PPSU

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

B. TECH. (COMPUTER SCIENCE ENGINEERING – ML & AI)

SYLLABUS BOOK

AY 2024-25

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 knowledge of engineering fundamentals, science, mathematics & engineering specialization for the solution of complex engineering problems.
PO 2	Problem analysis: Identify, formulate and analyze complex engineering problems leading to substantial conclusions using basic principles of mathematics, science and engineering.
PO 3	Design/development of solutions: Develop solutions for complex engineering problems and design system components or processes meeting specified needs having due consideration for the safety and societal & environmental considerations.
PO 4	Conduct investigations of complex problems: Use research-based knowledge & methods like design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid & viable conclusions.
PO 5	Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools for prediction and modeling of complex engineering activities with an understanding of the limitations.
PO 6	The engineer and society: Apply cognitive learning by the contextual knowledge to assess societal, health, safety, legal and cultural issues and following responsibilities relevant to the professional engineering practice.
PO 7	Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge & skill needed for sustainable development.
PO 8	Values & Ethics: Apply basic moral values & ethical principles and pledge to professional ethics/norms and responsibilities of the engineering practice.
PO 9	Individual and team work: Function effectively as an individual/as a team member or as a leader in diverse teams, and in multidisciplinary settings.
PO 10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects in multidisciplinary environments.
PO 12	Life-long learning: Recognize the need, do necessary preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PSO No	PROGRAMME SPECIFIC OUTCOMES (PSO) COMPUTER SCIENCE ENGINEERING (ML & AI)
PSO 1	Build skills to develop software applications in specialised areas of Computer Science & Engineering such as artificial intelligence, machine learning, data science & gaming.
PSO 2	Analyse and formulate solutions to real world and socially relevant problems using Artificial Intelligence and Machine Learning concepts.
PSO 3	Prepare technically competent employee, researcher, entrepreneur, excel in competitive exams, and boost passion for the 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

B. Tech.

Computer Science Engineering
(Machine Learning & Artificial Intelligence)

P P Savani University

School of Engineering

Effective From: 2024-25

Authored by: P P Savani University

CONTENT

FIRST YEAR B. TECH.

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

TEACHING & EXAMINATION SCHEME FOR FIRST YEAR B.TECH. COMPUTER SCIENCE ENGINEERING (MLAI) PROGRAMME AY: 2024-25

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 OR 2	SESH1110	Calculus	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SESH1120	Linear Algebra	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SEME1110	Hardware Workshop	ME	0	4	0	4	4	0	0	100	0	0	0	100
	SECE1110	Software Workshop	CE	0	4	0	4	2	0	0	100	0	0	0	100
	SEIT1110	Cyberspace Awareness	IT	2	0	0	2	2	40	60	0	0	0	0	100
	SEIT1120	Competitive Quantitative Aptitude	IT	2	0	0	2	2	40	60	0	0	0	0	100
	SECE1120	Joy of Programming	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SESH1130	Conceptual Experimental Physics	SH	3	2	0	5	4	40	60	40	60	0	0	200
	SECH1110	Fundamental Chemistry & Environmental Science	CH	3	2	0	5	4	40	60	40	60	0	0	200
	SEME1120	Fundamentals of Technical Drawing	ME	0	4	0	4	4	0	0	40	60	0	0	100
	SECV1110	Core Engineering Concepts	CV	3	2	0	5	4	40	60	40	60	0	0	200
	CFLS2130	Intermediate Communicative English	CFLS	2	2	0	4	3	100	00	100	0	0	0	200
	CLSC2070	Essentials of Entrepreneurship	CFLS/SLM	2	0	0	2	2	100	0	0	0	0	0	100
						Total	**52**	**45**							**2000**

Group 1	SESH1110	Calculus	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SEME1110	Hardware Workshop	ME	0	4	0	4	4	0	0	100	0	0	0	100
	SEIT1110	Cyberspace Awareness	IT	2	0	0	2	2	40	60	0	0	0	0	100
	SESH1130	Conceptual Experimental Physics	SH	3	2	0	5	4	40	60	40	60	0	0	200
	SEME1120	Fundamentals of Technical Drawing	ME	0	4	0	4	4	0	0	40	60	0	0	100
	SECE1120	Joy of Programming	CE	3	2	0	5	4	40	60	40	60	0	0	200
	CFLS2130	Intermediate Communicative English	CFLS	2	2	0	4	3	100	0	100	0	0	0	200
						Total	**29**	**26**							**1100**
Group 2	SESH1120	Linear Algebra	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SECE1110	Software Workshop	CE	0	4	0	4	2	0	0	100	0	0	0	100
	SEIT1120	Competitive Quantitative Aptitude	IT	2	0	0	2	2	40	60	0	0	0	0	100
	SECH1110	Fundamental Chemistry & Environmental Science	CH	3	2	0	5	4	40	60	40	60	0	0	200
	SECV1110	Core Engineering Concepts	CV	3	2	0	5	4	40	60	40	60	0	0	200
	CLSC2070	Essentials of Entrepreneurship	CFLS/SLM	2	0	0	2	2	100	0	0	0	0	0	100
						Total	**23**	**19**							**900**

P P Savani University
School of Engineering

Department of Science and Humanities

Course Code: SESH1110
Course Name: Calculus
Prerequisite Course/s: Algebra, Geometry, Trigonometry &Pre-Calculus till 12th 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	
3	0	2	5	40	60	0	0	100	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- summarize concept of calculus to enhance ability of analysing mathematical problems.
- acquire knowledge and ability to work with differentiation and integration for applications of mathematical techniques in engineering.
- develop the tool of convergence or divergence of any infinite series and power series for learning advanced Engineering Mathematics.
- acquire knowledge of partial differentiation and ability to work with applications to advanced Engineering Mathematics.
- application of concavity of graph and find out points of inflection.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Calculus** Limits, Continuity, Types of Discontinuity, Successive Differentiation, Rolle's Theorem, LMVT, CMVT, Maxima and Minima.	9	20
2.	**Sequence and Series-I** Convergence and Divergence, Comparison Test, Integral Test, Ratio Test, Root Test, Alternating Series, Absolute and Conditional Convergence.	9	20
3.	**Sequence and Series-II** Power series, Taylor and Macluarin series, Indeterminate forms and L'Hospitals Rule.	5	10
Section II			
Module No.	Content	Hours	Weightage in %
4.	**Partial Derivatives** Function of several variables, Partial differentiation, Applications, Chain rule, Linear approximations, Maxima and Minima, Euler's theorem, Lagrange multiplier.	11	30

