapping to improve user experience.
CO 4	Develop interactive prototypes and responsive interfaces by integrating wireframing, navigation, and prototyping techniques.
CO 5	Evaluate the usability of digital interfaces through usability testing and design a user-centric application that addresses real-world user needs.

MAPPING OF CO WITH PO:

ICACA1020	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	1	0	0	2	0	0	2
CO 2	2	3	2	1	3	2	2	0
CO 3	3	2	3	0	0	0	0	2
CO 4	1	0	3	3	0	2	0	3
CO 5	2	3	2	2	2	1	3	1

MAPPING OF CO WITH PSO:

ICACA1020	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	3	2	3
CO 3	3	0	2
CO 4	2	3	3
CO 5	2	2	2

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Introduction to UI/UX and Design Thinking	1,2
2	Visual Design Fundamentals	2,3
3	Basics of Figma tool	2,3,4
4	Wireframing & Responsive Design	3,4
5	Human Psychology and User Research	2, 3,4,5
6	Prototyping and Mini Project	5,6

P P Savani University

School of Engineering

Offered by: Department of Computer Science

COURSE DETAILS:

Course Code	ICACS1010
Course Name	Programming Fundamentals with C
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	120	45	60	00	00	00	15	00	00

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	00	00	00	00	40	00	00	00	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Understand the fundamentals of problem solving and structured programming using the C language.
- Develop logical thinking and algorithmic problem-solving skills.
- Learn C programming constructs including data types, operators, control statements, arrays, functions, pointers, structures, and file handling.
- Design, implement, debug, and test C programs for real-world problems.
- Build a strong programming foundation for advanced computer science subjects.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Introduction to Programming and C Fundamentals: :** Introduction to computers, programming languages, algorithms, flowcharts, program development cycle, history and features of C, structure of a C program, character set, identifiers, keywords, constants, variables, data types, operators, expressions, input/output functions (printf(), scanf()), formatted I/O.	08	18
2	**Decision Making and Looping: :** Conditional statements (if, if-else, nested if, switch), relational and logical operators, looping statements (while, do-while,	08	18

	for), nested loops, break, continue, goto, programming exercises on pattern generation and mathematical problems.		
3	**Functions and Arrays: :** User-defined functions, function declaration, definition and calling, parameter passing, recursion, scope and storage classes, one-dimensional arrays, two-dimensional arrays, strings and string handling functions, array applications.	10	22
4	**Pointers and Dynamic Memory Allocation: :** Introduction to pointers, pointer arithmetic, pointers and arrays, pointers to functions, call by value and call by reference, dynamic memory allocation (malloc(), calloc(), realloc(), free()), command line arguments.	08	18
5	**Structures, Unions and File Handling: :** Structures, nested structures, arrays of structures, unions, typedef, enumeration, file concepts, file opening and closing, reading and writing files, random access, error handling.	07	14
6	**Preprocessor, Modular Programming and Applications: :** Preprocessor directives, macros, header files, conditional compilation, modular programming concepts, debugging techniques, programming best practices, mini programming applications using multiple concepts.	04	10
	TOTAL	**45**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Installation of C Compiler and writing first C program	02
2	Programs using arithmetic expressions and formatted input/output	04
3	Programs based on decision making statements	06
4	Programs using loops and pattern generation	08
5	Programs using functions and recursion	08
6	Programs on arrays and strings	10
7	Programs using pointers and dynamic memory allocation	08
8	Programs using structures, unions and file handling (Mini Project)	06
9	Programs using preprocessor directives, macros, header files, and conditional compilation.	04
10	Programs using modular programming concepts and mini applications following programming best practices and debugging techniques.	04
	TOTAL	**60**

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the	30	00

		same will be converted to 30 marks.		
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Assignment	CE	• Students shall complete 4 programming assignments during the semester. Each assignment will be evaluated based on: • • Problem Understanding & Algorithm Design – 5 Marks • Program Logic & Correctness – 5 Marks • Code Quality & Documentation – 15 Marks • Execution, Output & Viva Voce – 15 Marks	40	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Let Us C (Latest Edition)	Yashavant Kanetkar	BPB Publications

REFERENCE BOOK(S):

Title	Author/s	Publication
Programming in ANSI C	E. Balagurusamy	McGraw Hill
The C Programming Language	Brian W. Kernighan & Dennis M. Ritchie	Pearson
C: How to Program	Paul Deitel & Harvey Deitel	Pearson

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICACS1010	Programming Fundamentals with C
CO 1	Explain the fundamentals of programming, algorithms, flowcharts, and C language syntax for solving computational problems.
CO 2	Develop C programs using operators, decision-making statements, loops, functions, and arrays to solve engineering problems.
CO 3	Apply pointers, strings, dynamic memory allocation, and user-defined functions to design efficient C programs.
CO 4	Implement programs using structures, unions, file handling, and modular programming techniques for data processing applications.
CO 5	Analyse structured C programs by applying good programming practices and problem-solving skills.

