PPSU

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

DIPLOMA

COMPUTER ENGINEERING

SYLLABUS BOOK

AY 2025-26

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 EUCATIONAL OBJECTIVES
PEO 1	Solve real-world engineering problems, design and develop innovative and cost-effective solutions exhibiting engineering skills/fundamentals to cater needs of society.
PEO 2	Excel in Industry/technical profession, higher studies, and entrepreneurship exhibiting comprehensive competitiveness.
PEO 3	Exhibit professional ethics & values, effective communication, teamwork, multidisciplinary approach, and ability to relate engineering issues to broader societal framework.

PO No	PROGRAMME OUTCOMES
PO 1	Engineering Knowledge: Apply foundational math, science, and engineering principles.
PO 2	Problem Analysis: Identify and solve well-defined engineering problems.
PO 3	Design/Development: Design solutions for technical problems with safety and environmental considerations.
PO 4	Investigation: Conduct investigations and experiments on technical problems.
PO 5	Modern Tool Usage: Apply appropriate techniques, resources, and modern IT tools.
PO 6	Engineer & Society: Analyze societal, health, safety, and legal responsibilities.
PO 7	Environment & Sustainability: Understand the impact of solutions on the environment and sustainability.
PO 8	Ethics: Apply ethical principles to professional practices.
PO 9	Individual & Teamwork: Function effectively as an individual or in a team.
PO 10	Communication: Communicate effectively with the engineering community and society.
PO 11	Project Management & Finance: Demonstrate knowledge of management and finance in projects.

PSO No	PROGRAMME SPECIFIC OUTCOMES (PSO) COMPUTER ENGINEERING
PSO 1	Apply Computing Knowledge with standard practice to develop software.
PSO 2	Maintain Computer hardware and software system.
PSO 3	Prepare technically competent employee, researcher, entrepreneur, and excel in competitive exams, and increase passion for higher studies.

Credit Guidelines (General)			
Component	**Hour/Week**	**Credit**	**Total Hours/Semester**
Theory	1	1	15
Practical	2	1	30
Tutorial	1	1	15
Note: In specific cases; extra credits can be granted for specific/important subjects.			

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

Institute of Diploma studies

P P Savani University

School of Engineering

Effective From: 2025-26

Authored by: P P Savani University

CONTENT

FIRST YEAR DIPLOMA IN COMPUTER ENGINEERING

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

INSTITUTE OF DIPLOMA STUDIES

TEACHING & EXAMINATION SCHEME FOR DIPLOMA ENGINEERING PROGRAMME AY:2025-26(BATCH:2025)

Sem.	Course Code	Course Title	Offered By	Teaching Scheme					Examination Scheme						
				Contact Hours				Credit	Theory		Practical		Tutorial		Total
				Theory	Practical	Tutorial	Total		CE	ESE	CE	ESE	CE	ESE	
1	IDSH1110	Mathematics-I	SH	3	0	2	5	5	40	60	0	0	100	0	200
	IDSH1140	Chemistry	CH	3	2	0	5	4	40	60	40	60	0	0	200
	IDCV1110	Basics of Civil Engineering	CV	3	0	2	5	5	40	60	0	0	40	60	200
	IDCE1110	Computer Fundamentals	CE	3	4	0	7	5	40	60	40	60	0	0	200
	CFLS2110	Elementary Communicative English-I	CLFS	3	0	0	3	3	100	0	0	0	0	0	100
						Total	**25**	**22**							**900**
2	IDSH1120	Mathematics-II	SH	3	0	2	5	5	40	60	0	0	100	0	200
	IDSH1130	Physics	SH	3	2	0	5	4	40	60	40	60	0	0	200
	IDME1110	Basics of Mechanical Engineering	ME	3	0	2	5	5	40	60	0	0	40	60	200
	IDIT1110	Python Programming	IT	3	2	0	5	4	40	60	40	60	0	0	200
	IDME1120	Workshop Fundamentals	ME	0	2	0	2	2	0	0	100	0	0	0	100
	CFLS2120	Elementary Communicative English-II	CLFS	2	0	0	2	2	100	0	0	0	0	0	100
						Total	**24**	**22**							**1000**

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Applied Science & Humanities

Course Code: IDSH1110
Course Name: Mathematics-1
Prerequisite Course(s): Algebra, Geometry, Trigonometry till 9th Standard level

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	-	02	05	40	60	-	-	100	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to

- outline logarithm properties.
- implement concepts of Determinants and Matrices for solving science and engineering problems.
- present usefulness of trigonometry.
- acquire knowledge of co-ordinate geometry and ability to work with applications to Engineering Mathematics.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Logarithm** Basic concept of logarithm, Rules and related examples, Applications of logarithm.	5	11
2.	**Trigonometry** Basic concept of trigonometry, Units of angles (degree and radian), Allied & compound angles, Multiple–submultiples angles, Graph of sine and cosine, Periodic function, Sum and factor formula.	10	21
3.	**Co-ordinate geometry** Introduction, Point, Distance formula, Mid-point, Locus of a point, Straight lines, Slope of a line, Equation of a straight line, The general equation, Angle between two lines, Circle.	8	18
4.	**Statistics** Introduction, Central tendency, Mean, Mean of grouped data, Median, Median for grouped data, Mode for grouped data, Mode, Standard deviation, Standard deviation for grouped data.	10	23

5.	**Determinants and Matrices** Basic concept of determinants and matrices, Addition and subtraction, Product, Inverse up to 3X3 matrix, Solution of simultaneous equations up to three variables, Applications of determinants and matrices.	12	27
	TOTAL	**45**	**100**

List of Tutorials:

Sr. No.	List of Tutorial	Hours
1.	Logarithm-1	4
2.	Logarithm-2	2
3.	Trigonometry-1	2
4.	Trigonometry-2	2
5.	Trigonometry-3	2
6.	Co-ordinate geometry-1	4
7.	Co-ordinate geometry-2	2
8.	Statistics-1	2
9.	Statistics-1	2
10.	Statistics-2	2
11.	Determinants and Matrices-1	2
12.	Determinants and Matrices-2	2
13.	Determinants and Matrices-3	2
	TOTAL	**30**

Text Book:

Title	Author(s)	Publication
Diploma Engineering Mathematics	H. K. Dass	H. K. Dass
Engineering Mathematics - 3rd Edition	Anthony croft & others	Pearson Education Publication

Reference Book:

Title	Author(s)	Publication
Basic Mathematics	G.C. Patel and Ami C. Shah	Atul Prakashan
Advanced Mathematics for Polytechnic	Dr. N. R. Pandya	Macmillan Publication
Applied Mathematics	W. R.Neelkanth	Sapna Publication

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 75 marks.
- Viva of 25 marks.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDSH1110	**MATHEMATICS-1**
CO 1	Apply algebraic concepts to solve engineering-related mathematical problems.
CO 2	Use trigonometric concepts and identities to solve engineering and real-world problems.
CO 3	Apply coordinate geometry concepts to analyze spatial relationships in engineering contexts.
CO 4	Analyze and interpret data sets using statistical methods to support decision-making in engineering applications.
CO 5	Solve engineering-related problems using determinants and matrices, including systems of linear equations.

Mapping of CO with PO

IDSH1110	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2			1						
CO 2	3	2	1		1						
CO 3	3	3	1	2	1						
CO 4	2	3		3	2					1	
CO 5	3	3	2	2	2						1

Mapping of CO with PSO

IDSH1110	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	2	1	2
CO 3	2	1	2
CO 4	1	1	2
CO 5	3	2	2

Level of Bloom's Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**
1	Logarithm	1,2,3,5
2	Trigonometry	2,3,4,5,6
3	Coordinate geometry	2,3,4,5
4	Statistics	1,2,3,4,5
5	Determinants and Matrices	2,3,4,5

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Applied Science & Humanities

Course Code: IDSH1140
Course Name: Chemistry
Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	-	04	40	60	40	60	-	-	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to

- The student will understand the interdisciplinary nature of chemistry and to integrate knowledge of mathematics, physics and other disciplines to a wide variety of chemical problems.
- The student will understand the importance of the Periodic Table of the Elements, how it came to be, and its role in organizing chemical information.
- The student will acquire a foundation of chemistry of sufficient breadth and depth.

Course Content:

Module. No.	Content	Hours	Weightage in %
1.	**Atomic Mass and Molecular Structure** Atom, Fundamental particles of Atom their Mass, Charge and Location. Atomic number and Mass number, Octet Rule, Isotopes and Isobars with suitable examples, Formation of Cation and Anion by electronic concept of oxidation and reduction, Molecule, Molecular Formula, Molecular Mass, Mole, Avogadro Number, Avogadro's Hypothesis – Relationship between Molecular Mass and Vapour Density, Simple calculations.	10	20
2.	**Chemical Bonding** Chemical Bond, Valence, Valence Electrons, Bonding and Non Bonding Electrons, Lewis Symbols. Condition for Formation of Ionic Bond, Factors Governing Formation of Ionic Bond, Metallic Bond, Covalent Bond and Co-ordinate Covalent Bond: Hydrogen Bonding.	06	20
3.	**Acids and Bases** Theories of Acids and Bases, Arrhenius Theory, Lowry – Bronsted Theory, Lewis Theory, pH and pOH, Indicator, Buffer solution, Types of buffer solution with examples, Application of pH in Industries, Numericals	06	10
4.	**Solutions and Colloids** Methods of expressing concentration of a solution Molarity, Molality, Normality, Mole fraction and Percentage Mass – Simple problems. True solution and Colloidal solution, Definition, Differences, Types of colloids – Lyophilic and Lyophobic colloids. Industrial applications of colloids.	08	20

5.	**Electrochemistry** Electrolyte, Strong and Weak electrolytes, Electrolysis, Industrial application of Electrolysis, Electroplating, Preparation of surface, Process Factors affecting the stability of the coating, Applications of Electro plating.	08	15
6.	**Electrochemical-Cell** Electrochemical Cell definition, Representation of a Cell, Single Electrode Potential definition, Galvanic Cell, Formation of Daniel Cell, Electrochemical Series, Definition and Significance, Electrolytic Concentration Cell definition and Formation.	07	15
	TOTAL	**45**	**100**

List of Practical

Sr No	Name of Practical/Tutorial	Hours
1.	Using a chemical balance.	04
2.	Introduction to chemistry laboratory – Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Quantitative analysis etc.	04
3.	Demonstration: Preparation of solutions of different concentrations	04
4.	Preparation of standard solution of Oxalic acid and Sodium Carbonate.	04
5.	Determination of strength of a given solution of Sodium Hydroxide by titrating it against standard solution of Oxalic acid.	04
6.	Determination of strength of a given solution of Hydrochloric acid by titrating it against standard Sodium Carbonate solution.	04
7.	Determination of temporary and permanent hardness in water sample using EDTA as standard solution.	04
8.	Determination of pH	02
	TOTAL	**30**

Text Book(s):

Title	Author/s	Publication
Text Book of Engineering Chemistry	Chawla S.	Dhanpat Rai & Co. Pvt. Ltd., Delhi, 2003.
Engineering Chemistry	Sharma B. K.	Krishna Prakashan Media (P) Ltd, Meerut.,2001

Reference Book(s):

Title	Author/s	Publication
Concise Inorganic Chemistry	J.D. Lee	Wiley India
Textbook of Engineering Chemistry (4th Edition)	R. Gopalan, D. Venkappaya, S. Nagarajan	Vikas Publishing house Ltd.

Web Material Link(s):

https://onlinecourses.nptel.ac.in/noc21_cy45/preview

https://nptel.ac.in/noc/courses/noc17/SEM2/noc17-cy03/

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 Hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks.

Practical:

- Continuous Evaluation consists of the performance of Practical which should be evaluated out of 10 marks for each practical and average of the same will be converted to 40 marks.
- Practical performance/quiz/drawing/test of 30 marks during End Semester Exam.
- Viva/Oral presentation consists of 30 marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDSH1140	**Chemistry**
CO1	Explain basic atomic structure, chemical bonding, and periodic trends.
CO2	Apply principles of acids, bases, solutions, and electrochemistry to solve problems.
CO3	Perform chemistry laboratory experiments safely using standard techniques.
CO4	Analyze electrochemical processes and industrial applications of chemistry.
CO5	Practice professional ethics, teamwork, and safety in laboratory and industrial work.