5.	**Curve tracing** Tracing of Cartesian Curves, Polar Coordinates, Polar and Parametric Form of Standard Curves, Areas and Length in Polar co-ordinates	11	20

List of Tutorials:

Sr. No.	Name of Tutorial	Hours
1.	Calculus-1	4
2.	Calculus-2	4
3.	Calculus-3	2
4.	Sequence and Series-1	4
5.	Sequence and Series-2	2
6.	Sequence and Series-3	2
7.	Partial Derivatives-1	4
8.	Partial Derivatives-2	2
9.	Curve tracing-1	4
10.	Curve tracing-2	2

Text Book:

Title	Author(s)	Publication
Thomas' Calculus	George B. Thomas, Maurice D. Weir and Joel Hass	Pearson
Elementary linear Algebra	Howard Anton and Chrish Rorres	Wiley

Reference Book:

Title	Author(s)	Publication
Advanced Engineering Mathematics	E Kreyszig	John Wiley and Sons
A textbook of Engineering Mathematics	N P Bali and Manish Goyal	Laxmi
Higher Engineering Mathematics	B S Grewal	Khanna
Engineering Mathematics	T Veerarajan	Tata Mc Graw Hill
Engineering Mathematics-1 (Calculus)	H. K. Dass and Dr. Rama Verma	S. Chand

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 50 marks
- Continuous Evaluation consists of self-performance assignment to 20 marks.
- Internal Viva consists of 30 marks.

Course Outcome(s):

After the completion of the course, the student will be able to

SESH1110	CALCULUS
CO 1	Recall the concepts of limit, continuity and differentiability for analysing mathematical problems.
CO 2	Analyze the series for its convergence and divergence to solve real world problems.
CO 3	Evaluate various limit problems using L' Hospital's rule.
CO 4	Identify the ordinary differentials and partial differentials and solve the maximum and minimum value of function.
CO 5	Construct the graphs for function with intervals and identify more application for function.

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	Calculus	1, 2, 3, 4, 5
2	Sequence and Series – I	1, 2, 3, 4, 6
3	Sequence and Series – II	1, 2, 3, 4, 6
4	Partial Derivatives	1, 2, 3, 4, 5
5	Curve tracing	1, 2, 3, 4, 5, 6

P P Savani University
School of Engineering

Department of Science and Humanities

Course Code: SESH1120
Course Name: Linear Algebra
Prerequisite Course/s: -- Algebra, Geometry, Trigonometry &Pre-Calculus till 12th 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	
3	0	2	5	40	60	0	0	100	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- analyse and solve system of linear equations and understand characteristics of Matrices.
- learn about and work with vector space, linear transformation and inner product space.
- apply concepts of linear algebra for solving science and engineering problems.
- introduce the concept of improper integral and Beta-Gamma Function.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Matrix Algebra** Elementary Row and Column operations, Inverse of matrix, Rank of matrix, System of Linear Equations, Characteristic Equation, Eigen values and Eigen vector, Diagonalization, Cayley Hamilton Theorem.	12	30
2.	**Vector Space** Concept of vector space, Subspace, Linear Combination, Linear Dependence and Independence, Span, Basis and Dimension, Row Space, Column Space and Null Space, Rank and Nullity.	11	20
Section II			
Module No.	Content	Hours	Weightage in %
3.	**Linear Transformation** Introduction of Linear Transformation, Kernal and Range, Rank and Nullity, Inverse of Linear Transformation, Rank Nullity Theorem, Composition of Linear Maps.	9	20
4.	**Inner Product Space** Inner Product, Angle and Orthogonality, Orthogonal projection, Gram-Schmidt process and QR Decomposition, Least square decomposition.	8	20
5.	**Beta and Gamma function**	5	10

	Improper Integrals, Convergence, Properties of Beta and Gamma Function, Duplication Formula (without proof)		

List of Tutorial:

Sr. No.	Name of Tutorial	Hours
5.	Matrix Algebra-1	4
6.	Matrix Algebra-2	2
7.	Vector Space-1	4
8.	Vector Space-2	2
9.	Linear Transformation-1	4
10.	Linear Transformation-2	2
11.	Inner Product Space-1	4
12.	Inner Product Space-2	2
13.	Beta and Gamma function-1	4
14.	Beta and Gamma function-2	2

Text Book(s):

Title	Author/s	Publication
Thomas' Calculus	George B. Thomas, Maurice D. Weir and Joel Hass	Pearson
Elementary Linear Algebra	Howard Anton and Chrish Rorres	Wiley

Reference Book(s):

Title	Author(s)	Publication
Advanced Engineering Mathematics	E Kreyszig	John Wiley & Sons
A textbook of Engineering Mathematics	N P Bali and Manish Goyal	Laxmi
Higher Engineering Mathematics	B S Grewal	Khanna
Engineering Mathematics for First Year	T Veerarajan	Tata Mc Graw Hill
Engineering Mathematics-1 (Calculus)	H. K. Dass and Dr. Rama Verma	S. Chand

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 50 marks.
- Continuous Evaluation consists of self-performance assignment to 20 marks.
- Internal Viva consists of 30 marks.

Course Outcome(s):

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

SESH1120	LINEAR ALGEBRA & CALCULUS
CO 1	Evaluate linear system using matrices and the knowledge of eigenvalues and eigenvectors for matrix diagonalization
CO 2	Determine the basis and dimension of vector spaces and subspaces.

CO 3	Discuss the matrix representation of a linear transformation given bases of the relevant vector space.
CO 4	Apply vectors, inner products, and linear transformations to real world situations.
CO 5	Classify gamma, beta functions & their relation which is helpful to evaluate some definite integral arising in various branch of engineering.