MAPPING OF CO WITH PO:

ICACS1010	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	2	1	0	1	0	0	1
CO 2	2	3	2	0	2	0	0	1
CO 3	2	3	3	1	2	1	0	1
CO 4	2	2	3	2	2	1	1	1

CO 5	2	3	3	2	2	2	2	3

MAPPING OF CO WITH PSO:

ICACS1010	PSO1	PSO2	PSO3
CO 1	3	1	0
CO 2	3	2	0
CO 3	2	3	1
CO 4	2	3	2
CO 5	2	3	3

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Introduction to Programming and C Fundamentals	1,2
2	Decision Making and Looping	2, 3
3	Functions and Arrays	2,3
4	Pointers and Dynamic Memory Allocation	3, 4
5	Structures, Unions and File Handling	2,3,4
6	Preprocessor, Modular Programming and Applications	5,6

P P Savani University

School of Engineering

Offered by: Department of Computer Science

COURSE DETAILS:

Course Code	ICACS1030
Course Name	Prompt Engineering
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	120	30	30	00	00	00	00	30	30

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	00	00	00	00	00	00	20	00	20	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Understand the fundamentals of Large Language Models (LLMs) and the role of prompts in steering their behaviour.
- Develop the ability to design, structure, and refine prompts for accurate, relevant, and reliable AI outputs.
- Explore prompting techniques such as zero-shot, few-shot, chain-of-thought, and role-based prompting across different AI platforms
- Apply prompt engineering practices to real-world tasks including content generation, coding assistance, data analysis, and research.
- Evaluate, debug, and ethically apply prompt engineering strategies for academic, professional, and creative use cases.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Introduction to Prompt Engineering:** Concept of prompts and prompt engineering; role of prompts in Large Language Models (LLMs); evolution from rule-based NLP to generative AI; overview of GPT, Gemini, Claude and other LLM architectures; anatomy of a prompt (instruction, context, input data, output indicator); applications of prompt engineering in industry and academia.	05	17

2	**Core Prompting Techniques:** Zero-shot, one-shot, and few-shot prompting; chain-of-thought and step-by-step reasoning prompts; role-based and persona prompting; instruction-based and template-based prompting; iterative prompt refinement; prompt formatting using delimiters, XML tags, and structured outputs.	05	17
3	**Advanced Prompting Strategies I:** Self-consistency and tree-of-thought prompting; retrieval-augmented generation (RAG) basics; system prompts versus user prompts.	05	16
4	**Advanced Prompting Strategies II:** Function calling and tool-use prompts; multi-turn conversation design; prompt chaining for complex, multi-step tasks.	05	17
5	**Domain-Specific Prompt Applications: :** Prompt engineering for content writing and summarisation; prompts for coding assistance and debugging; prompts for data analysis and visualisation; prompts for image and video generation tools; prompts for research, academic writing, and presentations.	05	16
6	**Evaluation, Ethics & Responsible Prompting:** Evaluating prompt quality and output reliability; identifying and reducing hallucination and bias; prompt injection and security concerns; data privacy in prompt design; responsible and ethical use of AI tools; documentation and version control of prompts.	05	17
	TOTAL	**30**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Introduction to LLM platforms (ChatGPT, Gemini, Claude) and exploring their prompt interfaces.	03
2	Anatomy of a prompt: instruction, context, input data, and output indicator identifying and rewriting weak prompts.	03
3	Designing zero-shot prompts for text classification and summarisation tasks	03
4	Building chain-of-thought prompts for solving multi-step mathematical and logical reasoning problems.	03
5	Prompt engineering for coding assistance — code generation and explanation.	03
6	Designing structured prompts using delimiters and XML tags for consistent, parseable outputs.	03
7	Prompt chaining and multi-turn conversation design for a multi-step task (e.g., research summary to presentation).	03
8	Image/content generation prompting using AI tools (DALL-E, Midjourney, Adobe Firefly) and prompt refinement.	03
9	Function calling and tool-use prompts; designing system prompts versus user prompts.	03
10	Mini Project: Building and documenting a prompt library for a chosen real-world use case.	03
	TOTAL	**30**

SELF-LEARNING ONLINE RESOURCES:

Sr. No	Link / Description	Self-Learning Hours
1	https://www.youtube.com/watch?v=YhRfgYH_AoU&t=17s P- Prompt Engineering Full Course | From Beginner to Pro	05
2	https://www.youtube.com/watch?v=dOxUroR57xs – ChatGPT Prompt Engineering for Developers (DeepLearning.AI)	05
3	https://www.promptingguide.ai/ – Prompt Engineering Guide (techniques and case studies)	05
4	https://www.youtube.com/watch?v=_ZvnD73m40o – Prompt Engineering Tutorial for Beginners	05
5	https://www.youtube.com/watch?v=suewaPnOdQI - Prompt Engineering Beginner COMPLETE Guide and for PROS (2025)	05
6	https://www.youtube.com/watch?v=DKUlRZ3hh-o&t=10s - Become a Prompt Engineering EXPERT in Just 1 hour	05

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Term Work	CE	Prompt Portfolio to solve a concrete, real-world problem using the advanced prompting methodologies	20	00
Self Learning	CE	40 MCQ questions based on self-study resources and online learning | 0.5 marks per question | Total = 20 marks	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Prompt Engineering for Generative AI	James Phoenix & Mike Taylor	O'Reilly Media