Mapping of CO with PO

IDSH1140	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	2	1									1
CO 2	2	2	1		1						1
CO 3	1	1		2	2	1	2	2	1		1
CO 4	2	2	2	2	1	2	1		1		1
CO 5							2	2	2	1	1

Mapping of CO with PSO

IDSH1140	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	3	1	2
CO 3	2	3	2
CO 4	3	2	2
CO 5	1	2	3

Level of Bloom's Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**
1	Atomic Mass and Molecular Structure	1, 2, 5
2	Chemical Bonding	1, 2, 3
3	Acids and Bases	2, 3, 4
4	Solutions and Colloids	2, 3, 4,5
5	Electrochemistry	1, 2, 5
6	Electrochemical-Cell	1, 2, 5

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Civil Engineering

Course Code: IDCV1110
Course Name: Basics of Civil Engineering
Prerequisite Course(s):

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	-	02	05	40	60	-	-	40	60	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to

- Scope and significance of civil engineering in infrastructural development.
- Surveying and levelling techniques and their importance in construction and land measurements.
- construction materials, their properties, and their selection based on strength, durability, economy, and environmental considerations.
- Highlight advancements in civil engineering, focusing on sustainable practices, smart city planning, and innovative systems for urban development.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction:** Branches of Civil Engineering, Scope of Civil Engineering, Role of Civil Engineer in Society. Impact of infrastructural development on the economy of a country.	4	8
2.	**Surveying and Levelling:** Definition of Surveying, Aims and applications, Fundamental principles of surveying, Classification of surveying, Plans and maps, Scales, and Units of measurement, Introduction to liner and angular measurements, Types of compass. Introduction to levelling, Aims and application of levelling, Methods of levelling.	10	22
3.	**Overview of Construction Material:** Scope of construction materials in Building Construction, Selection of materials for different civil engineering structures based on strength, durability, Eco friendly and economy.	9	20
4.	**Building Construction:** Introduction, Classification of buildings (types of buildings), Types of loads acting on buildings, Building Components and their functions	6	13

	and nominal dimensions, Bonds in brickwork.		
5.	**Building Services:** Introduction, Water supply system in a building, drainage, House drainage system, Electrification, Building finishes.	8	19
6.	**Advancements in Civil Engineering:** Smart city and its features, Solid waste management systems, Mass transport systems, Bus Rapid Transit System (BRTS), Metro, Green Building, Features of earthquake resistance structures.	8	18
	TOTAL	**45**	**100**

List of Tutorials:

Sr. No.	List of Tutorial	Hours
1.	Units of Conversion exercise	4
2.	Preparation of sketches on Conventional signs, symbols and abbreviations	2
3.	Assignment of Surveying and levelling	2
4.	Chart preparation of various materials. Collection of rate and sample.	4
5.	Preparation of sketchbook showing various bonds.	4
6.	Preparation sketch of various building components.	4
7.	Assignment based upon house drainage system.	2
8.	Assignment based on green building.	2
9.	Case studies on smart cities.	2
10.	Case study on BRTS and metro.	4
	TOTAL	**30**

Text Book:

Title	Author(s)	Publication
Elements of Civil Engineering	Anurag Kandya	Charotar Publication
Building Construction	Dr.B.C.Punmia	Laxmi Publication

Reference Book:

Title	Author(s)	Publication
Surveying and leveling	N. N. Basak	Tata McGraw Hill Education
Engineering Material	S.C. Rangwala	Charotar Publication
Basic Civil Engineering	M.S.Palanichamy	McGraw Hill

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and the average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous evaluation consists of the performance of the tutorial which will be evaluated out of 10

Marks for each tutorial and the average of the same will be converted to 30 marks.

- MCQ-based examination consists of 20 marks.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCV1110	BASICS OF CIVIL ENGINEERING
CO 1	Understand the scope and applications of Civil Engineering.
CO 2	Describe the methods of levelling and demonstrate its applications in real-world scenarios.
CO 3	Evaluate materials based on strength, durability, eco-friendliness, and economic considerations for different civil engineering structures.
CO 4	Identify the various building components, methods of construction, and services.
CO 5	Describe the Concept of Smart Cities and promote sustainable civil engineering practices.

Mapping of CO with PO

IDCV1110	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1			2	2				
CO 2	3	3	2	1		1	2				
CO 3	3	2	3			3	3		1		1
CO 4	3	2	1		3	2	3				
CO 5	3	2	2	3				2		1	

Mapping of CO with PSO

IDCV1110	PSO1	PSO2	PSO3
CO 1	2	2	2
CO 2	2	2	2
CO 3	3	2	2
CO 4	3	2	2
CO 5	2	2	2

Level of Bloom's 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	1,2,3,4
2	Surveying and Levelling	2,3,4,5
3	Overview of Construction Material	2,3,4,5,6
4	Building Construction	1,2,3,5
5	Building Services	2,3,5
6	Advancements in Civil Engineering	1,2,3,5

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Computer Engineering

Course Code: IDCE1110
Course Name: Computer Fundamentals
Prerequisite Course(s): NA

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	04	-	05	40	60	40	60	-	-	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to

- develop understanding of basic concepts that can be used in programming language.
- develop the algorithm as well as flowchart for particular problem.
- enforce logical thinking.
- understand the fundamentals of programming concepts and methodology.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Computers** Evolution of Computers: Generations of Computers, Functional Components of a Computer, Types of Software: System Software, Application Software, Utility Programs, Number Systems: Binary, Octal, Decimal, and Hexadecimal, Introduction to Computer Networks and the Internet	7	15
2.	**Basics of C Programming:** Introduction to Computer Programming, Importance of Programming in Problem Solving, Programming Methodologies (Structured, Object-Oriented, etc.), Steps in Program Development, Overview of Programming Languages, Features of C and Its Importance, Writing, Compiling, and Executing C Programs, Understanding Errors: Syntax Errors, Logical Errors, and Runtime Errors	6	18
3.	**Data Types, Operators, and Tokens:** Data Types and Variables, Primitive Data Types in C, Variables and Constants, Scope and Lifetime of Variables, Operators, Types of Operators in C, Expressions and Operator Precedence, Tokens, Overview of Tokens: Keywords, Identifiers, Constants, Strings, and Operator	10	22
4.	**Control Structures in C:** Decision-Making, Simple If and If-Else Statements, Switch Case and Nested If-Else, Loops, For, While, and Do-While Loops, Using Break	8	25

	and Continue, Nested Loops		
5.	**Arrays and Strings:** Arrays, Introduction to Arrays, Accessing Elements and Array Operations, Applications of Arrays, Strings, Declaring and Initializing Strings, String Functions: strlen(), strcat(), strcpy(), strcmp(), Input and Output with Strings	14	20
	TOTAL	**45**	**100**

List of practical:

Sr. No.	List of Practical	Hours
1.	Identify CPU, RAM, Hard Disk, and other internal components.	2
2.	Compare various types of operating systems.	2
3.	Write and execute a "Hello, World!" program. Write a program to perform addition, subtraction, multiplication, and division of two numbers.	2
4.	Develop a program to calculate the area and perimeter of a rectangle.	4
5.	Declare and initialize variables of different data types.	4
6.	Write a program to evaluate a complex mathematical expression using arithmetic operators.	4
7.	Demonstrate the use of relational and logical operators in a program.	4
8.	Write a program to determine whether a number is positive, negative, or zero.	6
9.	Develop a program to calculate grade based on marks using `if-else` or `switch` statements.	6
10.	Write a program to display the multiplication table of a given number using a loop.	6
11.	Calculate the factorial of a number using a `for` loop.	4
12.	Write a program to generate pyramid patterns using nested loops.	4
13.	Develop a program to check whether a number is prime using nested control structures.	4
14.	Write a program to input and display elements of an array.	2
15.	Implement a program to search for a specific element in an array.	2
16.	Write a program to reverse a given string without using inbuilt function.	2
17.	Develop a program to count the number of vowels, consonants, and digits in a string.	2
	TOTAL	**60**

Text Book:

Title	Author(s)	Publication
Programming in ANSI C	E. Balagurusamy	McGraw Hill Education
Fundamentals of Computers	V. Rajaraman	PHI Learning Pvt. Ltd.

Reference Book:

Title	Author(s)	Publication
Computer Fundamentals	N.M. Desai	University Granth Nirman Board

Microsoft Office Guide	Hiren Desai	Parshwa Publication

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous Evaluation consists of performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCE1110	**COMPUTER FUNDAMENTALS**
CO 1	Understand computer architecture, software types, number systems, and basics of networks.
CO 2	Use MS Office tools for document creation, data management, and multimedia presentations.
CO 3	Develop and debug basic C programs using programming methodologies.
CO 4	Implement solutions using data types, operators, and control structures in C programming.
CO 5	Solve problems with arrays and strings, including data manipulation and algorithm implementation.

Mapping of CO with PO

IDCE1110	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2		1	2	1				1	
CO 2	2	2	1		3				1	3	1
CO 3	3	3	2	1	3				1	1	
CO 4	3	3	2	2	3				1	1	
CO 5	3	3	2	2	3				1	1	

Mapping of CO with PSO

IDCE1110	PSO1	PSO2	PSO3
CO 1	2	1	
CO 2	2	2	1
CO 3	3	2	1
CO 4	3	2	1
CO 5	3	3	1

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

Level of Bloom's Revised Bloom's Taxonomy in Assessment

Module No	**Content**	**RBT Level**
1	Introduction to Computers	1,2,3,5
2	Basics of C Programming	2,3,4,5,6
3	Data Types, Operators, and Tokens:	2,3,5
4	Control Statements in C	2,3,5
5	Arrays and Strings	1,2,3,5

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Applied Science & Humanities

Course Code: IDSH1120
Course Name: Mathematics-II
Prerequisite Course(s): Algebra, Geometry, Trigonometry till 9th Standard level

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	-	02	05	40	60	-	-	100	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to
- This course is designed to give a comprehensive coverage at an introductory level to the subject of Functions and Limits, Differentiation, Integration and First Order Differential Equations.
- Recognize importance of differentiation and integration for solving engineering problems.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Complex Number** Introduction, Mathematical Operations, Polar form, De Movire's Theorem.	6	13
2.	**Functions and Limits** Introduction of Function, Types of function, Classification of function, Limit of a function, Properties of limit, Standard limits, limit of trigonometric functions.	8	18
3.	**Differentiation** Introduction of Differentiation, Derivative of standard functions, Working rules, Differentiation of composite function, Differentiation of parametric functions, Differentiation of implicit function, Derivative using logarithms, Successive differentiation, Application of Derivative (Maxima, Minima, Velocity & Acceleration).	12	27
4.	**Integration** Introduction of Integration, Integration of standard functions, Integration by substitution, Integration by parts, Integration using partial fraction.	10	22

5.	**Mensuration** Basic concept of Mensuration, Area of Triangle, Square, Rectangle, Trapezium, Parallelogram, Rhombus and Circle surface, Volume of Cuboids, Cone, Cylinder and Sphere.	9	20
	TOTAL	**45**	**100**

List of Tutorials:

Sr. No.	List of Tutorial	Hours
1.	Complex Number-1	2
2.	Complex Number-2	2
3.	Complex Number-3	2
4.	Functions and Limits-1	4
5.	Functions and Limits-2	2
6.	Differentiation-1	2
7.	Differentiation-2	2
8.	Differentiation-3	2
9.	Integration-1	2
10.	Integration-2	2
11.	Integration-3	2
12.	Mensuration-1	4
13.	Mensuration-2	2
	TOTAL	**30**

Text Book:

Title	Author(s)	Publication
Advanced Mathematics for Polytechnic	Dr. N.R. Pandya	Macmillan Publication
Engineering Mathematics - 3rd Edition	Anthony croft and others	Pearson Education Publication

Reference Book:

Title	Author(s)	Publication
Applied Mathematics for Polytechnics - 10th Edition	H. K. Dass	H. K. Dass
Applied Mathematics	W. R.Neelkanth	Sapna Publication
Polytechnic Mathematics	Deshpande S P	Pune Vidyarthi Gruh Prakashan,1984
Polytechnic Mathematics	Prakash D S	S Chand,1985

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.

- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 75 marks.
- Viva of 25 marks.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDSH1120	**MATHEMATICS-II**
CO 1	Apply the properties and algebraic operations of complex numbers, including polar form and De Moivre's Theorem, to solve engineering problems.
CO 2	Analyze functions and evaluate limits, including standard and trigonometric limits, to model engineering problems.
CO 3	Apply differentiation techniques to determine rates of change and solve engineering problems involving maxima, minima, velocity, and acceleration.
CO 4	Use integration techniques to compute areas, volumes, and solve engineering problems involving physical quantities.
CO 5	Compute areas, perimeters, surface areas, and volumes of standard geometrical shapes to solve real-world engineering problems in mensuration.

Mapping of CO with PO

IDSH1120	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2		1	1						
CO 2	3	3		2	1						
CO 3	3	3	2	2	1						
CO 4	3	3	2	2	1						
CO 5	3	2	2	1	1		1				

Mapping of CO with PSO

IDSH1120	PSO1	PSO2	PSO3
CO 1	3	1	2
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	2	2
CO 5	2	1	2

Level of Bloom's Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**

1	Complex Number	1,2,3,4,6
2	Function and Limits	1,2,3,4
3	Differentiation	2,3,5
4	Integration	2,3,5

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Applied Science & Humanities

Course Code: IDSH1130

Course Name: Physics

Prerequisite Course(s): Concept of Science up to 9th Standard

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	-	04	40	60	40	60	-	-	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- understand the basic principles of physics and apply for the advancement of engineering and technology.
- experimenting the laboratory concepts to apply in their career of engineering.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introductory concepts:** Need of measurement and unit in engineering and science, definition of unit, requirements of standard unit, systems of units-CGS, MKS and SI, fundamental and derived quantities and their units Definition of accuracy, precision and error, estimation of errors -absolute error, relative error and percentage error, rules and identification of significant figures. (Numerical on above topics)	08	18
2.	**Mechanics:** The concept of Force, Newton's 1st law of motion, Newton's 2nd law of motion, Newton's 3rd law of motion, Conservation of momentum, Applications of Conservation of linear momentum, Impulse. (Numerical on above topics)	07	15
3.	**Work, Energy and Power:** Work done by a constant force and a variable force, Kinetic energy, Work-energy theorem, Power, Notion of potential energy, Potential energy of a spring, Conservative forces, Conservation of mechanical energy (kinetic and potential energies), Non-conservative forces. (Numerical on above topics)	07	15
4.	**Mechanical properties of solids:** Deforming force, Restoring force, Elastic and plastic body, Stress and Strain with their types, Elastic limit, Hooke's law, Young's modulus, Bulk modulus, Modulus of rigidity and Relation	08	18

	between them (no derivation), Stress- Strain diagram, Yield point, Ultimate stress, Breaking stress, Factor of safety. (Numerical on above topics)		
5.	**Properties of fluids:** Pascal's law and its applications (hydraulic lift and hydraulic brakes), Viscosity, Stokes' law, terminal velocity, streamline and turbulent flow, critical velocity, Bernoulli's theorem and its applications, Surface energy and surface tension, angle of contact. (Numerical on above topics)	08	18
6.	**Heat transfer:** Introduction to thermodynamics, Temperature and Heat, Transmission of heat - Conduction, Convection and Radiation, Law of thermal conductivity, Coefficient of thermal conductivity and its S.I. unit, Heat capacity and Specific heat of materials, Celsius, Fahrenheit and Kelvin temperature scales and their conversion formula. (Numerical on above topics)	07	16
	TOTAL	**45**	**100**

List of Practical:

Sr. No.	Name of Practical	Hours
1.	To study about basic unit conversion and dimension analysis.	04
2.	To measure diameter and the dimension of regular body of known mass using Vernier Calipers.	04
3.	To measure the thickness of a sheet and diameter of a wire with the help of Micrometer Screw Gauge.	04
4.	To determine the radius of curvature of a given spherical surface by a spherometer.	04
5.	To verify ohm's law by using ammeter and voltmeter.	02
6.	To determine the coefficient of viscosity of a given viscous liquid by measuring the terminal velocity of a given spherical body.	04
7.	To determine the value of 'g' using simple pendulum.	04
8.	To study the relationship between the temperature of a hot body and time by plotting a cooling curve.	04
	TOTAL	**30**

Text Book(s):

Title	Author/s	Publication
Physics Part-I and II	Resnick and Haliday	Wiley Eastern Publication
Concept of the Modern Physics	A. Beiser	Tata McGraw-Hill Education
Concept of Physics	H.C. Verma	Bharati Bhawan
Fundamentals of Physics	Gomber and Gogia	Pradeep publications
NCERT Physics part 1 & 2		NCERT

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by Course Coordinator.
- End Semester Examination will consist of 60 marks.

Practical:

- Continuous Evaluation consists of Performance of Practical which will be evaluated out of 20 marks for each practical and average of the same will be converted to 20 Marks.
- Internal viva and practical performance consist of 20 Marks.
- Practical performance/quiz/drawing/test of 30 marks during End Semester Exam.
- Viva/Oral performance of 30 marks during End Semester Exam.

Course Outcome(s):

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

IDSH1130	**PHYSICS**
CO 1	Identify physical quantities, different systems of units and make measurements with accuracy by minimizing different types of errors to solve real life relevant problems.
CO 2	Analyze type of motions and apply the knowledge to solve equation of motion and conservation of momentum principle to describe motion of rocket, recoil of gun etc.
CO 3	Define scientific work, energy and power and their units. Derive relationships for work, energy and power and solve related problems.
CO 4	Learn about the concept of elasticity, it's types and applications from engineering perspectives.
CO 5	Describe the properties of fluids, understand the concepts of viscosity and surface tension and their respective applications.

Mapping of CO with PO

IDSH1130	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1	2	2	1	1	1	1	1	1
CO 2	3	3	2	2		1	1		1	1	1
CO 3	3	3	2	1	1				1	1	1
CO 4	3	2	3	2	1	1			1	1	1
CO 5	3	2	2	2	1	2	2	1	1	1	1

Mapping of CO with PSO

IDSH1130	PSO1	PSO2	PSO3
CO 1	1	1	3
CO 2	1	1	3
CO 3	1	1	3
CO 4	1	2	3
CO 5	1	2	3

Level of Bloom's Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**
01	Introductory Concepts	3,5

02	Mechanics	1,4
03	Work, Energy and Power	1,3
04	Mechanical properties of solids	2,6
05	Properties of fluids	1,5
06	Heat transfer	3,4

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Mechanical Engineering

Course Code: IDME1110
Course Name: Basics of Mechanical Engineering
Prerequisite Course(s): Zeal to learn the course

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	-	02	05	40	60	-	-	40	60	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:

To help learners to

- Use relevant mechanical power and hand tools in real life applications.
- Recognize the various properties of gases, steams and their applications in an engineering industry.
- Explore the working principles of different prime movers like IC Engine, Boilers
- Select relevant power transmission mode in simple engineering situations.
- Identify and comprehend various hydro-pneumatic devices/equipment, brakes, clutch and couplings.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction and Basic Mechanical Applications** Concept of Force, Pressure, Energy, Work, Power, System, Heat, Temperature, Specific heat capacity, Prime movers and its types. Basic Mechanical Components and its applications like bolts, nuts, washers, bearings, valves, bushes, springs, levers, rivets, keys, shafts, axles.	6	15
2.	**Properties of Gases** Difference between vapour and gas, perfect gas, gas laws, Boyle's law, Charle's law, Combined gas law, Gas constant and universal gas constant, N.T.P, S.T.P	6	15
3.	**Steam Generators** Introduction, I.B.R, Classification of boilers, Cohran and Babcock and Wilcox boiler, only Functioning of different mountings (Only Purposes) and accessories.	6	10
4.	**Pumps** Types, Construction and working of Reciprocating, Centrifugal pumps and Rotary pumps	4	10

5.	**Internal Combustion Engines** Introduction, Difference between I.C. Engine and E.C. Engine, Classification of I.C. Engine, Main Components of Engine and their functions, working four- stroke cycle Petrol/Diesel engines, Comparison between Petrol cycle and diesel cycle. Basic concept of CNG and EV. (No Numericals)	8	15
6.	**Transmission of Motion and Power** Shaft and axle, Various types of Belt drive, Chain drive, Friction drive, Gear drive.	8	15
7.	**Couplings, Clutches and Brakes** Concept and applications of Couplings (Box; Flange; Pin type flexible; Universal and Oldham), Clutches (Disc and Centrifugal), and Brakes (Block; Shoe; Band, and Disc).	7	20
	TOTAL	**45**	**100**

List of Tutorials:

Sr. No.	List of Tutorial	Hours
1.	Demonstration of various types of boilers.	4
2.	Demonstration of different boiler mountings and accessories.	4
3.	Demonstration of four stoke petrol/diesel engines.	2
4.	Demonstration of centrifugal, reciprocating, and rotary pump.	4
5.	Demonstration of various belt drives and chain drive.	4
6.	Demonstration of various gear drives.	2
7.	Demonstration of various couplings.	2
8.	Demonstration of various brakes.	2
9.	Demonstration of various clutches.	2
	TOTAL	**30**

Text Book:

Title	Author(s)	Publication
Elements of Mechanical Engineering	N M Bhatt and J R Mehta	Mahajan Publishing House
Elements of Mechanical Engineering	Sadhu Singh	S. Chand Publication

Reference Book:

Title	Author(s)	Publication
Elements of Mechanical Engineering	P. S. Desai and S. B. Soni	Atul Prakashan
Basic Mechanical Engineering	Pravin Kumar	Pearson Education

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 30 marks.
- MCQ based examination consists of 20 marks.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDME1110	**BASICS OF MECHANICAL ENGINEERING**
CO 1	Use relevant mechanical power and hand tools in real-life applications
CO 2	Describe the various properties of gases, steams and their applications in the engineering industry
CO 3	Explain the working principles of different prime movers like IC Engine, Boilers
CO 4	Explain the relevant power transmission mode in simple engineering situation.
CO 5	Summarize various hydro-pneumatic devices/equipment, brakes, clutch and couplings.