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	Matrix Algebra	1, 2, 3, 4, 5, 6
2	Vector Space	1, 2, 3, 4, 6
3	Linear Transformation	1, 2, 3, 4, 6
4	Inner Product Space	1, 2, 3, 4, 5, 6
5	Beta and Gamma Function	1, 2, 3, 4, 5

P P Savani University

School of Engineering

Department of Mechanical Engineering

Course Code: SEME1110

Course Name: Hardware Workshop

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	04	00	04	00	00	100	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- learn about the safety measures required to be taken while using working in workshop.
- learn about how to select the appropriate tools required for specific operation.
- learn about different manufacturing technique for production out of the given raw material.
- understand applications of machine tools, hand tools, power tools and welding process.

Course Content:

Module No.	Contents	Weightage in %
1.	**Introduction:** Introduction to Various Shops / Sections and Workshop Layouts, Safety Norms to be Followed in a Workshop. **Fitting Shop:** Introduction of Fitting Shop; Safety; Making a Job as perDrawing including Marking and other Performing Operations. **Carpentry and Drilling Shop:** Introduction of Carpentry Shop; Preparation of Job as per Drawing including Marking and other Performing Operations. **Introduction to Machine Tools:** Introduction and Demonstration of various Machine Tools like Lathe, Drilling, Grinding, Hack Saw Cutting etc. **Introduction to Welding & Plumbing:** Introduction and Demonstration of Welding process. Introduction and Demonstration of Plumbing Shop.	25%
2.	**Introduction to Computer Hardware** Computer hardware structure, Identify and understand hardware components: CPU, Motherboard, RAM, HDD, SSD, Keyboard, Ports, Mouse, Monitor, Printer, UPS/SMPS, etc. **Hardware Maintenance and Troubleshooting** Assembling and disassembling a PC, connectors and cables, BIOS setup, Disk management, Device manager, Task manager, Network management, Backup/recovery disk.	25%

3.	**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	25%
4.	**Logic Gates:** Digital Electronics, Symbol and truth table of Logic gates (OR, AND, NOT, NAND, NOR and EX-OR gate), De morgan's theorem. **Cathode Ray Oscilloscope:** Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only– no mathematical treatment), brief discussion on screen phosphor, visual persistence & Use of CRO for the measurement of voltage (dc or ac frequency, time period. Special features of dual trace, Digital storage Oscilloscope: Block diagram and principle of working.	25%

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction and Demonstration of Safety Norms. Different Measuring Instruments. Introduction and Demonstration of Machine Shop. To Perform a Job of Fitting Shop.	12
2.	To Perform a Job of Carpentry Shop. Introduction and Demonstration of Plumbing Shop & Welding Process.	15
3.	(I)Identify computer hardware layout and components (II)Perform assembling and disassembling of PC	08
4.	Configure BIOS, disk, network and other hardware management	05
5.	Understanding the electronic components and study of Shouldering and Desoldering of electronic components on PCB Board.	04
6.	Understanding the connection on Breadboard and study of Alternate Flashing LED Lights using Breadboard.	06
7.	Verify the truth table of Logic gates and De morgan's theorem on IC trainer board.	04
8.	Study of Cathode Ray Oscilloscope.	06

Text Book(s):

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(s):

Title	Author(s)	Publication
Basic Electronics: A text lab manual	P.B. Zbar, A.P. Malvino, M.A. Miller	Mc-Graw Hill.
Digital Electronics	Subrata Ghoshal	Cengage Learning

Course Evaluation:
Practical:

- Continuous Evaluation consists of Performance of Practical/Tutorial which will be evaluated outof 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:

SEME1110	HARDWARE WORKSHOP
CO 1	Apply the application of mechanical workshop such as fitting, drilling and carpentry. Understand various tools of mechanical workshop and understand its applications.
CO 2	Identify and inspect hardware components and interpret latest development of the field.
CO 3	Make students capable of analysing and solving the varieties of problems coming up in the electrical measurements and also enable the students to design as well as trouble shoots the circuits and networks through hands-on mode.
CO 4	Develop skill to build, and troubleshoot digital circuits.

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, Fitting Shop, Carpentry Shop and Drilling Shop, Introduction to Machine Tools, Welding and Plumbing	2,3,4,6
2	Introduction to Computer Hardware, Hardware Maintenance and Troubleshooting	1,2,3,4,5,6
3	Understand and designing of Electrical circuit	2,3,5
4	Cathode ray oscilloscope and Digital Electronics	1,2,3,5

P P Savani University

School of Engineering

Department of Computer Engineering

Course Code: SECE1110

Course Name: Software Workshop

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	04	00	02	00	00	100	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Provide a comprehensive knowledge of overall basic computer software tools and technology.
- Providing hands-on experience related to basic software installation, usage of Operating systems, and various essential software utilities.

Course Content:

Section I		
Module No.	Content	Weightage in %
1.	**Software Fundamentals** Introduction to Software, Types of software, Applications of software, Web based software, Understand Software specific requirements, Installation of Software	10
2.	**Operating System** Introduction of OS, Functions of Operating System, Types of OS, Installation of Windows and Linux OS, Linux architecture, Role of Device Drivers in OS, Shell scripting, Command structure, and general-purpose utility.	25
3.	**DOS Commands** Getting Started with DOS, Introduction to Command Prompt, System Files and Command, Creating directories, Traversing through directories, Deleting directories, Viewing Files within a directory.	15
Section II		
Module No.	Content	Weightage in %
4.	**Application Software** Introduction to Application Software, Types of Application Software, Installation of Application Software, Logo Designing, Creating Flowcharts and diagrams, Introduction To Google Apps.	10
5.	**Data Analysis using Application Software** Introduction to Spreadsheets, Spreadsheet Functions to Organize Data, Introduction to Filtering, Pivot Tables, and Charts, VlookUp and HlookUp in Spreadsheets.	15

6.	**Website Creation** Creating a website using Google Sites, Creating Web Pages, Working with Images, Working with Documents on Web Pages. Introduction to Wordpress, Installing Web Server and Wordpress, Creating Web pages in Wordpress.	25