REFERENCE BOOK(S):

Title	Author/s	Publication
The Art of Prompt Engineering with ChatGPT	Mark McQuillan	Packt Publishing

Generative Deep Learning	David Foster	O'Reilly Media

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICACS1030	Prompt Engineering
CO 1	Explain the fundamentals of Large Language Models, prompt anatomy, and the significance of prompt engineering in generative AI
CO 2	Apply zero-shot, few-shot, chain-of-thought, and role-based prompting techniques to solve academic and professional tasks.
CO 3	Design advanced prompts using chaining, system/user prompt separation, and retrieval-augmented strategies for complex tasks.
CO 4	Use domain-specific prompting for content generation, coding assistance, data analysis, and creative AI tools.
CO 5	Evaluate prompt outputs for reliability and bias, and apply ethical and responsible practices in prompt design.

MAPPING OF CO WITH PO:

ICACS1030	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	1	0	0	2	0	0	1
CO 2	2	3	1	2	3	2	0	2
CO 3	2	3	3	2	3	2	0	2
CO 4	1	2	2	1	3	3	0	2
CO 5	0	2	0	2	2	0	3	2

MAPPING OF CO WITH PSO:

ICACS1030	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	3	2	2
CO 3	2	2	3
CO 4	2	3	2
CO 5	1	2	3

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Introduction to Prompt Engineering	1,2
2	Core Prompting Techniques	3
3	Advanced Prompting Strategies-I	3,4
4	Advanced Prompting Strategies-II	3,4
5	Domain-Specific Prompt Applications	5
6	Evaluation, Ethics & Responsible Prompting	5

P P Savani University

School of Engineering

Offered by: Department of Science and Humanities

COURSE DETAILS:

Course Code	ICASH1020
Course Name	Applied Statistics
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	PPT	Assignment	Term Work	Self-Learning
04	120	45	00	30	00	00	30	00	15

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		PPT		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	00	00	30	50	00	00	00	00	20	00	00	00	20	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Understand the fundamentals of data, statistical measures, and methods for data summarization and visualization.
- Analyze datasets using descriptive statistics, exploratory data analysis, and correlation techniques.
- Apply probability concepts and probability distributions to model uncertainty and solve real-world problems.
- Develop the ability to perform statistical inference through sampling and hypothesis testing techniques.
- Interpret and apply statistical methods for data-driven decision-making in computing and related domains.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Introduction to Data & Descriptive Statistics:** Elements, Variables, and Observations, Scales of Measurement , Categorical and Quantitative Data, Cross-Sectional and Time Series Data, Summarizing Categorial Data and Quantitative Data, Frequency Distribution, Relative Frequency and Percentage Distributions, Bar Charts and Pie Charts, Dot Plot, Histogram, Cumulative Distributions, Ogive, Measures of Location: Mean, Median, Mode, Percentiles and	10	25

	Quartiles, Measures of Variability: Range, Interquartile Range, Variance, Standard Deviation, Coefficient of Variation.		
2	**Exploratory Data Analysis:** Distribution Shape, Scores, Chebyshev's Theorem, Empirical Rule, Outliners, Five Number Summary, Box Plot.	07	15
3	**Correlation Analysis:** Type and properties of Correlation, Karl-Pearson's coefficient.	05	10
4	**Introduction to Probability:** Experiments, Counting Rules, Assigning Probabilities, Events and their Probabilities, Relationships of Probabilities, Conditional Probability, Bayes' Theorem	06	10
5	**Discrete and Continuous Probability Distribution:** Random Variables, Discrete Probability Distributions, Expected Values and variance, Binomial Probability Distribution, Poisson Probability Distribution, Uniform Probability Distribution, Normal Probability Distribution.	10	25
6	**Testing of Hypothesis:** Introduction, Sampling, Tests of Significance, Null Hypothesis, Alternative Hypothesis, Type 1 and Type 2 errors, Level of Significance, Chi-square test, Student's t-test, Seducer's F-test.	07	15
	TOTAL	**45**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Introduction to various statistical tools.	02
2	Implementation of Data & Descriptive Statistics-1.	02
3	Implementation of Data & Descriptive Statistics-2.	02
4	Implementation of Data & Descriptive Statistics-3.	02
5	Implementation &Exploratory Data Analysis.	02
6	Correlation Analysis	04
7	Introduction to Probability	02
8	Discrete and Continuous Probability Distribution-1.	04
9	Discrete and Continuous Probability Distribution-2.	04
10	Testing of Hypothesis	06
	TOTAL	**30**

SELF-LEARNING ONLINE RESOURCES:

Sr. No	Link / Description	Self-Learning Hours
1	https://www.youtube.com/watch?v=wI9PKnQkusQ An Introduction to Statistics... a practical, psychology-focused intro to statistics displaying data, focused on categorical variables.	05
2	https://www.youtube.com/watch?v=-iYycoUGfuE Why probability matters and its uses, Sample Space & Events: defining outcomes and events , Discrete vs Continuous Probability: understanding different types of events Conditional Probability: updating probabilities with new information	05