Mapping of CO with PO

IDME1110	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1			2	2				
CO 2	3	3	2	1		1	2				
CO 3	3	2	3			3	3		1		1
CO 4	3	2	1		3	2	3				
CO 5	3	2	2	3				2		1	

Mapping of CO with PSO

IDME1110	PSO1	PSO2	PSO3
CO 1	2	2	2
CO 2	2	2	2
CO 3	3	2	2
CO 4	3	2	2
CO 5	2	2	2

Level of Bloom's 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 and Basic Mechanical Applications	1,2,3
2	Properties of Gases	1,2,3,4
3	Steam Generators	1,2,3
4	Pumps	1,2,3
5	Internal Combustion Engines	1,2,3,4
6	Transmission of Motion and Power	1,2,3,4
7	Couplings, Clutches and Brakes	1,2,3,4

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Information Technology

Course Code: IDIT1110
Course Name: Python Programming
Prerequisite Course(s):

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	-	04	40	60	40	60	-	-	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to

- To understand basic of python programming.
- To implement various control structures on different data types and analyze the use of different data structures in Python.
- Develop logic building and problem-solving skills.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Python** History, Features and application of python, installing Python, Basic structure of python program, Input and Output Functions in Python, Variable, Identifiers, Basic Operators, Expressions and Types of Data Int, Float, Complex, String, List, Tuple, Set, Dictionary and its Methods, Type Conversions, Comments, Input Processing and output.	06	14
2.	**Control Flow Structures in Python** Conditional Blocks Using if, if_Else and Else If, Simple for Loops in Python, For Loop Using Ranges, String, List and Dictionaries Use of While Loops in Python, Loop Manipulation Using Pass, Continue, Break and Else	07	18
3.	**Array and Strings** Array, Advantages of array, Creating an array, Importing the array module, Indexing and slicing on arrays, Processing the arrays, Types of arrays. Introduction to String, Access String elements using index operator, String functions: Basic functions: len, max, min,	08	18

	Testing functions: isalnum, isalpha, isdigit, isidentifier, islower, isupper, Searching functions: endswith, startswith, find, rfind, count, Manipulation functions: capitalize, lower, upper, title, swapcase, replace, lstrip, rstrip, strip		
4.	**Lists, Tuples, Sets, and Dictionaries** Dictionaries, Accessing Values in Dictionaries, Working with Dictionaries, Properties, Functions and Methods. Sets, Accessing Values in Set, Working with Set Properties, Functions and Methods, Tuple, Accessing Tuples, Operations, Working, Functions and Methods. List, Accessing List, Operations, Working With Lists, Function and methods, two-dimensional lists.	08	15
5.	**Functions, Modules and Packages** Introduction to Functions, defining a Function, Calling a Function, Types of Functions, Function Arguments, Anonymous Functions, Global and Local Variables, Importing Module, Math Module, Random Module, Introduction to Packages: Numpy, Pandas, Matplotlib.	08	15
6.	**File Handling** Introduction to Text files, File Handling functions: Basic functions: open, close, Reading file: read, readline, readlines, Writing file: write, append, writelines	08	20
	TOTAL	**45**	**100**

List of Practical:

Sr. No.	List of Practical	Hours
1.	Introduction to Python (Introduction to IDLE, different data types, Input Output in Python, Operators, Operator precedence).	04
2.	Implementation of Dictionaries, Sets, Tuples and Lists and its various methods in Python.	06
3.	Working with decision structures in Python	04
4.	Working with array in Python	04
5.	Manipulation of Strings.	02
6.	Working with functions in Python.	04
7.	Working with modules and packages in Python.	04
8.	Implementation of file handling in Python.	02
	TOTAL	**30**

Text Book:

Title	Author(s)	Publication
Python approach Programming: A modular	Sheetal Taneja, Naveen Kumar	Pearson

Reference Book:

Title	Author(s)	Publication

Think Python: How to Think Like a Computer Scientist	Allen Downey	Green Tea Press
Python Cookbook	David Ascher, Alex Martelli Oreilly	O Reilly Media

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 30 marks.
- MCQ based examination consists of 20 marks.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDIT1110	**PYTHON PROGRAMMING**
CO 1	Interpret the fundamental Python syntax and semantics and control flow statements.
CO 2	Determine the methods for creating and manipulating Python programs by utilizing data structures like lists, dictionaries, tuples, and sets.
CO 3	Apply a modular programming approach to solve the given problems using user-defined functions.
CO 4	Perform string manipulation and file handling operations.
CO 5	Utilize Python modules, packages, and libraries (Math, Random, NumPy, Pandas, and Matplotlib to develop efficient, reusable, and data-oriented Python applications.

Mapping of CO with PO

IDIT1110	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2				1	1	
CO 2	3	3	2	1	3				1	1	
CO 3	3	3	2	2	3				1	1	1
CO 4	3	3	2	2	3				1	2	
CO 5	3	3	2	2	3				1	2	1

Mapping of CO with PSO

IDIT1110	PSO1	PSO2	PSO3
CO 1	3	2	1
CO 2	3	3	1
CO 3	3	3	2
CO 4	3	3	2

CO 5	3	3	2

Level of Bloom's 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	1,2,4
2	Control Flow Structures in Python	1,2,3
3	Array and Strings	1,2,3
4	Lists, Tuples, Sets, and Dictionaries	2,3,4
5	Functions, Modules, and Packages	2,3,4
6	File Handling	3,4,5

P P Savani University
School of Engineering
Institute of Diploma Studies

Department of Mechanical Engineering

Course Code: IDME1120
Course Name: Workshop Fundamentals
Prerequisite Course(s):--

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
00	02	-	02	00	00	100	00	-	-	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:

To help learners to

- Introduce essential tools and machines used in workshops, emphasizing their functions, handling, and maintenance.
- Provide practical training in machining, fitting, carpentry, and other foundational manufacturing techniques.
- Instill the importance of workshop safety protocols to prevent accidents and ensure a secure working environment.
- Bridge the gap between classroom learning and real-world applications by implementing engineering principles in practical tasks.

Course Content:

Module No.	Content	Weightage in %
1.	**Introduction to Workshop Practice** Workshop Layout, Overview of workshop safety rules and regulations, Importance of various sections/shops in workshop, Understanding tools, materials, and machinery.	7
2.	**Carpentry, Fitting and Bench work** Basic wood types and their properties, Tools: saws, chisels, planes, hammer, and clamps, Preparation of Job as per Drawing including Marking and other Performing Operations Tools: files, hammers, punches, and measuring instruments, Techniques: filing, drilling, tapping, and sawing.	33

3.	**Introduction to Machine Tools and Sheet Metal Work** Introduction and Demonstration of various Machine Tools like Lathe, Drilling, Grinding, Hack Saw Cutting etc. Introduction to sheet metal materials and their uses, Tools: snips, mallets, and stakes, Techniques: bending, cutting, joining, and soldering	26
4.	**Welding and Plumbing** Types of welding: gas, arc, and MIG/TIG welding, Tools and safety equipment for welding, Welding techniques and applications. Introduction and Demonstration of Plumbing Shop.	7
5.	**Forging and Smithy** Tools: hammers, anvils, and tongs, Techniques: heating, bending, and shaping metals Applications of forging in engineering.	13
6.	**Measurement and Metrology** Introduction to measuring tools: Vernier calipers, micrometers, and gauges, Precision and accuracy in measurements.	7
7.	**Electrical and Electronic Skill** Use of Multimeter, Soldering of electrical circuits having discrete components (R, L, C & diode) and ICs on PCB, connections on Breadboard	7
	TOTAL	**100**

List of Practical:

Sr. No.	List of Practical	Hours
1.	Introduction and Demonstration of Safety Norms and various shops.	02
2.	To Perform a Job of Fitting Shop.	08
3.	To Perform a Job of Carpentry Shop.	04
4.	To Perform a Job of Black Smithy shop.	04
5.	To Perform a Job of Sheet metal Shop.	08
6.	To Perform a Job of Plumbing Shop	02
7.	Introduction to Machine Tool	02
	TOTAL	**30**

Text Book:

Title	Author(s)	Publication
Elements of Workshop Technology	S K Hajra Choudhury	Media Promoters & Publishers
A text book in Electrical Technology	B L Theraja	S Chand and Co

Reference Book:

Title	Author(s)	Publication
A Textbook of Workshop Technology	Deepak Dhounchak and Lalit Kumar Biban	White Falcon Publishing; 1st edition
Elements Of Workshop Technology Vol 2 Machine	S. K. Hajra Choudhury and Nirjhar Roy	Media Promoter and Publishers Pvt. Ltd.
Basic Electronics: A text lab manual	P.B. Zbar, A.P. Malvino, M.A. Miller	Mc-Graw Hill.

Course Evaluation:

Practical:

- Continuous Evaluation consists of Performance of Practical/Tutorial which will be evaluated out of 10 for each practical/Tutorial and average of the same will be converted to 30 Marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator
- Internal Viva consists of 30 Marks.
- Practical performance/quiz/drawing/test will consist of 30 Marks.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDME1120	**WORKSHOP FUNDAMENTALS**
CO 1	Students will demonstrate proficiency in basic workshop operations such as carpentry, fitting, welding, and machining.
CO 2	Understand the proper use and maintenance of hand tools, power tools, and workshop machinery, and sheet metal work
CO 3	Adopt essential safety protocols to ensure a hazard-free workshop environment.
CO 4	Identify and utilize various materials effectively, understanding their properties and applications in engineering projects.
CO 5	Use precision measuring instruments and electrical/electronic tools such as Vernier calipers, micrometers, multimeters, soldering equipment, and breadboards to carry out accurate measurements and basic circuit assembly.

Mapping of CO with PO

IDME1120	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	2			1	2				2		1
CO 2	2				3			3	3		1
CO 3	2			1	2				1		1
CO 4	2								3		2
CO 5	2		1	1	2				1		1

Mapping of CO with PSO

IDME1120	PSO1	PSO2	PSO3
CO 1	1	1	1
CO 2	1	1	1
CO 3	1	1	1
CO 4	1	1	1
CO 5	1	1	1

Level of Bloom's 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 Workshop Practice	1,2

2	Carpentry, Fitting, and Benchwork	1,2,3
3	Introduction to Machine Tools and Sheet Metal Work	1,2,3,4
4	Welding and Plumbing	1,2,3,4
5	Forging and Smithy	1,2,4
6	Measurement and Metrology	1,2,3,4,5
7	Electrical and Electronic Skill	1,2,3

SECOND YEAR DIPLOMA IN COMPUTER ENGINEERING

P P SAVANI UNIVERSITY															
SCHOOL OF ENGINEERING															
INSTITUTE OF DIPLOMA STUDIES															
TEACHING & EXAMINATION SCHEME FOR DIPLOMA COMPUTER ENGINEERING PROGRAMME AY:2025-26(BATCH:2025)															
Sem.	**Course Code**	**Course Title**	**Offered By**	**Teaching Scheme**					**Examination Scheme**						
				Contact Hours				**Credit**	**Theory**		**Practical**		**Tutorial**		**Total**
				Theory	**Practical**	**Tutorial**	**Total**		**CE**	**ESE**	**CE**	**ESE**	**CE**	**ESE**	
3	IDSH2020	Mathematics-III	SH	3	0	2	5	5	40	60	0	0	100	0	200
	IDCE2021	Data Structures	CE	3	2	0	5	4	40	60	40	60	0	0	200
	IDIT2030	Web Application Design	IT	0	4	0	4	2	0	0	40	60	0	0	100
	IDCE2080	Database Management System	CE	3	2	0	5	4	40	60	40	60	0	0	200
	IDIT2050	Object Oriented Concepts & Programming	IT	3	2	0	5	4	40	60	40	60	0	0	200
	IDCE2060	Software Engineering	CE	3	0	1	4	4	40	60	0	0	40	60	200
						Total	**28**	**23**							**1100**
4	IDIT2051	Mobile Application Development	IT	3	2	0	5	4	40	60	40	60	0	0	200
	IDCE2070	Computer Networks	CE	3	2	0	5	4	40	60	40	60	0	0	200
	IDIT3031	Advanced Web Technology	IT	3	2	0	5	4	40	60	40	60	0	0	200
	IDCE2090	Operating System	CE	3	2	0	5	4	40	60	40	60	0	0	200
	IDCE2110	Computer Architecture	CE	3	2	0	5	4	40	60	40	60	0	0	200
	IDCE2500	MOOC Course	CE	3	0	0	3	3	100	0	0	0	0	0	100
						Total	**28**	**23**							**1100**

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Applied Science & Humanities

Course Code: IDSH2020
Course Name: Mathematics-III
Prerequisite Course(s): NIL

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
3	0	2	5	40	60	-	-	100	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to

- extend concepts of set theory by study of relation and lattice.
- illustrate mathematical logic with various techniques of program verification.
- apply knowledge of discrete mathematics for problem solving skills necessary to succeed in design and analysis of algorithms, database management, software engineering and computer networks.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Set** Set, Type of Sets, Power set, Basic operations on sets, Cartesian Product, Union set, Intersection set, Disjoint set, Difference set, Set Identities	05	10
2.	**Relation** Definition-Relation, Type of Relation, Properties of Relation, Domain & Range	05	10
3.	**Function** Definition of Function, Domain, Codomain & Range, Type of Function, Inverse Function, Composite Function	05	10
4.	**Introduction to Group Theory** Binary Operations, Group, Properties of Group, Abelian Group, Groupoid, Semigroup & Monoid	05	12
5.	**Mathematical Logic and Proofs** Properties, Logical operator, Algebra of Proposition, Predicates and Quantifiers, Rules of Inference, Proof Method	05	12

6.	**Graph Theory** Graphs and their basic properties – degree, path, Type of Graph, Graph and Graph model, Representing Graph and Isomorphism, Eulerian and Hamiltonian Walk	07	15
7.	**Tree** Introduction to Tree, Rooted Tree, Properties of tree, Binary tree, Spanning trees, Minimum Spanning tree	06	16
8.	**Boolean Algebra** Definition & Examples of Boolean Algebra, De-Morgan's Law, Truth Tables, Boolean Functions, Representation and minimization of Boolean Functions, Design example using Boolean algebra	07	15
	TOTAL	45	100

List of Tutorials:

Sr. No.	List of Tutorial	Hours
1.	Problems based on Set-1	2
2.	Problems based on Set-2	2
3.	Problems based on Relation-1	2
4.	Problems based on Relation -1	2
5.	Problems based on Function-1	2
6.	Problems based on Function-2	2
7.	Problems based on Group Theory-1	2
8.	Problems based on Group Theory-2	2
9.	Problems based on Mathematical Logic and Proofs-1	2
10.	Problems based on Mathematical Logic and Proofs-2	2
11.	Problems based on Graph Theory-1	2
12.	Problems based on Graph Theory-2	2
13.	Problems based on Tree-1	2
14.	Problems based on Tree-2	2
15.	Problems based on Boolean Algebra-1	2
	TOTAL	30

Text Book:

Title	Author(s)	Publication
Discrete Mathematics and Its Applications	Kenneth Rosen	McGraw Hill, New York.