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Study of Different Software.	2
2.	Installation of any 2 software with required plugins and libraries.	4
3.	Study of Different Operating Systems.	2
4.	Creation of Bootable Pen drive.	2
5.	Installation of Windows OS.	2
6.	Installation of Linux OS using VMWare.	2
7.	Study of Basic commands of Linux/UNIX.	4
8.	Study of Basic commands of DOS.	4
9.	Design logo using Canva.	2
10.	Draw a Flowchart to find maximum of two numbers in either draw.io or Microsoft Visio or LucidChart.	2
11.	Study of different Google Apps.	4
12.	Create a Google Doc and Google sheet and share with 2 classmates.	2
13.	Demonstrate working of HlookUp and VlookUp in Excel.	2
14.	Create different types of charts in Excel.	4
15.	Demonstrate Data Analysis in Excel.	4
16.	Create a Google Website with minimum two pages showing your personal details.	4
17.	Demonstrate embedding of a youtube video and pdf document on a web page in google site.	4
18.	Demonstrate placing Map and hyperlinks on web page in Google Site.	4
19.	Create a wordpress site and create minimum three web pages and menu to navigate between the pages.	4
20.	Demonstrate the use of Accordian in wordpress.	2

Text Book(s):

Title	Author/s	Publication
Fundamentals Of Computers, 2nd Edition	Reema Thareja	Oxford University Press
Excel 2019 Bible	Michael Alexander, Richard Kusleika, John Walkenbach	Wiley

Reference Book(s):

Title	Author/s	Publication
UNIX : Concepts and Applications | 4th Edition	Sumitabha Das	McGraw Hill Education

Web Material Link(s):

- https://sites.google.com/site/willkimbley/google-apps-tutorials
- https://www.cs.upc.edu/~robert/teaching/foninf/doshelp.html
- https://www.javatpoint.com/software-engineering
- https://www.wikihow.com/Create-a-Website-Using-Google-Sites

- https://www.wpbeginner.com/guides/

Course Evaluation:

Practical:

- Continuous Evaluation consists of performance of practical, which should be evaluated out of 10 marks per each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/test consists of 30 marks during Internal practical Exam.
- Mini Project performance consists of 40 marks during End Semester Exam.

Course Outcome(s):

After the completion of the course, the student will be able to

SECE1110	**Software Workshop**
CO 1	Understand the types of computer software with their requirements and how to use as per the need.
CO 2	Install different Operating Systems and learn commands used in the OS.
CO 3	Get familiar with the application software and different applications of application software
CO4	Achieve some useful information from data through analysis and represent it with different views like charts, graphs etc.
CO 5	Learn the designing and development of website to have a global communication.

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	Software Fundamentals	1,2
2	Operating System	1,2,3,6
3	Disk Operating System	2,3
4	Application Software	2,3,4,5
5	Data Analysis using Application Software	3,4,5,6
6	Website Creation	2,3,6

P P Savani University
School of Engineering
Department of Information Technology

Course Code: SEIT1110
Course Name: Cyberspace Awareness
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	
2	0	0	2	40	60	00	00	0	0	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to,

- understand governance, regulatory, legal, economic, environmental, social, and ethical context of cyber security.
- equip students with the technical knowledge and skills needed to protect and defined against cyber threats.
- help students to protect the one's data, systems, and networks from malicious attacks and cyber threats.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Cyber space** Cyber space, Cyber Crime and its Types, Overview of Cyber Security, Cyber Attacks in History, Internet Governance, Hacking and its Types, Cracking, Overview of System and Web Vulnerability, OWASP	06	20
2.	**Cyber Threats** Various Cyber Threats, Malware, Phishing, Password Attacks, DOS attack, Man in the Middle, Drive by download, Malvertising, Rogue Software, Cyber Warfare and its conflicts, Cyber Terrorism, Case studies	09	30
Section II			
Module No.	Content	Hours	Weightage in %
3.	**Cyber security Practices** Cyber Security Practices and dos and don'ts, Data Privacy and Security, Security Controls, Overview of social media and its security, E-Commerce, Digital payments and its security, Tools and technology for cyber security, Platform to report and combat cyber crime, Case studies	05	15

4.	**Cyberspace and the Law** Cyber Security Regulations, Cyber Law, need for a Comprehensive Cyber Security Policy, Need for an International convention on Cyber space, Contemporary crime, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards, The INDIAN Cyberspace, Indian IT Act 2000, Indian IT Act 2008, Case studies	06	15
5.	**Cyber Forensics** Introduction to Cyber Forensics, Handling Preliminary analysis, Investigating Investigations, Controlling an Investigation, Legal Policies, Case studies	04	20

Text Book(s):

Title	Author/s	Publication
Cybersecurity for Beginners	Raef Meeuwisse	Cyber Simplicity Ltd

Reference Book(s):

Title	Author/s	Publication
Cyber Security	Nina Godbole, Sunit Belapure	Wiley India, New Delhi
The Indian Cyber Law	Suresh T. Vishwanathan;	Bharat Law House New Delhi

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.

Course Outcome(s):

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

SEIT1110	Cyberspace Awareness
CO 1	Understand Concepts of Cyber space.
CO 2	Analyze the Concepts of Cyber Threats.
CO 3	Elaborate the overview of social media and understanding cybercrimes.
CO 4	Identify cyber laws and cyber acts in India.
CO 5	Explore different case studies based on cyber-Forensics.