3	https://www.youtube.com/watch?v=ruWsWnik7YY Probability Distribution, Random Variable	05

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of tutorial which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz – 25Marks External Viva Voce – 25 Marks	50	20
Assignment	CE	A single assignment comprising 30 questions covers all six modules.	20	00
Self Learning	CE	20 MCQ questions based on self-study resources and online learning | 1 marks per question | Total = 20 marks	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Basic Statistics	B L AGRAWAL	New Age International

REFERENCE BOOK(S):

Title	Author/s	Publication
Understandable Statistics Concepts and Methods	Charles Henry Brase Corrinne PellilloBrase	Houghton Mifflin Company

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICASH1020	Applied Statistics
CO 1	Elaborate analysis of categorial data and quantitative data.
CO 2	Examine the box plot for real data and able to find the outliers.
CO 3	Adapt the knowledge of various probability distribution and their applications in mathematical models, sport strategies and insurance.
CO 4	Analyze the relationship between variables using correlation techniques and interpret Karl Pearson's correlation coefficient for data-driven decision-making.
CO 5	Apply hypothesis testing techniques, including Chi-square, t-test, and F-test, for statistical data analysis and decision-making.

MAPPING OF CO WITH PO:

ICASH1020	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	3	1	2	0	0	0	1
CO 2	3	2	1	2	0	0	0	1
CO 3	3	2	1	2	0	0	0	1
CO 4	3	2	1	2	0	0	0	1
CO 5	2	2	1	2	0	0	0	1

MAPPING OF CO WITH PSO:

ICASH1020	PSO1	PSO2	PSO3
CO 1	2	2	1
CO 2	1	1	1
CO 3	2	1	1
CO 4	1	2	1
CO 5	2	2	1

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Introduction to Data & Descriptive Statistics	1,2,3,5
2	Exploratory Data Analysis	1,2,3,4
3	Correlation Analysis	2,3,4,5
4	Introduction to Probability	2,3,5
5	Discrete & Continuous Probability Distribution	1,2,3,4
6	Testing of Hypothesis	1,2,3,4

P P Savani University

School of Engineering

Offered by: Department of Information Technology

COURSE DETAILS:

Course Code	ICAIT1020
Course Name	Introduction to Database Concepts
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	120	45	30	00	00	00	25	20	00

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	00	00	00	00	20	00	20	00	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- To understand the fundamental concepts of database management systems, data models, and the relational model, and to differentiate them from traditional file organization systems.
- To familiarize students with relational database concepts, including keys, integrity constraints, and various query languages (DDL, DML, TCL) for database manipulation.
- To develop proficiency in writing SQL queries, ranging from basic SELECT operations to advanced techniques involving sub-queries, joins, and views.
- To enable students to design conceptual database schemas using Entity-Relationship (E-R) modelling techniques, including extended E-R features like generalization, specialization, and aggregation.
- To equip students with the knowledge of functional dependencies and normalization techniques (1NF, 2NF, 3NF, BCNF) to design efficient, anomaly-free database schemas.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Introduction to DBMS and Data Models: :** File Organization vs. DBMS, Purpose & Application of DBMS, Data Independence, Architecture, Users & Administrators. Data Models. Relational Model: Structure, Domains, Relations, Relational Algebra (Operators & Queries).	07	16
2	**Relational Database Concepts and Integrity:**	08	18

	Components of DBMS, Query Languages (DDL, DML, TCL), Data Independence, Keys (Super, Candidate, Primary, Foreign, etc.), Integrity Constraints (Domain, Referential, Entity).		
3	**SQL Query Fundamentals and Functions:** Basic SELECT, WHERE, ORDER BY. IN operator, Aggregate functions, Built-in functions (numeric, date, string). Set operations. INSERT, UPDATE & DELETE queries.	08	16
4	**Advanced SQL:** Sub-queries and Correlated Sub-queries. Joins (Inner, Outer, Self), Exist, Any, All. Views and its types.	07	16
5	**Entity-Relationship (E-R) Modelling:** E-R Model: Basic concepts, Design process, Constraints, Keys, Design issues, E-R diagrams, Weak Entity Sets. Extended E-R Features: Generalization, Specialization, Aggregation, Reduction to Database Schema.	07	16
6	**Normalization:** Functional Dependency & its types, Consequences of Bad Design (Anomalies), Normalization Need. Normal Forms: First (1NF), Second (2NF), Third (3NF), BCNF.	08	18
	TOTAL	**45**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Create and manage databases using DDL commands (CREATE, ALTER, DROP) and explore data types.	04
2	Execute DML operations using INSERT, UPDATE, DELETE with realistic sample tables.	02
3	Implement integrity constraints including primary key, foreign key, unique, check, and not null.	04
4	Implement basic SQL queries using SELECT, WHERE, ORDER BY, BETWEEN, LIKE, IN.	04
5	Apply aggregate and built-in functions (COUNT, SUM, AVG, MIN, MAX, string, date functions).	02
6	Implement SQL queries using GROUP BY & HAVING clauses	02
7	Perform set operations such as UNION, INTERSECT, and MINUS on sample datasets.	02
8	Write SQL queries using different types of JOINs (Inner, Left, Right, Full, Self Join).	04
9	Implement subqueries and correlated subqueries for complex data retrieval.	04
10	Create and manage views (simple view, complex view, updatable/non-updatable views).	02
	TOTAL	**30**