Reference Book(s):

Title	Author(s)	Publication
A Textbook of Discrete Mathematics	Dr. Swapan Kumar Sarkar	S. Chand & Company Ltd., New Delhi.

Discrete Mathematical Structure with Applications to Computer Science	J.P. Trembly, R. Manohar	Tata McGraw-Hill Publishing Company Ltd. New Delhi.
Graph Theory with Applications to Engineering and Computer Science	Narsingh Deo	PHI Learning Pvt. Ltd. New Delhi.

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous Evaluation consists of the performance of the tutorial which will be evaluated out of 10 marks for each tutorial and average of the same will be converted to 100 marks.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDSH2020	**Mathematics-III**
CO 1	use concepts of set theory for understanding & fetching data from database using query.
CO 2	apply knowledge of group theory for data encryption.
CO 3	design and use foundational concepts of notations and results of graph theory in information storage and retrieval.
CO 4	apply the basic concepts of spanning tree algorithm namely DFA, BFS, Prim's and Kruskal's in design of networks.
CO 5	Apply the concepts of Boolean algebra for logical reasoning, digital circuit design, and simplification of logical expressions.

Mapping of CO with PO

IDSH2020	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2						
CO 2	3	3	2	1	2			1			
CO 3	3	3	3	2	2						
CO 4	3	3	3	2	3	1			1		1
CO 5	3	2	3	1	3			1			

Mapping of CO with PSO

IDSH2020	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	2	2
CO 5	3	2	2

Level of Bloom's Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**
1	Set	1, 2, 4, 6
2	Relation	1, 2, 3, 4, 6
3	Function	1, 2, 3, 4, 6
4	Introduction to Group Theory	1, 2, 3, 4
5	Mathematical Logic and Proofs	1, 2, 3, 4, 6
6	Graph Theory	1, 2, 3, 5, 6
7	Tree	1, 2, 3, 5, 6
8	Boolean Algebra	1, 2, 3, 5

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Computer Engineering

Course Code: IDCE2021
Course Name: Data Structures
Prerequisite Course(s): Computer Fundamentals

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	-	04	40	60	40	60	-	-	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:

To help learners to
- understand linear and non-linear data structures and their applications.
- analyze various searching and sorting algorithms and their impacts on data structures.
- develop logic, building and problem-solving skills.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction** Introduction, Data types, Types of Data Structure, Primitive and non-primitive data structures.	05	11
2.	**Array and Strings** Row major arrays, column major arrays, overview of various array operations, searching an element into an array, string representation, string operations	07	12
3.	**Stack and Queue** Linear and non-linear data structures, Stack: array representation of stack, PUSH POP operations on stack, Queue: Array representation of Queue, Operations on Queue, Applications of queue, Circular queue	10	20
4.	**Searching and Sorting** Linear Search, Binary Search, Bubble Sort, Insertion Sort, Selection Sort, Radix sort.	05	11

5.	**Linked List** Pointers Revision, Revision of Structure, Revision of structure using pointers, Dynamic Memory Allocation, Linked list Presentation, Types of Linked List, Basic operations on singly linked list, circular linked list, Applications of linked list	05	18
6.	**Recursion and Applications** Introduction to Recursion, Types of Recursion, Recursion vs Iteration, Applications of Recursion, Tower of Hanoi and Function Call Stack	05	11
7.	**Trees** Non-linear data structure, Tree definition, Representation of Tree, Binary Tree Traversals, Conversion from general to binary tree, Binary Search Tree, Applications of Trees	04	9
8.	**Hashing** Hashing Concepts, Hash Functions: Division Method, Middle Square Method, Folding Method.	04	8
	TOTAL	45	100

List of Practical:

Sr. No.	List of Practical	Hours
1.	Implement array using row major order and column major Order.	02
1.	Implement various string algorithms.	02
2.	Implement push and pop algorithms for a stack using an array.	04
3.	Programs to perform various operations on Queue using array.	04
4.	Programs to perform various operations on Linked List.	06
5.	Programs to perform various types of sorting algorithms.	06
6.	Programs to perform various operations on Tree.	06
	TOTAL	30

Text Book:

Title	Author(s)	Publication
Data Structures Using C	Reema Thareja	Oxford University Press

Reference Book:

Title	Author(s)	Publication
Data and File Structures using C,	Thareja, Reema	Oxford University Press
Data Structures using C	ISRD Group.	McGraw Hill

Web Material Link(s):

- https://www.coursera.org/learn/data-structures
- https://nptel.ac.in/courses/106102064/
- https://nptel.ac.in/courses/106106127/

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCE2021	**DATA STRUCTURES**
CO 1	Differentiate primitive and non primitive data structures.
CO 2	Design and apply appropriate data structures for solving computing problems.
CO 3	Compile the knowledge of different data structures to enhance the performance of a program.
CO 4	Apply sorting and searching algorithms to the small and large datasets.
CO 5	Analyze algorithms for specific problems.

Mapping of CO with PO

IDCE2021	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2						
CO 2	3	3	3	1	3				1		
CO 3	3	3	2	2	3				1		
CO 4	3	3	2	2	3						
CO 5	3	3	2	3	2						1

Mapping of CO with PSO

IDCE2021	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	1	2
CO 5	3	1	2

Level of Bloom's 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	1,2
2	Array and Strings	2,3
3	Stack and Queue	3,4
4	Searching and Sorting	3,4,5
5	Linked List	3,4,5
6	Recursion and Applications	4,5
7	Trees	2,3,4,6
8	Hashing	3,4,5,6

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Information Technology

Course Code: IDIT2030
Course Name: Web Application Design
Prerequisite Course(s):

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
-	04	-	02	-	-	40	60	-	-	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to

- understand working of Internet/ Websites, Client Server Model and Internet Tools.
- understand and develop HTML Web pages.
- control the Look and feel of web pages by using CSS

List of Practical:

Sr. No.	List of Practical	Hours
1.	**Introduction to Web Designing:** Internet, WWW, Browser, Search engine Client Server Model, URL, Web Pages, Website and Web Services, Types of Websites	04
2.	**HTML Tags and Attributes** Types of HTML Tags, Rules of nesting, Basic Tags (HTML Tag. Head Tag, Title Tag, Body Tags).	04
3.	**Page Formatting:** Adding a new Paragraph, Adding a line break, Inserting a blank space, changing page background , Div and Span tags	04
4.	**Text Formatting:** Html Headings, Formatting elements (<b> Bold text , Important text ,<i> Italic text , Emphasized text , <mark> Marked text, <small> Small text, <del> Deleted text, <ins> Inserted text, <sub> Subscript text, <sup> Superscript text), Comments, Horizontal Lines	04
5.	**Creating Lists:** Ordered List, Unordered Lists, Definition Lists	04
6.	**Images and Linking** Images, Text Links, Image Links, opening a page in New Window or Tab, Linking to an area of same page	04
7.	**Introduction to Table Tags**	04

8.	**Frames & Iframe**	04
9.	**HTML Forms**	04
10.	**Cascading Style Sheets** Introduction, Benefits of CSS, CSS Syntax, CSS Implementation (inline, internal and external), CSS Selectors (ID Selectors, Class Selectors, Grouping Selectors, Universal Selectors, CSS Pseudo-classes), CSS properties (background-color, background-image, border-style, height, width, color, text-align, font-family, font-style, font-size, font-weight), Box Model in CSS(margin, border, padding)	14
11.	Small Project using HTML and CSS.	10
	TOTAL	60

Text Book:

Title	Author(s)	Publication
"Learning Web Design: A Beginner's Guide to HTML, CSS, JavaScript and Web Graphics	Niederst Jennifer Robbins	5th Edition, O'Reilly

Reference Book:

Title	Author(s)	Publication
Developing Web Application	Ralph Moseley, M.T.Savaliyaa	Wiley India
Web Technologies, Black Book	-	DreamTech Press

Web Material Link(s):

- https://www.w3schools.com/html/
- https://www.w3schools.com/css/
- https://www.w3schools.com/bootstrap/

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDIT2030	WEB APPLICATION DESIGN
CO 1	Understand the basic concepts of the Internet, WWW, web browsers, and client-server communication
CO 2	Develop static web pages using HTML tags, attributes, and basic formatting techniques.
CO 3	Apply HTML elements such as lists, images, tables, frames, and forms for webpage design.
CO 4	Use Cascading Style Sheets (CSS) to enhance webpage appearance and layout using selectors and properties.
CO 5	Design and develop a mini project using HTML and CSS integrating all learned concepts.

Mapping of CO with PO

IDIT2030	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2					1	
CO 2	3	2	3	1	3				1	1	
CO 3	3	3	3	1	3				1	1	
CO 4	2	2	3	1	3					1	
CO 5	3	3	3	2	3				2	2	1

Mapping of CO with PSO

IDIT2030	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	1	2
CO 5	3	2	3

Level of Bloom's 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 Web Designing	1,2
2	HTML Tags and Attributes	2,3
3	Page Formatting	2,3
4	Text Formatting	2,3
5	Creating Lists	3
6	Images and Linking	3,4
7	Introduction to Table Tags	3,4
8	Frames & Iframe	3,4
9	HTML Forms	3,4,5
10	Cascading Style Sheets	3,4,5
11	Small Project using HTML and CSS.	4,5,6

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Computer Engineering

Course Code: IDCE2080
Course Name: Database Management System
Prerequisite Course (s): NIL

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	00	04	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- understand database concepts, applications, data models, schemas and instances.
- implement the relational database design and data modelling using entity-relationship (ER) model.
- use of SQL in querying the database
- demonstrate Normalization process.
- learn the new emerging Technologies and Applications in database.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Databases** What is a database system? Purpose of database system, View of data, Characteristics of databases, Advantages and disadvantages of DBMS, Database users and administrators.	04	08
2.	**Database System Architecture & Transactions** Database architecture: components, data independence, DBMS languages, data dictionary, transaction management concepts, states of transaction, and ACID properties.	03	08
3.	**Data Models and Data Abstraction** Importance of data models, Basic building blocks (entities, attributes, relationships), Business rules, Evolution of data	05	10

	models, Degrees of data abstraction.		
4.	**Database Design and ER Modeling** Database design process, ER Model overview, Entities and attributes, Relationships, Constraints, ER diagrams, Weak entity sets, ERD issues, Codd's rules, Relational schemas.	06	12
5.	**Relational Model and Normalization** Relational database model: Logical view of data, Keys, Integrity rules. Features of good relational database design, atomic domains, Normalization (1NF, 2NF, 3NF, BCNF).	06	12
6.	**Relational Algebra and Relational Calculus** Relational Algebra: Introduction, Selection, Projection, Set operations, Renaming, Joins, Division, Grouping, and Relational comparison. Relational Calculus: Tuple and Domain relational calculus, Comparison with algebra, Computational capabilities.	08	20
7.	**SQL and Database Constraints** Constraints: Types, Integrity constraints. Views: Introduction, Data independence, Security, Updates on views, Comparison between tables and views. SQL: Data definition, Aggregate functions, Null values, Nested subqueries, joined relations, Triggers.	08	15
8.	**Transaction Management and Concurrency Control** Transaction processing, System concepts, Desirable properties of transactions, Basic concepts of concurrency control, Locking mechanisms, Live lock and Deadlock.	05	15
	TOTAL	45	100