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	Content	RBT Level
1	Introduction to Cyber space	1
2	Cyber Threats	1,2
3	Cyber security Practices	1,2,3
4	Cyberspace and the Law	1,2
5	Cyber Forensics	1,23

P P Savani University

School of Engineering

Department of Computer Engineering

Course Code: SEIT1120

Course Name: Competitive Quantitative Aptitude

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	
02	00	00	02	40	60	00	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

- This course is designed to suit the need of the outgoing students and to acquaint them with frequently asked patterns in quantitative aptitude and logical reasoning during various examinations and campus interviews.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Quantitative Ability (Basic Mathematics)** Number Systems, LCM and HCF, Decimal Fractions, Simplification, Square Roots and Cube Roots, Average, Problems on Ages, Surds & Indices, Percentages, Problems on Numbers, Quadratic Equations	5	15
2.	**Quantitative Ability (Applied & Engineering Mathematics)- Part I** Logarithm, Permutation and Combinations, Probability, Profit and Loss, Simple and Compound Interest,	5	35
3.	**Quantitative Ability (Applied & Engineering Mathematics) -Part II** Time, Speed and Distance, Time & Work, Ratio and Proportion, Mixtures and Allegation	5	20
Section II			
Module No.	Content	Hours	Weightage in %
4.	**Data Interpretation** Data Interpretation, Tables, Column Graphs, Bar Graphs, Line Charts, Pie Chart, Venn Diagrams	6	20
5.	**Logical Reasoning (Deductive Reasoning)** Analogy, Blood Relation, Directional Sense, Number and Letter Series, Coding – Decoding, Calendars, Clocks, Seating Arrangement, Syllogism	6	20

6.	**Mensuration & Trigonometry** Two-dimensional (2D) and Three-dimensional (3D) Mensuration, Degree and Radian Measures, Trigonometric Ratios, Complementary Angles, Height and Distance, Standard Identities, Area, Inequalities	3	10

Text Book(s):

Title	Author/s	Publication
Quantitative aptitude for Competitive examination	R S Agarwal	S. Chand
A Modern Approach to Verbal & Non-Verbal Reasoning	R S Agarwal	S. Chand

Reference Book(s):

Title	Author/s	Publication
Analytical and Logical reasoning	Sijwali B S	arihant

Web Material Link(s):

- https://prepinsta.com/
- https://www.indiabix.com/
- https://www.javatpoint.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.

Course Outcome(s):

After the completion of the course, the student will be able to

SEIT1120	Competitive Quantitative Aptitude
CO 1	Understand the basic concepts of quantitative ability
CO 2	Understand the basic concepts of logical reasoning Skills
CO 3	Acquire satisfactory competency in use of reasoning
CO4	Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning Ability
CO 5	Compete in various competitive exams like CAT, CMAT, GATE, GRE, GATE, UPSC, GPSC etc

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	Quantitative Ability (Basic Mathematics)	1, 3, 5
2,3	Quantitative Ability (Applied & Engineering Mathematics)	1, 2, 3, 5
4	Data Interpretation	2, 3, 6
5	Logical Reasoning (Deductive Reasoning)	2, 4, 5
6	Mensuration & Trigonometry	1, 3, 5

P P Savani University
School of Engineering
Department of Computer Engineering

Course Code: SECE1120
Course Name: Joy of 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	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
- identify appropriate approach to computational problems.
- develop logic building and problem-solving skills.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Motivation of Programming:** Use of Programming, Importance of Programming, Discussion of different Case Study	5	14
2.	**Welcome to Programming:** Introduction of Programming, Flow Charts and Algorithms, Debugging, Tracing the execution of the Program, Watching Variables Values in Memory, Character Set, Keyword and Identifiers, Constants and Variables, Data Types - Declaration and Initialization, Basic Input, and Output Operations, Symbolic Constants, Overflow and Underflow of Data.	9	18
3.	**Conditional Statements and Looping Statements:** Decision Making & Branching: Decision Making with If and If - else Statements, Nesting of If-else Statements, The Switch and go-to statements. Looping: The while Statement, The Break Statement &The Do While loop, The FOR loop, Jump within loops - Programs.	9	18
Section II			
Module No.	Content	Hours	Weightage in %
4.	**Collection of Data:** Introduction, One-dimensional Arrays, Two-dimensional Arrays, Concept of Multidimensional Arrays, Declaring and Initializing String Variables, Arithmetic Operations on Characters, Putting Strings Together, Comparison of Two Strings, String Handling Functions, Dictionary, List, Tuples and Sets.	10	20
5.	**Functions** Introduction to Functions, defining a Function, Calling a Function, Types of Functions, Function Arguments, Anonymous Functions, Global and Local Variables, Recursion	6	15
6.	**Building Desktop Application**		

	Exploring the Tkinter Library in Python, Creating basic Desktop application using Tkinter	6	15

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Working with basic elements of C languages (different input functions, different output functions, different data types, and different operators).	2
2.	Working with control structures (if statement, if-else statement, nested if-else statement, switch statement, break statement, goto statement).	2
3.	Working with array and strings in C.	4
4.	Introduction to Python (Introduction to IDLE, different data types, Input Output in Python, Operators, Operator precedence).	2
5.	Implementation of Dictionaries, Sets, Tuples and Lists and its various methods in Python.	6
6.	Working with functions in C/Python.	2
7.	Working with recursive function in C/Python.	2
8.	Building desktop application of your own calculator in Python.	4
9.	Case Study: a. Sorting : Arrange the books b. Searching : Find in seconds c. Recursion : Tower of Hanoi	6

 # Use of different libraries will be covered in Practical Assignments.

Text Book(s):

Title	Author(s)	Publication
Programming in ANSI C	E. Balagurusamy	Tata McGraw Hill
Python Programming: A modular approach	Sheetal Taneja, Naveen Kumar	Pearson

Reference Book(s):

Title	Author(s)	Publication
Programming in C	Ashok Kamthane	Pearson
Python Cookbook	David Ascher, Alex Martelli Oreilly	O Reilly Media

Web Material Link(s):

- https://www.tutorialspoint.com/cprogramming/index.htm
- https://www.w3schools.com/c/
- https://www.tutorialspoint.com/python/
- https://www.w3schools.com/python/

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

Course Outcomes:

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

SECE1120	JOY OF PROGRAMMING
CO 1	Immediately analyze the syntax and semantics of the computer languages and apply it in programs.
CO 2	Implement computing solutions using logic building and problem-solving skills of a given programming language.
CO 3	Interpret the fundamental language syntax, semantics and fluent in the use of python or any computer language control flow statements.
CO 4	Determine the methods to create and manipulate programs by utilizing the data structures like lists, dictionaries, tuples and sets with emphasis on Python.