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00

	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Assignment	CE	• Assessment based on identification of functional dependencies, determination of candidate keys, and normalization of relations. Evaluation: FD Analysis & Candidate Keys (5), Normalization (8), Documentation & Presentation (7).	20	00
Term Work	CE	Assessment based on development of an ER model for a given problem domain. Evaluation: Entities & Attributes (5), Relationships & Constraints (5), Design Accuracy (5), Presentation & Documentation (5).	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Database System Concept	Abraham Silberschatz, Henry F. Korth, S. Sudarshan	McGraw Hill

REFERENCE BOOK(S):

Title	Author/s	Publication
PL/SQL-The Programming Language of Oracle	Ivan Bayross	BPB Publications
An Introduction to Database System	CJ Date	Addition-Wesley
Fundamental of Database System	R. Elmasri and S.B Navathe	Benjamin/Cumming
Oracle: The Complete Reference	George Koch, Kevin Loney	TMH/oracle press

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICAIT1020	Introduction to Database Concepts
CO 1	Understand fundamental DBMS concepts, data models, architectures, and relational algebra operations.
CO 2	Apply relational database concepts, keys, and integrity constraints to design consistent database structures.
CO 3	Construct SQL queries using basic, advanced, and functional operations for data retrieval and manipulation.
CO 4	Design Entity-Relationship models for real-world application domains and convert them into relational schemas.
CO 5	Apply functional dependencies and normalization techniques to design efficient and consistent relational database schemas.

MAPPING OF CO WITH PO:

ICAIT1020	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	2	0	0	0	0	0	1
CO 2	3	3	1	0	0	0	0	1
CO 3	2	3	0	2	2	0	0	2
CO 4	2	3	1	2	2	2	1	2
CO 5	3	3	2	2	0	2	2	2

MAPPING OF CO WITH PSO:

ICAIT1020	PSO1	PSO2	PSO3
CO 1	1	0	0
CO 2	2	0	1
CO 3	2	0	2
CO 4	3	2	2
CO 5	3	2	2

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Introduction to DBMS and Data Models	1,2
2	Relational Database Concepts and Integrity	1,2,3
3	SQL Query Fundamentals and Functions	2,3,4
4	Advanced SQL	4,5
5	Entity-Relationship (E-R) Modelling	2,3,4
6	Normalization	2,3,4

P P Savani University

School of Engineering

Offered by: Department of Computer Application

COURSE DETAILS:

Course Code	ICACA1010
Course Name	Basics of Web Designing
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	120	30	45	00	30	00	00	00	15

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	20	00	00	00	00	00	00	00	20	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Understand the core concepts of UI/UX design and standard web terminologies.
- Build structured and semantic web pages using HTML5.
- Apply modern styling, layouts, and responsive design properties using CSS3.
- Create fully responsive, mobile-first web applications using Bootstrap frameworks.
- Introduce client-side scripting logic using JavaScript (ES6) for web interactivity.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Basics of User Interface & Web Fundamentals:** User Interface: Importance, benefits, and design principles. Human-computer interaction basics. Web terminologies: Web Browser, Web Server, Domain Name, URL, IP Address, Website vs. Web App. Intro to Web Hosting & Cloud deployment concepts.	05	15
2	**Core Markup Language (HTML5):** Structure of HTML: Elements, Tags, and Attributes. Core Elements: Root, Metadata, Headings, Paragraphs, Links, Formatting tags, Lists, and HTML Tables. Forms: Form attributes, Types of input elements, and modern validation techniques.	06	20
3	**Advanced HTML5 Features:**	04	15

	Semantic elements (Header, Footer, Section, Article, Nav, Aside). Multimedia integration: Audio, Video, and Canvas elements. Modern file paths, Favicons, and Embedding external components(iFrames).		
4	**Applying Styles (CSS3) & Layouts:** Syntax, Structure, and CSS implementation (Inline, Internal, External). Selectors: Element, Class, ID, Pseudo-classes, and Universal selectors. Core Properties: Box Model (Margin, Border, Padding, Content), Typography, Backgounds. Modern Layouts: Flexbox and CSS Grid.	06	20
5	**Modern UI Frameworks (Bootstrap):** Introduction to responsive web design and Media Queries. Integrating Bootstrap via CDN. Understanding the Grid System (Containers, Rows, Columns). Utilizing utility utility classes and responsive components (Navbar, Cards, Buttons, Modals).	04	15
6	**Client-Side Scripting with JavaScript:** Introduction to Client-side vs Server-side scripting. Embedding JavaScript into HTML. Core Essentials: Variables (let, const), Data types, Operators, Conditional statements, and Loops. Functions: Declaration, Arrow functions, and Basic Event Handling (Keyboard and Mouse events).	05	15
	TOTAL	**30**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Practice core HTML tags: Headings, Paragraphs, Lists, and Text Formatting.	04
2	Create structured data representations using HTML Tables and complex Forms with validation.	04
3	Embed multimedia components (Images, Audio, Video) and link pages seamlessly.	04
4	Style a web page using CSS selectors, custom typography, backgrounds, and the Box Model.	04
5	Design a structural modern layout using CSS Flexbox and CSS Grid rules.	05
6	Apply standard CSS responsive design rules using custom Media Queries.	04
7	Develop a clean, professional, fully responsive website utilizing the Bootstrap 5 UI framework.	06
8	Implement introductory JavaScript to perform basic arithmetic operations and handle browser alerts.	04
9	Build a functional interactive Form that validates data using JavaScript prior to submission.	05
10	Mini Project Execution: Build a 3-page responsive personal portfolio/business landing page using HTML5, CSS3, JS, and Bootstrap.	05
	TOTAL	**45**