List of Practical:

Sr. No	Name of Practical	Hours
1.	To study DDL-create and DML-insert commands	2
2.	Create table and insert sample data in tables.	2
3.	Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables.	4
4.	Perform queries involving predicates LIKE, BETWEEN, IN etc	2
5.	To Perform various data manipulation commands, aggregate functions and sorting concept on all created tables.	4
6.	To study Single-row functions.	2
7.	Displaying data from Multiple Tables (join).	4
8.	To apply the concept of Aggregating Data using Group functions.	2
9.	To solve queries using the concept of sub query.	2
10.	To study Transaction control commands.	2
11.	Write and execute a Cursor in PL/SQL.	2
12.	Write and execute a Trigger in PL/SQL.	2
	TOTAL	30

Reference Book(s):

Title	Author/s	Publication
Database System Concepts	A. Silberschatz, S. Sudarshan& H. F. Korth	fifth Edition McGraw-Hill
SQL/ PL/SQL	Bayross, Ivan	BPB
Database Management System	Prof. Nilesh Shah	Atul Prakashan

Web material link:

- http://swayam.gov.in
- https://www.w3schools.com/sql/
- https://in.udacity.com/
- https://www.codecademy.com/learn/learn-sql

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCE2080	DATABASE MANAGEMENT SYSTEM
CO 1	Describe the fundamental concepts of database systems, data models, and database architecture.
CO 2	Design Entity–Relationship (ER) diagrams and convert them into relational schemas for efficient database design.
CO 3	Apply normalization techniques to ensure data integrity and reduce redundancy in relational databases.
CO 4	Construct and execute SQL queries for data definition, manipulation, and retrieval, including the use of constraints, views, and triggers.
CO5	Explain transaction management concepts and apply concurrency control techniques to maintain consistency in multi-user database environments.

Mapping of CO with PO

IDCE2080	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2					1	
CO 2	3	3	3	1	3				1	1	
CO 3	3	3	2	2	3						
CO 4	3	3	3	2	3			1	1	1	
CO 5	3	3	2	3	2	1		1	1		1

Mapping of CO with PSO

IDCE2080	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	2	2
CO 5	3	2	3

Level of Bloom's 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 Databases	1, 2
2	Database System Architecture & Transactions	2,3
3	Data Models and Data Abstraction	1,2
4	Database Design and ER Modeling	2,3,4
5	Relational Model and Normalization	2,3,4
6	Relational Algebra and Relational Calculus	2,3,4
7	SQL and Database Constraints	2,3,4,6
8	Transaction Management and Concurrency Control	2,4,5

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Information Technology

Course Code: IDIT2050
Course Name: Object Oriented Concepts & Programming
Prerequisite Course (s): NIL

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	00	04	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- understand the basic object-oriented programming concepts and apply them in problem solving.
- illustrate inheritance concepts for reusing the program.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Object-Oriented Concepts** Principles of Object-Oriented Programming: Classes and objects, Data abstraction, Encapsulation, Inheritance, Polymorphism, Benefits of inheritance, Procedural vs. Object-Oriented paradigm.	05	10
2.	**Java Programming Basics** Introduction to Java, Features of Java, Java data types, Type casting and conversion, Arrays and their types, Memory allocation and garbage collection overview.	05	08
3.	**Operators and Control Statements – Part I** Operators: Arithmetic, Relational, Boolean logical, Assignment, and Ternary; Operator precedence and associativity; Control statements: if, if-else, nested if, if-else ladder.	05	10

4.	**Operators and Control Statements – Part II** Switch statement, Iteration statements (while, do-while, for), Jump statements (break, continue), Use of nested loops.	05	07
5.	**Introduction to Classes and Objects** Class and object creation, Access modifiers, Constructors, Overloading, the garbage collector & finalizer, use of 'this' keyword, Difference between class and instance members, Use of 'static' keyword, Command line arguments.	05	15
6.	**Wrapper Classes and String Handling** Wrapper classes, String constructors, String operations: concatenation, case conversion, comparison, substring extraction, immutable vs mutable strings, Introduction to Scanner class.	06	15
7.	**Inheritance, Packages, and Interfaces** Inheritance, Super and subclass, Method overriding, hiding methods, Abstract classes, Final methods and classes, Packages, Access protection, Interfaces, implementing multiple inheritance using interfaces.	08	20
8.	**Exception Handling in Java** Fundamentals of exception handling, Exception types (checked and unchecked), Try-catch-finally, Throw and throws, Built-in exceptions, Creating user-defined exceptions.	06	15
	TOTAL	45	100

List of Practical:

Sr. No	Name of Practical	Hours
1.	Write a Java program to display "Hello World" and demonstrate basic syntax, data types, and type casting.	2
2.	Write a Java program to demonstrate the use of arithmetic, relational, and logical operators.	2
3.	Write a Java program using if-else, nested if, and switch statements.	2
4.	Write a Java program using loops (for, while, do-while) to find the sum of natural numbers.	2
5.	Write a Java program to define a class and create objects to access class members.	4
6.	Write a Java program to demonstrate constructors (default, parameterized, copy constructor).	2
7.	Write a Java program to demonstrate the use of 'this' and 'static' keywords.	2
8.	Write a Java program to perform string operations: concatenation, comparison, case conversion.	2
9.	Write a Java program to implement inheritance and method overriding.	2
10.	Write a Java program to demonstrate interface implementation and multiple inheritance using interfaces.	4

11.	Write a Java program to handle exceptions using try, catch, and finally blocks.	2
12.	Mini Project: Create a simple Java application (e.g., student marks calculator, billing system, or attendance manager).	4
	TOTAL	30

Reference Book(s):

Title	Author/s	Publication
Programming with JAVA	E – Balagurusamy	McGraw Hill Education (India) Private Limited.
Object Oriented Programming through Java	P. Radha Krishna	Universities Press (India) Pvt. Ltd.
Object Oriented Programming with Java	J. B. Patel	Atul Prakashan

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

Practical:

- Continuous Evaluation consists of performance of practical which will be evaluated out of 20 marks for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDIT2050	OBJECT ORIENTED CONCEPTS AND PROGRAMMING
CO 1	Explain the fundamental concepts and principles of Object-Oriented Programming and Java language features.
CO 2	Apply operators, control statements, classes, and objects to develop simple Java programs.
CO 3	Implement and analyze the concepts of inheritance, polymorphism, packages, and interfaces in Java applications.
CO 4	Demonstrate the use of strings, arrays, wrapper classes, and exception handling mechanisms in Java.
CO5	Design and develop Java-based applications by integrating object-oriented concepts and programming constructs.

Mapping of CO with PO

IDIT2050	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2					1	
CO 2	3	3	2	1	3				1	1	
CO 3	3	3	3	2	3				1	1	
CO 4	3	2	2	2	3			1			
CO 5	3	3	3	2	3			1	2	2	1

Mapping of CO with PSO

IDIT2050	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	2	2
CO 5	3	2	3

Level of Bloom's 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 Object-Oriented Concepts	1, 2
2	Java Programming Basics	1, 2, 3
3	Operators and Control Statements – Part I	2, 3
4	Operators and Control Statements – Part II	2, 3
5	Introduction to Classes and Objects	2, 3, 4
6	Wrapper Classes and String Handling	2, 3, 4
7	Inheritance, Packages, and Interfaces	2, 3, 4, 5
8	Exception Handling in Java	2, 3, 4, 5

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Computer Engineering

Course Code: IDCE2060
Course Name: Software Engineering
Prerequisite Course(s):

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	-	01	04	40	60	-	-	40	60	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to
- To understand the fundamentals of software engineering, its methodologies, and life cycle models.
- To study software requirement analysis, design, and testing processes.
- To familiarize students with software project management and quality assurance concepts.
- To develop the ability to design, implement, and maintain software projects effectively.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Software Engineering** Definition, Importance, Software Characteristics, Software Development Life Cycle (SDLC), Types of Software, Roles of Software Engineer	05	10
2.	**Software Process Models** Waterfall, V-Model, Incremental, Prototyping, Spiral, Agile (Scrum, XP)	05	10
3.	**Software Requirements Engineering** Requirement Gathering, Analysis, Specification, Functional & Non-functional Requirements, SRS Document	05	12
4.	**Software Design** Design Principles, Architectural Design, Data Design, Component-Level Design, UML Diagrams (Use Case, Class, Sequence), UI design principle	06	12

5.	**Software Coding** Coding Standards, Guidelines, Code Review, Best Practices, Documentation	06	10
6.	**Software Testing** Levels of Testing (Unit, Integration, System, Acceptance), Testing Techniques (Black Box, White Box), Test Cases, Debugging	06	12
7.	**Software Project Management** Estimation Techniques (COCOMO), Project Planning, Scheduling, Risk Management, Team Management	06	12
8.	**Software Quality Assurance & Maintenance** Quality Concepts, Metrics, Verification & Validation, Software Maintenance Types, Re-engineering	06	22
	TOTAL	45	100

List of Practical:

Sr. No.	List of Practical	Hours
1.	Introduction to Software Development Life Cycle (SDLC).	02
2.	To assign the requirement engineering tasks and discuss various systems.	02
3.	To perform the system analysis: a) Requirement analysis b) SRS.	02
4.	UML Diagrams: Draw Use Case and Class diagrams for a simple system (e.g., Online Bookstore)	02
5.	To draw the structural view diagram: Class diagram	02
6.	To draw the behavioral view diagram: Sequence diagram	02
7.	Mini Project Discussion: Plan, design, and document a mini project incorporating all phases	03
	TOTAL	15

Text Book:

Title	Author(s)	Publication
Software Engineering	Rajib Mall	PHI

Reference Book:

Title	Author(s)	Publication
Software Engineering – A Practitioner's Approach"	Roger S Pressman	Tata McGraw-Hill
Software Engineering	Ian Sommerville	Pearson Education
Fundamentals of Software Engineering	Ghezzi, Jazayeri, Mandrioli	Pearson Education

Web Material Link(s):

- Software Engineering Tutorial - GeeksforGeeks
- GPRS Tutorial

- Software Engineering Courses | Learn Online
- Software Engineering Tutorial

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCE2060	**SOFTWARE ENGINEERING**
CO 1	Explain the software engineering process and classify software development models.
CO 2	Analyze software requirements and model them to build software systems
CO 3	Design software using diagrams such as Use Case, Class, and Sequence diagrams.
CO 4	Apply user interface and software design principles in small projects
CO 5	Estimate project effort and resources using software project estimation techniques

Mapping of CO with PO

IDCE2060	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2			1		1	
CO 2	3	3	2	2	2				1	1	
CO 3	3	3	3	2	3				1	1	
CO 4	3	2	3	2	3	1		1	1	1	
CO 5	2	3	2	2	2				1	1	3

Mapping of CO with PSO

IDCE2060	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	2	2

CO 5	2	1	3

Level of Bloom's 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 Software Engineering	1,2
2	Software Process Models	2,3,4
3	Software Requirements Engineering	2,3,4,6
4	Software Design	3,4,5,6
5	Software Coding	3,4,6
6	Software Testing	3,4,5,6
7	Software Project Management	3,4,5,6
8	Software Quality Assurance & Maintenance	2,3,5,6

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Information Technology

Course Code: IDIT2051
Course Name: Mobile Application Development
Prerequisite Course (s): Object Oriented Concepts Programming