Level of Revised Bloom's Taxonomy in Assessment:

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

Module No	Content	RBT Level
1.	Motivation of Programming	1, 2, 4
2.	Welcome to Programming	1, 2, 3
3.	Conditional Statements and Looping Statements	1, 2, 3
4.	Collection of Data	1, 2, 3
5.	Functions	2, 3, 4, 6
6.	Building Desktop Application	2, 3, 4, 6

P P Savani University
School of Engineering

Department of Chemical Engineering

Course Code: SECH1110
Course Name: Fundamental Chemistry & Environmental Science
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	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 concepts of chemistry, including atoms, molecules, and chemical processes.
- Apply the scientific method to examine chemical phenomena, including the design and execution of experiments, data analysis, and evidence-based conclusion drawing.
- Evaluate the causes and consequences of environmental problems and propose solutions based on scientific evidence.
- Integrate knowledge from multiple disciplines to analyze environmental problems and propose effective solutions.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Chemistry** Overview of the scientific method and chemistry as a science, Basic concepts of matter, including atoms, molecules, and the periodic table, Introduction to chemical bonding and intermolecular forces, Basic principles of chemical reactions, including stoichiometry and reaction types	6	15
2.	**Chemical Thermodynamics and Kinetics** Introduction to thermodynamics and the laws of thermodynamics, Energy and enthalpy changes in chemical reactions, Introduction to chemical kinetics and reaction rates, Factors affecting reaction rates, including temperature, concentration, and catalysts	6	15
3.	**Properties of Matter and Solutions** Physical properties of matter, including states of matter and phase changes, Solutions and their properties, including solubility and colligative properties, Introduction to acids and bases and their properties, Chemical equilibrium and the equilibrium constant	5	10
4.	**Organic Chemistry** Introduction to organic chemistry and the basics of carbon chemistry, Functional groups and their properties, Nomenclature and isomerism in organic compounds, Introduction to organic reactions and mechanisms	6	10

Section II			
Module	Content	Hours	Weightage in %
5.	**Introduction to Environment** Definition, principles and scope of Environmental Science, Impacts of development on Environment, Environmental Degradation, The interdisciplinary nature of environmental science, Concept of 4R's	06	10
6.	**Environmental Pollution** a) Water Pollution: Introduction – Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants. b) Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like PM, SO_2, NO_X, Auto exhaust, Effects of common air pollutants c) Noise Pollution: Introduction, Sound and Noise, Noise measurements, Causes and Effects. d) Solid Waste: Generation and management e) Bio-medical Waste: Generation and management f) E-waste: Generation and management	08	20
7.	**Social Issues and Environment** Sustainable Development, Equitable use of Resources for sustainable lifestyle and it's benefits, Water conservation, Climate Change, Global Warming and Green House Effect, Acid Rain, Depletion of Ozone layer, Carbon Footprint	08	20

List of Practical:

Sr. No	Name of Practical	Hours
1.	Acid-base titration adding a base of known concentration to an acid of unknown concentration until the reaction is complete, and the concentration of the acid is determined.	02
2.	Determination of the boiling point of a liquid heating a sample of a liquid and observing the temperature at which it boils.	02
3.	Determination of the density of a liquid weighing a known volume of a liquid and calculating its density.	04
4.	Determination of the pH of a solution using a pH meter to measure the acidity or basicity of a solution.	04
5.	Flame test: burning a sample of a substance and observing the color of the flame to identify the presence of certain elements.	04
6.	Preparation of a salt reacting an acid and a base to form a salt and observing the reaction products.	02
7.	Testing of soil acidity	02
8.	Studying the effect of temperature on the solubility of a solid in water at different temperatures to see how temperature affects solubility.	02
9.	Studying the properties of acids and bases: Students can test the properties of different acids and bases (e.g., pH, conductivity) and compare their properties.	04
10.	Investigating the reaction between an acid and a metal and measure the	04

	amount of gas produced.	

Text Book(s):

Title	Author/s	Publication
Textbook of Environmental Chemistry and Pollution Control	Dr. S. S. Dara, Dr. D.D. Mishra	S Chand & Co Ltd
Environmental Studies	Benny Joseph	Mc.Graw hill education Pvt. Ltd.
Environmental Studies	Dr. S.K. Dhameja	S.K. Kataria & Sons

Reference Book(s):

Title	Author/s	Publication
Engineering Chemistry	Jain & Jain	Dhanpat Rai Publishing company
Environmental Studies (From crisis to cure)	R. Rajagopalan	OXFORD university press

Web Material Link(s):

https://www.iare.ac.in/sites/default/files/lecture_notes/IARE_ENS_LECTURE_NOTES_2.pdf

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 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 of 30 marks during End Semester Exam.
- Viva/Oral presentation consists of 30 marks during End Semester Exam.

Course Outcome(s):

After completion of the course, the student will be able to

SECH1110	Fundamental Chemistry & Environmental Science
CO 1	Develop a fundamental understanding of the principles and concepts of chemistry, including atomic structure, chemical reactions, and chemical bonding.
CO 2	Demonstrate an ability to apply chemical knowledge to real-world problems, such as calculating reaction yields and predicting chemical properties.
CO 3	Identify the types of pollution in society along with their sources.
CO 4	Realize the global environmental issues.

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 Chemistry	2,1

2	Chemical Thermodynamics and Kinetics	4, 5
3	Properties of Matter and Solutions	1,2
4	Organic Chemistry	4,5
5	Introduction to Environment	1,2
6	Environmental Pollution	1,2,3
7	Social Issues and Environment	1,2,3

P P Savani University
School of Engineering

Department of Mechanical Engineering

Course Code: SEME1120
Course Name: Fundamentals of Technical Drawing
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	04	00	04	00	00	40	60	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

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

- Know conventions and the methods of engineering drawing.
- Interpret engineering drawings using fundamental technical mathematics.
- Construct basic and intermediate geometry.
- Improve their visualization skills so that they can apply these skills in developing new products.
- Improve their technical communication skill in the form of communicative drawings.
- Comprehend the theory of projection.
- Basic knowledge of computer-aided drawing using AutoCAD.