SELF-LEARNING ONLINE RESOURCES:

Sr. No	Link / Description	Self-Learning Hours

1	https://www.coursera.org – Introduction to HTML, CSS, & JavaScript, IBM	03
2	https://www.coursera.org – Web Design for Everybody: Basics of Web Development, University of Michigan	03
3	https://www.w3schools.com – HTML, CSS and JS	03
4	https://swayam.gov.in/explorer - HTML, SWAYAM NPTEL MOOCs	03
5	https://swayam-plus.swayam2.ac.in/courses/course-details?id=F_INFOSY_03 - JavaScript	03

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Project	CE	Project Evaluation Rubrics UI/UX Layout Quality – 5 Marks Code Structure & Semantics – 5 Marks Responsiveness – 5 Marks Functionality & Code logic – 5 Marks	20	00
Self Learning	CE	40 MCQ questions based on self-study resources and online learning | 0.5 marks per question | Total = 20 marks	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Black Book, Web Technologies	Kogent Learning Solutions Inc.	Dreamtech Press

REFERENCE BOOK(S):

Title	Author/s	Publication
Black Book, HTML 5	DT Editorial Services	Dreamtech Press
Developing Web Applications	Ralph Moseley and M. T. Savaliya	Wiley-India

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICACA1010	Basics of Web Designing
CO 1	Understand core web communication frameworks and general user interface principles.

CO 2	Create semantic, well-formed digital architectures using modern HTML5 tags.
CO 3	Apply comprehensive visual aesthetics and advanced multi-device layouts via CSS3.
CO 4	Design fully responsive framework-driven mobile/desktop web platforms utilizing Bootstrap layout standards.
CO 5	Write efficient JavaScript logic to handle client-side operations and active UI interactive elements.

MAPPING OF CO WITH PO:

ICACA1010	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	1	0	0	0	0	1	2
CO 2	2	1	2	0	1	0	0	2
CO 3	2	2	3	0	2	0	0	2
CO 4	2	2	3	1	3	2	1	3
CO 5	3	3	3	1	2	1	0	3

MAPPING OF CO WITH PSO:

ICACA1010	PSO1	PSO2	PSO3
CO 1	1	2	2
CO 2	2	0	1
CO 3	3	0	2
CO 4	3	1	3
CO 5	3	0	3

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Basics of User Interface & Web Fundamentals	1, 2
2	Core Markup Language (HTML5)	2, 3
3	Advanced HTML5 Features	3, 4
4	Applying Styles (CSS3) & Layouts	3, 4, 6
5	Modern UI Frameworks (Bootstrap)	4, 5, 6
6	Client-Side Scripting with JavaScript	3, 4, 5

P P Savani University

School of Engineering

Offered by: Department of Computer Science

COURSE DETAILS:

Course Code	ICACS1020
Course Name	Fundamentals of Python Programming
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
04	100	30	45	00	00	00	25	00	00

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	00	00	00	00	20	00	00	00	20	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Understand the fundamentals of programming and problem-solving using Python.
- Develop Python programs using decision-making and iterative constructs.
- Apply functions and data structures for developing simple applications.
- Implement object-oriented programming concepts and exception handling mechanisms.
- Develop basic applications involving file handling and introductory Python libraries.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Introduction to Python Programming:** Introduction to Programming, Features of Python, Installation and IDE Setup, Python Syntax, Variables, Data Types, Operators, Input and Output Functions, Type Conversion.	05	16
2	**Decision Making and Iterative Constructs:** Conditional Statements, Nested Conditions, for Loop, while Loop, break, continue, pass Statements, Pattern-Based Programming	05	17
3	**Functions and Modular Programming:** User Defined Functions, Function Arguments, Return Values, Scope of Variables, Recursive Functions, Lambda Functions, Modules and Packages.	05	17
4	**Strings and Python Data Structures:**	05	17