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	00	04	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- understand life cycle of an application/activity.
- learn design of responsive mobile applications.
- develop mobile application using open-source technologies.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Android** Overview of Android Operating System, Features, History of Mobile Software Development, Open Handset Alliance (OHA), Android Versions	05	10
2.	**Android Architecture and Setup** Android Platform Overview, Android SDK, Development Tools, Android Studio Installation, Emulator Setup, Android Project Structure, Android Manifest File	05	10
3.	**User Interface Basics** Introduction to Android Views, TextView, EditText, Buttons, ImageView, CheckBox, RadioButton, and RadioGroup	06	15

4.	**Interactive UI Elements** Event Handling, Listeners, Menus (Options, Context, Popup), Seek Bar, Progress Bar, Indicators, Toast, Toolbar, Dialogs, Styles, and Themes	05	10
5.	**Layouts and View Groups** Concept of View and View Group, Layout Managers: Linear Layout, Relative Layout, Frame Layout, Table Layout, Constraint Layout	06	15
6.	**Advanced Layouts and Screen Organization** Multiple Layouts in One Screen, Scrolling Views, Tabs, Recycler View Introduction, Card View, and Adapter Concepts	06	15
7.	**Data Handling and Intents** Working with Resources, String and Drawable Resources, Explicit and Implicit Intents, Passing Data Between Activities	06	15
8.	**Android Application Structure and Deployment** Application Components (Activity, Service, Broadcast Receiver, Content Provider), Building and Running Android Apps, APK Generation and Testing	06	10
	TOTAL	45	100

List of Practical:

Sr. No	Name of Practical	Hours
1.	Install Android Studio and configure the Android SDK. Create a simple "Hello Android" application.	4
2.	Create an Android app to display your name and college name using TextView and EditText.	2
3.	Develop an application to take input from the user and display it using Button and Toast message.	2
4.	Create an Android app with CheckBox and RadioButton to select hobbies and gender.	2
5.	Design an interface using different Layouts (LinearLayout, RelativeLayout, and TableLayout).	2
6.	Develop an app that uses DatePicker and TimePicker to select date and time.	4
7.	Create an app with Context Menu and Options Menu for basic operations (like New, Open, Exit).	2
8.	Create an app that uses Intent to move from one activity to another.	2
9.	Develop an app that demonstrates the use of ScrollView and Tab Layout.	2
10.	Mini Project: Create a small Android app (e.g., Student Information Form, Simple Calculator, or Login Page).	2
11.	Install Android Studio and configure the Android SDK. Create a simple "Hello Android" application.	2
12.	Create an Android app to display your name and college name using TextView and EditText.	4
	TOTAL	30

Reference Book(s):

Title	Author/s	Publication
Android Programming – A Beginner's Guide	Pradeep Kothari	Dreamtech Press
Android Programming	J. B. Patel, Atul Patel	Atul Prakashan, Ahmedabad

Web material link:

- http://swayam.gov.in/
- http://spoken-tutorial.org/
- https://developer.android.com/

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

Practical:

- Continuous Evaluation consists of performance of practical which will be evaluated out of 20 marks for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDIT2051	MOBILE APPLICATION DEVELOPMENT
CO1	Understand the basics of Android operating system, its architecture, and installation of the development environment.
CO2	Develop simple Android applications using basic UI components such as TextView, Button, and EditText.
CO3	Implement various layouts and organize user interfaces using different view groups in Android.
CO4	Handle user events, menus, and styles to enhance the interactivity and appearance of Android applications.
CO5	Integrate date, time, and other UI elements to design simple and user-friendly Android applications.

Mapping of CO with PO

IDIT2051	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		3					1	

CO 2	3	3	3	1	3				1	1	
CO 3	3	3	3	1	3				1	1	
CO 4	3	2	3	2	3			1	1	1	
CO 5	3	3	3	2	3			1	2	2	1

Mapping of CO with PSO

IDIT2051	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	2	2
CO 5	3	2	3

Level of Bloom's 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 Android	1, 2
2	Android Development Environment	2, 3
3	Android Application Components and Manifest File	2, 3
4	Exploring User Interface Elements	3, 4
5	Handling User Interaction and Events	3, 4
6	Styles, Themes, and UI Design	2, 3
7	Designing User Interfaces with Layouts	3, 4, 5
8	Advanced UI Components	3, 4

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Computer Engineering

Course Code: IDCE2070
Course Name: Computer Networks
Prerequisite Course(s):

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	-	04	40	60	40	60	-	-	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to

- To introduce the fundamental concepts, technologies, and terminologies used in modern data communication and computer networks.
- Learn the different types of networks, network topologies and their characteristics.
- Learn the working of protocols used at various layers.
- To explore and understand the various hardware devices and equipment used in networking.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Computer Networks** Uses of computer network, Applications of computer network, Types of computer networks (LAN, CAN, MAN, WAN), network topologies, OSI Reference Model, TCP/IP Reference Model. network devices and their role, Server-client based network, peer to peer networks.	06	12
2.	**Physical Layer** Data and transmission techniques, Transmission Modes: simplex, half duplex and full duplex, Transmission media (Guided and Unguided)	05	14

3.	**Data Link Layer** Functions and services of the Data Link Layer; design issues: framing, flow, and error control; error detection and correction methods (VRC, LRC, CRC, Checksum); and data link protocols including Simplex, Stop-and-Wait	07	14
4.	**Medium Access Control Layer** Channel Allocations, Multiple Access protocols- ALOHA, CSMA, CSMA/CD protocols, Collision-free protocols.	05	10
5.	**Network Layer** A network Layer design issue, Routing algorithms, and protocols, Congestion Control Algorithms, Internetworking, Addressing, N/W Layer Protocols and recent developments	07	13
6.	**Transport Layer** Transport services, Design issues, transport layer protocols, Congestion Control, QOS and its improvement.	05	13
7.	**Application Layer** Client-Server Model, DNS, SMTP, FTP, HTTP, DHCP, WWW, and recent developments	05	14
8.	**Introduction to Wireless Networks** Introduction to wireless LAN IEEE 802.11, WiMax and Li-Fi, Introduction to Bluetooth - architecture, application, Comparison between Bluetooth and WiFi	05	10
	TOTAL	45	100

List of Practical:

<table>
<tr><th>Sr. No.</th><th>List of Practical</th><th>Hours</th></tr>
<tr><td>1.</td><td>To study different types of networks, networks devices and network cables.</td><td>02</td></tr>
<tr><td>2.</td><td>Cable Crimping using Different Color Codes (Straight and Cross Cable)</td><td>02</td></tr>
<tr><td>3.</td><td>1. Determine whether following IPv4 address are valid or invalid. If valid IPv4 address then find class, Network and Host ID of an IPv4 address. If invalid IPv4 address then write reason for the same.
a) 298.27.5.6 b) 1.4.5.5 c) 11100010.23.14.67 d) 192.226.12.11.9

2. Determine Class and Network Address for given IPv4 address and subnet mask.
<table>
<tr><th>IPv4 address</th><th>Subnet Mask</th><th>Class</th><th>Subnet</th></tr>
<tr><td>172.16.2.10</td><td>255.255.255.0</td><td></td><td></td></tr>
<tr><td>10.6.24.20</td><td>255.255.240.0</td><td></td><td></td></tr>
<tr><td>10.30.36.12</td><td>255.255.255.0</td><td></td><td></td></tr>
</table></td><td>04</td></tr>
<tr><td>4.</td><td>To create a point to point and multipoint topologies using cisco packet tracer and also set properties to the node.</td><td>02</td></tr>
<tr><td>5.</td><td>Implementation of various Topologies (Bus, Star, Ring, Mesh and Hybrid) in Cisco Packet Tracer.</td><td>04</td></tr>
<tr><td>6.</td><td>To study basic network command and Network configuration commands.</td><td>02</td></tr>
</table>

	1. Ping 2. Tracert 3. Netstat 4. nslookup 5. ipconfig 6. route 7. ARP	
7.	Switch + Router Configuration in Cisco Packet Tracer.	02
8.	Installation and Configuring FTP, HTTP Services	04
9.	Installation and Configuring DNS & DHCP Services	04
10.	Simulate a wireless scenario using Cisco Packet Tracer.	04
	TOTAL	30

Text Book:

Title	Author(s)	Publication
Data Communication and Networking	Behrouz A. Forouzan	Tata McGraw Hill

Reference Book:

Title	Author(s)	Publication
Computer Networks	Andrew S Tanenbaum	Pearson, 2012
Data and Computer Communications	William Stallings	Prentice Hall
TCP/IP Illustrated Volume-I	Kevin R. Fall, W.Richard Stevens	Addition Wesley
Internetworking with TCP/IP Volume-I	Douglas E. Comer	PHI

Web Material Link(s):

- http://www.tutorialspoint.com/computer_fundamentals/computer_networking.html
- https://nptel.ac.in/courses/106105080/
- https://www.udemy.com/new-2016-networking-fundamentals-for-beginners/
- https://www.cisco.com/c/en_in/training-events/training-certifications/certifications.html

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.

- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCE2070	**COMPUTER NETWORKS**
CO 1	Distinguish the working of network protocols, application and OSI reference model and TCP/IP reference model.
CO 2	Explain various service provided by computer network and its uses.
CO 3	Describe concept of network interface and performance issues in the networks, wired are networks and IP address.
CO 4	Examine the Network and Transport Layers, including routing, addressing, congestion control, protocols, and Quality of Service (QoS).
CO 5	Identify real world applications of networking.

Mapping of CO with PO

IDCE2070	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		3					1	
CO 2	3	2	1		2	1				1	
CO 3	3	3	2	1	3				1		
CO 4	3	3	3	2	3	1			1		1
CO 5	2	2	2	1	2	2	1		1	1	

Mapping of CO with PSO

IDCE2070	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	2	1	2
CO 3	3	2	2
CO 4	3	2	2
CO 5	2	1	3

Level of Bloom's 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 Computer Networks	1,2,4,6
2	Physical Layer	1,2,3,5
3	Data Link Layer	1,2,3
4	Medium Access Control Layer	2,3,4,5
5	Network Layer	2,3,4,5
6	Transport Layer	3,4,5,6
7	Application Layer	2,3,4,6
8	Introduction to Wireless Networks	2,3,4,5,6

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Information Technology

Course Code: IDIT3031
Course Name: Advanced Web Technology
Prerequisite Course(s): Web Application Design

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	-	04	40	60	40	60	-	-	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:
To help learners to
- To understand the basics of dynamic web development using PHP and MySQL.
- To learn how to create and manage web pages using PHP, forms, and databases.
- To develop simple web applications by combining front-end and back-end technologies.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Dynamic Web Development** Internet & Web Architecture, Client-Server model, Static vs Dynamic pages, Role of web servers (Apache, IIS), Installation of Important tools for Working in PHP like WAMP, XAMPP.	04	10
2.	**Basics of PHP** Introduction to different kinds of Languages, Introduction to PHP for Web Development, History and future, scope of PHP, state the relationship between PHP, MySQL and Apache, Structure and Syntax of PHP, PHP variable and its data types, type casting.	05	12
3.	**Control Statements in PHP** Conditional statements – if, else, switch Looping statements – while, do-while, for, foreach, Using decision and loop statements in small programs	04	10

4.	**Arrays, Strings and Functions** Types of arrays – Indexed, Associative, Multidimensional Array operations – create, traverse, sort, merge String functions – strlen(), strrev(), strpos(), str_replace(), Creating simple user-defined function. Math functions: Abs, ceil, floor, round, fmod, min, max, pow, sqrt, rand	06	12
5.	**Form Handling and Validation** HTML form creation – text box, radio, checkbox, dropdown, GET and POST methods, Server-side form validation using PHP	06	12
6.	**Cookies and Session** Introduction of Cookies, Create, fetch and Delete cookie, Differentiate session and cookie.	04	10
7.	**Database Connectivity (PHP + MySQL)** Introduction to MySQL, Connecting PHP with MySQL, Performing CRUD operations (Insert, Select, Update, Delete), Displaying data in a web page	08	20
8.	**Mini Project Development** Combine PHP and MySQL to develop a small application (e.g., Student Info System, Online Feedback Form), Use HTML, CSS, and PHP for front-end and back-end	08	14
	TOTAL	45	100