Course Content:

Section I			
Module No.	Contents	Lab Hours	Weightage in %
1.	**Introduction:** Importance of the Course; Use of Drawing Instruments and accessories; BIS – SP – 46; Lettering, Dimensioning, and Lines; Representative Fraction; Types of Scales (Plain and Diagonal Scales); Construction of Polygons.	03	05%
2.	**Engineering Curves:** Classification and Application of Engineering Curves; Construction of Conics, Cycloidal Curves, Involutes, Spiral, and Normal & Tangent to each curve.	12	15%
3.	**Projections of points, lines & planes:** Types of Projections; Introduction of Principle Planes of Projections; Projection of Points in all four Quadrants; Projection of Lines inclined to one Referral Plane & two Referral Planes. True length and inclination with reference plane; Projection of Planes (Circular and Polygonal) with inclination to one Referral Plane and two Referral Planes; Concept of Auxiliary Projection Method.	15	30%
Section II			

Module No.	Content	Hours	Weightage in %
4.	**Orthographic Projection and Isometric Projections** Types of Projections: Principle of First and Third Angle Projection Applications & Difference; Projection from Pictorial view of Object, View from Front, Top, and Sides; Full Section View. Isometric Scale, Conversion of Orthographic views into Isometric Projection, Isometric View, or Drawing of simple objects.	18	30%
5.	**Residential Building Planning:** Introduction to buildings, Classification of buildings, Principles of building planning, Principles of architecture composition, Detail drawing, Line Plan, plan, elevation, section, Preparing working drawing of residential building.	06	10%
6.	**Computer-Aided Drawing:** Introduction to AutoCAD, Basic commands for 2D drawing (Line, Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim, Extend, Offset, Dim style, etc.)	06	10%

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction sheet (dimensioning methods, different types of lines,construction of various polygons, dividing the line and angle into parts, use of stencil, lettering), plane scale and diagonal scale	03
2.	Engineering curves	12
3.	Projection of points, lines & planes	15
4.	Orthographic projection	10
5.	Isometric projection	10
6.	Residential building drawing (Line plan, Plan, Elevation, Section, Schedule opening)	04
7.	Computer-Aided Drawing	06

Text Book(s):

Title	Author(s)	Publication
A Text Book of Engineering Graphics	P J Shah	S. Chand & Company Ltd., New Delhi
Engineering Drawing	N D Bhatt	Charotar Publishing House, Anand
Building Planning, Designing and Scheduling	Gurucharan Singh	Standard Book

Reference Book(s):

Title	Author(s)	Publication
Engineering Drawing	P.S.Gill	S. K. Kataria & sons, Delhi
Engineering Drawing	B. Agrawal & C M Agrawal	Tata McGraw Hill, New Delhi
Engineering drawing made Easy	K. Venugopal	Wiley Eastern Ltd
Building Drawing	M. G. Shah, C.M. Kale, S.Y. Patki	Tata McGraw Hill

Web Material Link(s):

- http://nptel.ac.in/courses/105104148/

Course Evaluation:

Practical:

- Continuous evaluation consists of performance of practical/tutorial which will be evaluated outof 20 marks for each practical/tutorial and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical test will consist of 30 marks and viva will consist of 30 marks during end semester exam.

Course Outcome(s):

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

SEME1120	FUNDAMENTALS OF TECHNICAL DRAWING
CO 1	Apply BIS standards of building planning and conventions while drawing Lines, printing Letters, and showing dimensions.
CO 2	Explore the various methods to draw various engineering curves and their applications.
CO 3	Classify the orthographic projection systems concerning the observer, object, and reference planes.
CO 4	Develop 3D Isometric views in relation to 2D orthographic views.
CO 5	Software application in engineering drawing.

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, 6
2	Engineering Curves	2, 6
3	Projection of Points, Line & Plane	1, 2, 3, 4
4	Orthographic Projection	2, 5, 4
5	Isometric Projections and Isometric Drawing	2, 5, 4
6	Computer-Aided Drawing	2,3,6

P P Savani University

School of Engineering

Department of Civil Engineering

Course Code: SECV1110

Course Name: Core Engineering Concepts.

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	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

- Study the basic fundamentals of construction planning and material.
- Study significance of mechanical engineering systems in different fields of engineering.
- Study the basic concepts of electrical and electronics engineering.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Basics of Construction material and techniques** Common materials used in construction, Aggregate, Sand, Cement, Bricks, Timber, Steel, Paints. Bonds in brick masonry techniques, Foam works, Curing, Compaction of concrete, Water proofing, Fire safety norms and requirement.	08	18
2.	**Building planning and Bye laws** Building by laws as per national building code, building by laws as per local authority, standards for residential, public, commercial, industrial and institutional buildings planning, planning of earth quake resistance building, overview of RERA and ODPS, Green building and LEED certification, general layout, maps and plan used at construction site.	08	18
3.	**Basic Electricity Principles** Concept of Charge, Potential Difference and Current, Resistor, capacitor, Inductor, Ohm's law, effect of Temperature on resistance, temperature coefficient, Series and parallel combinations of Resistors and capacitors, Lenz and Faraday's laws for electromagnetic induction, AC Electricity and DC Electricity. **Electrical Wiring:** Different types of conductors and cables. Basics of wiring-Star and delta connection. Voltage drop and losses across cables and conductors.	07	14

Section II			
Module No.	Content	Hours	Weightage in %
4.	**Basics of I.C Engines:** Construction and working of 2 Stroke & 4 Stroke Petrol and Diesel Engines, Difference Between 2-Stroke - 4 Stroke Engine & Petrol-Diesel Engine, Efficiency of I. C. Engines.	08	18
5.	**Power Transmission Elements:** Construction and Applications of Couplings, Clutches and Brakes, Difference Between Clutch and Coupling, Types of Belt Drive and Gear Drive	08	18
6.	**DC Circuits and AC Circuits** DC Circuits: Introduction of Electrical circuit elements (prerequisites), voltage and current sources, Kirchoff's current and voltage laws, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits. AC Circuits: Representation of sinusoidal waveforms, peak and RMS values, Phasor representation of AC quantities, real power, reactive power, apparent power, power factor, Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), Series and parallel resonance. Three phase balanced circuits, voltage and current relations in star and delta connections, Power measurement in three phase circuits.	06	14
7.	**Basics of Steam Generators:** Introduction, Classification, Cochran, Lancashire and Babcock and Wilcox Boiler, Functioning of Different Mountings and Accessories	LAB	08