	Strings, Lists, Tuples, Sets, Dictionaries, List Comprehensions, Basic Searching and Sorting Techniques.		
5	**Object-Oriented Programming and Exception Handling:** Classes, Objects, Constructors, Inheritance, Polymorphism, Exception Handling, User Defined Exceptions.	05	17
6	**File Handling and Introduction to Python Libraries:** Text Files, CSV Files, Introduction to NumPy, Pandas and Matplotlib, Development of Simple Applications.	05	16
	TOTAL	**30**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Installation and Configuration of Python Environment and IDE	02
2	Programs using Variables, Data Types, Operators, and Expressions	02
3	Programs for Input/Output Operations and Type Conversion	02
4	Programs using Conditional Statements (if, if-else, nested if)	03
5	Programs using Looping Constructs (for, while) and Pattern Generation	03
6	Development of Menu-Driven Applications using Control Structures	03
7	Programs using User Defined Functions and Recursive Functions	03
8	Programs using Lambda Functions, Modules, and Packages	03
9	String Processing Applications (Searching, Counting, Validation, Formatting)	04
10	Programs using Lists, Tuples, Sets, and Dictionaries	03
11	Implementation of Searching and Sorting Applications	02
12	Design and Development of Applications using Classes and Objects	04
13	Programs demonstrating Inheritance, Polymorphism, and Exception Handling	04
14	File Handling Applications using Text and CSV Files	04
15	Mini Application Development using Python Libraries (NumPy, Pandas, Matplotlib)	03
	TOTAL	**45**

SELF-LEARNING ONLINE RESOURCES:

Sr. No	Link / Description	Self-Learning Hours
1	https://onlinecourses.nptel.ac.in/noc25_cs56/preview – Video lectures covering Python fundamentals, problem-solving, functions, data structures and applications.	04
2	https://swayam.gov.in/ Self-paced video courses on Python programming and computational thinking offered by Indian institutions.	04
3	https://www.coursera.org/specializations/python - Video-based learning on Python programming, data structures, file handling and web applications.	04
4	https://www.edx.org/learn/python/massachusetts-institute-of-technology-introduction-to-computer-science-and-programming-using-python - Introductory video lectures on Python programming and problem solving.	04
5	https://learn.microsoft.com/training/browse/?products=python Guided video modules and hands-on learning resources for Python programming.	04

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Assignment	CE	Each assignment be evaluated out based on problem understanding, algorithm design, code implementation, coding standards, correctness of output, documentation, innovation, and viva/presentation for the Continuous Evaluation (CE) component.	20	00
Self Learning	CE	40 MCQ questions based on self-study resources and online learning | 0.5 marks per question | Total = 20 marks	20	00
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Python Programming Using Problem Solving Approach	Reema Thareja	Oxford University Press

REFERENCE BOOK(S):

Title	Author/s	Publication
Core Python Programming	Dr. R. Nageswara Rao	Dreamtech Press
Think Python	Allen B. Downey	O'Reilly Media

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICACS1020	Fundamentals of Python Programming
CO 1	Explain Python programming fundamentals including syntax, variables, data types, operators, and input/output operations.
CO 2	Develop Python programs using decision-making and iterative control structures to solve computational problems.
CO 3	Apply functions, strings, lists, tuples, sets, and dictionaries for developing Python applications.
CO 4	Design and implement object-oriented programs using classes, objects, inheritance, and exception handling techniques.
CO 5	Develop Python applications involving file handling and introductory data analysis and

	visualization libraries.

MAPPING OF CO WITH PO:

ICACS1020	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	2	1	0	1	0	0	2
CO 2	3	3	2	1	2	0	1	2
CO 3	3	2	3	2	2	1	2	3
CO 4	2	3	3	2	3	1	0	2
CO 5	2	3	3	3	3	2	2	3

MAPPING OF CO WITH PSO:

ICACS1020	PSO1	PSO2	PSO3
CO 1	3	1	0
CO 2	3	2	0
CO 3	2	3	1
CO 4	2	3	2
CO 5	2	3	3

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Introduction to Python and Programming Fundamentals	1,2
2	Decision Making and Looping Constructs	2,3
3	Functions and Modular Programming	3
4	Strings and Python Data Structures	3,4
5	Object-Oriented Programming and Exception Handling	4,5
6	File Handling and Introduction to Python Libraries	5,6

P P Savani University

School of Engineering

Offered by: Department of Information Technology

COURSE DETAILS:

Course Code	ICAIT1030
Course Name	Digital Literacy
Prerequisite Course/s	None

TEACHING SCHEME:

Credit	Total Learning Hours	Direct Contact Hours			Indirect Contact Hours				
		Theory	Practical	Tutorial	Project	CS	Assignment	Term Work	Self-Learning
03	90	30	30	00	00	00	30	00	00

GD = Group Discussion | CS = Case Study | FV = Field Visit | PPT = Presentation

EXAMINATION SCHEME:

Theory		Practical		Tutorial		Project		CS		Assignment		Term Work		Self-Learning		Total
CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	CE	ESE	
30	50	30	50	00	00	00	00	00	00	40	00	00	00	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

OBJECTIVE OF THE COURSE:

To help learners to:

- Understand the fundamentals of digital technologies, computing devices, and online services
- Develop proficiency in using productivity software for creating documents, spreadsheets, and presentations
- Utilize internet-based communication, collaboration, and cloud computing tools effectively.
- Practice cyber hygiene, digital ethics, and responsible use of technology
- Apply digital tools and emerging technologies for academic, professional, and personal productivity.