List of Practical:

Sr. No.	List of Practical	Hours
1.	Install and configure PHP, Apache (XAMPP), and MySQL. Write a simple PHP program to print "Welcome to PHP".	02
2.	Write PHP programs using expressions, operators, and control structures (If, If-Else, Switch).	02
3.	Write PHP programs using looping structures (for, while, do-while, foreach).	02
4.	Write PHP programs to demonstrate arrays (Indexed and Associative arrays).	02
5.	Write PHP programs using string functions and user-defined functions.	02
6.	Design a simple HTML form with text boxes and radio buttons. Write PHP code to capture and display input data using GET and POST.	02
7.	Implement server-side form validation in PHP (e.g., checking empty fields or email format).	04
8.	Write PHP programs to create, read, and delete cookies. Demonstrate session creation and data storage.	04
9.	Write PHP programs to connect with MySQL and perform basic CRUD operations (Insert, Retrieve, Update, Delete).	04
10.	**Mini Project:** Develop a small web application using HTML, CSS, PHP, and MySQL (e.g., Student Info System, Online Feedback Form).	06

	TOTAL	30

Text Book:

Title	Author(s)	Publication
Beginning PHP and MySQL: From Novice to Professional	W. Jason Gilmore	Apress Publication

Reference Book:

Title	Author(s)	Publication
PHP and MySQL Web Development	Luke Welling & Laura Thomson	Pearson Education
Head First PHP & MySQL	Lynn Beighley & Michael Morrison	O'Reilly MediaPearson Education

Web Material Link(s):

- https://www.php.net/docs.php
- https://dev.mysql.com/doc/
- https://www.w3schools.com/php/
- https://www.tutorialspoint.com/php/

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Tutorial:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDIT303 1	**ADVANCED WEB TECHNOLOGY**
CO 1	Explain the fundamentals of dynamic web development, web architecture, and PHP environment setup.
CO 2	Apply PHP syntax, data types, control structures, arrays, and functions to develop dynamic web pages.
CO 3	Develop and validate web forms using PHP and handle user input effectively.
CO 4	Implement cookies, sessions, and database connectivity using PHP and MySQL

	for dynamic content management.
CO 5	Design and create a small web application integrating front-end (HTML, CSS) and back-end (PHP, MySQL) technologies.

Mapping of CO with PO

IDIT3031	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		3					1	
CO 2	3	3	2	1	3				1	1	
CO 3	3	3	3	2	3				1	1	
CO 4	3	3	3	2	3			1	1	1	
CO 5	3	3	3	2	3			1	2	2	1

Mapping of CO with PSO

IDIT3031	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	1	2
CO 3	3	1	2
CO 4	3	2	2
CO 5	3	2	3

Level of Bloom's 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 Dynamic Web Development	1,2
2	Basics of PHP	2,3
3	Control Statements in PHP	2,3
4	Arrays, Strings and Functions	1,3,4
5	Form Handling and Validation	3,4
6	Cookies and Session	2,3
7	Database Connectivity (PHP + MySQL)	3,4
8	Mini Project Development	3,6

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Computer Engineering

Course Code: IDCE2090
Course Name: Operating System
Prerequisite Course (s): NIL

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	00	0	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- understand the services of an operating system provides to its users and system itself.
- apply various CPU scheduling algorithms and recognize the classic synchronization problems.
- compare methods for handling deadlocks and apply various memory management techniques.
- describe file systems.

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Introduction to Operating Systems** What Operating Systems Do, OS Structure and Operations, Types of Operating Systems, System Components and Services	05	10
2.	**Computer System Architecture & OS Environment** System Components (CPU, Memory, I/O, Storage), System Calls and System Programs, OS Design and Implementation, Open-source and Distributed Systems	05	10

3.	**Process Management Fundamentals** Process Concept and States, Process Control Block (PCB), Process Creation and Termination, Interprocess Communication (IPC)	06	15
4.	**CPU Scheduling** Scheduling Criteria and Objectives, Scheduling Algorithms (FCFS, SJF, RR, Priority), Multilevel Queue Scheduling, Thread Scheduling	06	15
5.	**Process Synchronization** The Critical-Section Problem, Synchronization Hardware, Semaphores and Monitors, Classical Synchronization Problems.	05	10
6.	**Deadlocks** Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention and Avoidance, Deadlock Detection and Recovery.	05	10
7.	**Memory Management** Contiguous Memory Allocation, Paging and Segmentation, Virtual Memory Concepts, Page Replacement Algorithms	07	15
8.	**File and Storage Management** File Concept and Access Methods, Directory Structure, File-System Mounting and Sharing, Secondary Storage Structure and Disk Scheduling	06	15
	TOTAL	45	100

List of Practical:

Sr. No	Name of Practical	Hours
1.	Install & test different types of Operating System & compare its features	10
2.	Compare various process scheduling algorithm	04
3.	Test and run basic unix commands.	04
4.	Test commands related with File editing with Vi, Vim, gedit, gcc.	04
5.	Test and run Advanced unix commands	06
6.	Create a shell script to print" Hello".	04
7.	Create a Shell script to read and display content of a file.	06
8.	Create a Shell script to read from command line.	04
9.	Create a Shell script to append content of one file to another	04
10.	Create a Shell script to accept a string in lower case letters from a user, & convert to upper case letters.	10
	TOTAL	30

Reference Book(s):

Title	Author/s	Publication
Operating System Principles	Abraham	8th edition, Wiley-India.

(Chapters-1, 3, 5, 6, 7, 8, 9, 10 and 11)	Silberschatz, Peter Baer Galvin, Greg Gagne	
Operating Systems, I	Chandra Mohan	PHI, 2013
Basics of Operating System	Dr. Bharat V. Chawda	Atul Prakashan

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests, each of 30 marks and 1 hour of duration and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.

End Semester Examination consists of 60 marks.

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 20 Marks.
- Internal Viva component of 20 Marks.
- Practical performance/quiz/test of 30 Marks during End Semester Exam.
- Viva/Oral performance of 30 Marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCE2090	**OPERATING SYSTEM**
CO1	Describe the basic functions, structure, and components of operating systems.
CO2	Explain the concept of processes, threads, and CPU scheduling mechanisms.
CO3	Apply synchronization techniques and handle deadlocks in process management.
CO4	Analyze memory management strategies including paging, segmentation, and virtual memory.
CO5	Explain file and storage management techniques used in operating systems.

Mapping of CO with PO

IDCE2090	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2					1	
CO 2	3	3	2	1	2				1		
CO 3	3	3	3	2	3			1	1		
CO 4	3	3	2	3	3				1		
CO 5	3	2	2	2	3	1				1	

Mapping of CO with PSO

IDCE2090	PSO1	PSO2	PSO3
CO 1	2	2	1
CO 2	3	2	2

CO 3	3	2	2
CO 4	3	2	2
CO 5	2	3	2

Level of Bloom's 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 Operating Systems	1, 2
2	Computer System Architecture & OS Environment	1, 2, 3
3	Process Management Fundamentals	2, 3
4	CPU Scheduling	2, 3, 4
5	Process Synchronization	2, 3, 4
6	Deadlocks	2, 3, 4
7	Memory Management	2, 3, 4
8	File and Storage Management	2, 3, 4

P P Savani University
School of Engineering

Institute of Diploma Studies

Department of Computer Engineering

Course Code: IDCE2110
Course Name: Computer Architecture
Prerequisite Course (s): NIL

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	02	00	04	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- impart basic concepts of computer architecture and organization.
- explain key skills of constructing cost-effective computer systems.
- help students in understanding various memory devices

Course Content:

Module No.	Content	Hours	Weightage in %
1.	**Number Systems and Data Representation** Decimal, Binary, Octal, and Hexadecimal Number Systems, Conversion from One Number System to Another, Fixed Point Representation, Signed Magnitude, 1's & 2's Complement Representation, Binary Addition and Subtraction	06	15
2.	**Overview of Computer Architecture** Basics of Computers and their Components, Overview of Digital Electronics Concepts, Introduction to Flip-Flops and Registers, Shift Registers and Their Operations	05	10

3.	**Register Transfer and Micro-operations** Register Transfer Language (RTL), Bus Transfer and Memory Transfer, Arithmetic Micro-operations: Addition, Subtraction, Complements, Increment, Decrement, Negation, Logic and Shift Micro-operations	06	15
4.	**Basic Computer Organization** Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupts	06	12
5.	**Memory Organization Concepts** Memory Hierarchy, Associative Memory, Cache Memory: Mapping Techniques, Hit Ratio, Virtual Memory and Paging Concepts	06	15
6.	**Input-Output Organization** Input-Output Interface, Asynchronous Data Transfer, Modes of Data Transfer, DMA (Direct Memory Access) Transfer	05	10
7.	**Microprocessor Fundamentals** 8086 Microprocessor Architecture, Registers of 8086 and Their Functions, Addressing Modes and Applications of Microprocessors	05	10
8.	**Parallel Processing and Pipelining** Flynn's Classification (SISD, SIMD, MISD, MIMD), Concepts of Parallel Processing, Instruction Pipelining and its Stages	06	13
	TOTAL	45	100

List of Practical:

Sr. No	Name of Practical	Hours
1.	Number System Conversions, Understand decimal, binary, octal, and hexadecimal conversions with examples.	10
2.	Arithmetic Operations in Binary, perform binary addition, subtraction, multiplication, and division using 1's and 2's complement.	04
3.	Simulation of Basic Logic Gates, Verify truth tables of basic logic gates (AND, OR, NOT, NAND, NOR, XOR, XNOR).	04
4.	Study of Basic Computer Organization, Identify Input, Output, Memory, ALU, and Control Unit with block diagram.	04
5.	Study of Registers and ALU (Simulation-based).	06
6.	Study of Memory Types and Hierarchy, Understand types of memory: primary, secondary, cache, and virtual memory.	04
7.	Input/Output Device Demonstration, Examine I/O devices and describe data transfer modes (DMA, interrupt).	06
8.	Study of Microprocessor (8086) Architecture, draw 8086 block diagram and describe its components and registers.	04
9.	Write and Execute Simple Assembly Program.	04
10.	Study of Parallel Processing Concepts, Understand Flynn's classification and types of parallel systems.	10
	TOTAL	30

Reference Book(s):

Title	Author/s	Publication
Computer System Architecture	M. Morris Mano	Pearson
Computer Organization and Architecture	Atul P. Godse & Dr. Deepali A. Godse	Technical Publications, 2021

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 hour of duration, which will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the course coordinator.
- End Semester Examination consists of 60 marks

Practical:

- Continuous Evaluation consists of performance of practical which will be evaluated out of 20 marks for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test consists of 30 marks during End Semester Exam.
- Viva/ Oral performance consists of 30 marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the following course outcomes will be able to:

IDCE2110	COMPUTER ARCHITECTURE
CO1	Perform data representation and binary arithmetic operations.
CO2	Explain computer architecture, registers, and micro-operations.
CO3	Describe instruction formats, execution cycles, and I/O operations.
CO4	Analyze memory hierarchy and input/output organization.
CO5	Understand microprocessor basics and parallel processing concepts.

Mapping of CO with PO

IDCE2110	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11
CO 1	3	2	1		2						
CO 2	3	2	2	1	2					1	
CO 3	3	3	2	1	2				1		
CO 4	3	3	2	2	3				1		
CO 5	3	2	2	2	3				1	1	

Mapping of CO with PSO

IDCE2110	PSO1	PSO2	PSO3
CO 1	2	2	1
CO 2	2	3	1
CO 3	2	3	2
CO 4	3	3	2

CO 5	3	2	2

Level of Bloom's 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 Systems and Data Representation	1, 2
2	Overview of Computer Architecture	1, 2, 3
3	Register Transfer and Micro-operations	2, 3
4	Basic Computer Organization	2, 3, 4
5	Memory Organization Concepts	2, 3, 4
6	Input-Output Organization	2, 3, 4
7	Microprocessor Fundamentals	2, 3, 4
8	Parallel Processing and Pipelining	2, 3, 4