COURSE CONTENT:

Module No.	Content	Hours	Weightage in%
1	**Introduction to Digital Literacy:** Digital ecosystem, digital transformation, hardware and software concepts, operating systems, file management, digital skills for education and employment.	05	16
2	**Internet and Digital Communication:** Internet fundamentals, web browsers, search techniques, email communication, video conferencing, digital collaboration tools, online communication etiquette.	05	17
3	**Digital Documentation and Productivity Tools:** Word processing, document formatting, tables, templates, mail merge, spreadsheet basics, formulas and functions.	05	17

4	**Digital Presentation and Cloud Collaboration:** Presentation design, multimedia integration, cloud storage, file sharing, collaborative editing, online productivity suites.	05	17
5	**Cyber Security and Digital Ethics:** Cyber threats, malware, phishing, password management, privacy protection, digital footprint, cyber laws, ethical use of technology.	05	17
6	**Emerging Digital Technologies:** Artificial Intelligence, Cloud Computing, Internet of Things (IoT), Digital Payments, E-Governance, Digital Citizenship, Future Digital Skills.	05	16
	TOTAL	**30**	**100%**

LIST OF PRACTICAL / TUTORIAL:

Sr. No	Practical / Tutorial	Hours
1	Familiarization with Computer System, Operating System and File Management	02
2	File and Folder Operations, Compression and Storage Management	02
3	Internet Browsing, Search Techniques and Information Retrieval	02
4	Professional Email Creation and Communication Practices	02
5	Document Creation and Formatting using Word Processing Software	02
6	Working with Tables, Templates and Mail Merge	02
7	Spreadsheet Operations and Data Entry Techniques	02
8	Spreadsheet Functions, Formulae and Data Analysis	02
9	Charts and Graphs using Spreadsheet Software	02
10	Creating Professional Presentations with Multimedia Elements	02
11	Cloud Storage and File Sharing using Google Drive / OneDrive	02
12	Online Collaboration using Google Workspace / Microsoft 365	02
13	Digital Payment Systems and E-Governance Services	02
14	Cyber Security Awareness and Safe Internet Practices	02
15	Mini Project using Digital Productivity and Collaboration Tools	02
	TOTAL	**30**

COURSE EVALUATION & ASSESSMENT RUBRICS:

Component	CE/ESE	Evaluation Methodology / Rubrics	Marks	Passing Marks
Theory	CE	Two Internal Tests of 30 marks each shall be conducted during the semester. The average of both tests will be converted to 30 marks.	30	00
	ESE	Comprehensive written examination covering all modules of the course. Duration: 2 Hours	50	20
Practical	CE	Performance of practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.	30	00
	ESE	Quiz / Practical Performance – 25Marks External Viva Voce – 25 Marks	50	20
Assignment	CE	The assignment will be evaluated based on the student's understanding of digital literacy concepts, accuracy and relevance of the content, practical	40	00

		application of digital tools, organization and presentation of the work, originality, and timely submission. Marks will be awarded for clarity, completeness, and the effective demonstration of digital literacy skills.		
		TOTAL MARKS	**200**	**80**

TEXT BOOK(S):

Title	Author/s	Publication
Digital Literacy	Faithe Wempen	Wiley Publications

REFERENCE BOOK(S):

Title	Author/s	Publication
Computer Fundamentals	P. K. Sinha & Priti Sinha	BPB Publications
Cyber Security Essentials	Charles J. Brooks	Wiley

COURSE OUTCOME(S):

After the completion of the course, the students will be able to:

ICAIT1030	Digital Literacy
CO 1	Explain the fundamentals of digital technologies, computer systems, and internet services.
CO 2	Utilize digital communication and collaboration tools for academic and professional activities.
CO 3	Create and manage digital documents, spreadsheets, and presentations using productivity tools.
CO 4	Apply cyber security practices and digital ethics for safe and responsible use of technology.
CO 5	Evaluate emerging digital technologies and utilize digital platforms for learning, communication, and problem-solving.

MAPPING OF CO WITH PO:

ICAIT1030	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8
CO 1	3	2	1	0	2	0	0	0
CO 2	1	2	2	0	3	0	0	0
CO 3	2	3	3	2	3	2	0	1
CO 4	0	1	1	0	-	3	3	0
CO 5	2	2	3	2	3	2	1	2

MAPPING OF CO WITH PSO:

ICAIT1030	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	2	2	1
CO 3	3	3	2
CO 4	2	1	3
CO 5	3	2	3

LEVEL OF REVISED BLOOM'S TAXONOMY IN ASSESSMENT

1: Remember	2: Understand	3: Apply
4: Analyze	5: Evaluate	6: Create

Module No	Content	RBT Level
1	Introduction to Digital Literacy	1,2
2	Internet and Digital Communication	2,3
3	Digital Documentation and Productivity Tools	3
4	Digital Presentation and Cloud Collaboration	3,4
5	Cyber Security and Digital Ethics	4,5
6	Emerging Digital Technologies	5,6