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Preparation of drawing sheet showing various bonds.	04
2.	Preparation of Basic plan of Construction site.	04
3.	Preparation sketch of various building component.	04
4.	Verify the series and parallel connections of resistors and capacitors.	04
5.	To understand construction and working of various types of boilers.	04
6.	To understand construction and working of mountings and accessories.	04
7.	To verify the Kirchoff's current and voltage laws and Network theorems.	02
8.	To understand construction and working 2 –stroke & 4 –stroke Petrol engines.	02
9.	To understand construction and working 2 –stroke & 4 –stroke Diesel engines.	02

Text Book(s):

Title	Author(s)	Publication
Elements of Mechanical Engineering	Sadhu Singh	S. Chand Publications

Building construction	Dr. B C Punamia	Laxmi Publication
A text book in Electrical Technology	B L Theraja -	S Chand & Co.
Basic Electrical Engineering	D. C. Kulshreshtha	McGraw Hill, 2009

Reference Book(s):

Title	**Author(s)**	**Publication**
Basic Mechanical Engineering	T.S. Rajan	Wiley Eastern Ltd., 1996.
Town Planning	G. K. Hiraskar	Dhanpatrai Publications
Basic Electrical Engineering	Nagsarkar and Sukhija,	Oxford University Press

Web Material Link(s):

- http://nptel.ac.in/course.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 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 10 marks.
- Internal viva consists 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 following course outcomes will be able to:

SECV1110	**Core Engineering Concepts**
CO 1	Understand basic properties of various construction materials.
CO 2	Understand the general rules and regulation of building planning.
CO3	Apply the principles of basic mechanical engineering.
C04	Comprehend the importance of mechanical engineering equipments like IC engine and power transmission elements.
CO5	Understand working of various instruments and equipments used for the measurement of various electrical engineering parameters like voltage, current, power, phase etc in industry as well as in power generation, transmission and
CO6	Apply fundamental electrical laws and circuit theorems to electrical circuits.

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	Basics of Construction material and techniques	1, 2, 3
2	Building planning and Bye laws	1, 2
3	Basic Electricity Principles	1,2,3
4	Power Transmission Elements	1, 2
5	Basics of I.C Engines	2

6	DC Circuits and AC Circuits	2,3,4
7	Basics of Steam Generators	1, 2

P P Savani University

School of Engineering

Course Code: CLSC2180

Course Name: Essentials of Entrepreneurship

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	
02	00	00	2	100	00	00	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- To understand the basics of entrepreneurship and its traits
- To analyze the theory and models of entrepreneurships
- To evaluate different types and dimensions of entrepreneurship

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Entrepreneurship** Definition of Entrepreneurship, Entrepreneurship as a career choice, Benefits and Myths of Entrepreneurship, Characteristics, Qualities and Skills of an Entrepreneur, Model Traits of Entrepreneurs	07	30
2.	**Dimensions of Entrepreneurship** Entrepreneurship Theories, Intrapreneurship, Benefits of intrapreneurship, Difference between Entrepreneurs and Intrapreneurs Institutes for Entrepreneurship Development, sStartup Failures,	08	20

Section II			
Module No.	Content	Hours	Weightage in %
3.	**Women Entrepreneurship** Women Entrepreneurship Meaning, Factors that influence women Entrepreneurship, Barriers to Women Entrepreneurship, Qualities of Women Entrepreneurs, Success stories of Women Entrepreneurs Lijjat Papad Case study, Jassuben Pizza Case study	08	30
4.	**Social Entrepreneurship and emerging trends** Social Entrepreneurship, Functions of Social Entrepreneurship, Difference between Entrepreneurship and Social Entrepreneurship How does an NGO run?, Case Study on Social Entrepreneurship, Emerging trends in Entrepreneurship	07	20

Text Book(s):

Title	Author/s	Publication
Entrepreneurship Business and Management	Dr. R C Bhatia	Sultan Chand and Sons

Reference Book(s):

Title	Author/s	Publication
Entrepreneurship	Trehan A	Dremtech

Web Material Link(s):

- https://www.startupindia.gov.in
- https://ediindia.ac.in
- https://www.ediindia.org

Theory:

- Continuous Evaluation consists of one test of 20 marks, 10 marks assignment, 10 marks presentation, 10 marks class participation and behavior.
- One live project of 50 marks

Course Outcome(s):

CLSC2070	Essentials of Entrepreneurship
CO 1	Students will be able to think of startup ideas
CO 2	Students will be able to apply the model of entrepreneurship practically
CO 3	Students will be able to further analyze other dimensions of Entrepreneurship

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 Entrepreneurship	1, 2, 3, 4, 5
2	Dimensions of Entrepreneurship	1, 2, 3, 4, 5
3	Women Entrepreneurship	1, 2, 3, 4, 6
4	Emerging Trends and Social Entrepreneurship	1, 2, 3, 4, 6

SECOND YEAR B. TECH.

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

TEACHING & EXAMINATION SCHEME FOR SECOND YEAR B.TECH. B.TECH. COMPUTER SCIENCE ENGINEERING (MLAI) PROGRAMME AY: 2024-25

Sem	Course Code	Course Title	Course Category	Offered By	Teaching Scheme					Examination Scheme						
					Contact Hours				Credit	Theory		Practical		Tutorial		Total
					Theory	Practical	Tutorial	Total		CE	ESE	CE	ESE	CE	ESE	
3	SESH2130	Discrete Structures & Graph Theory	Interdisciplinary	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SECE2210	Database Management System	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SECE2221	Data Structures	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT2210	Object Oriented Programming with Java	Major/Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT2220	Software Engineering	Major/Core	IT	3	0	1	4	4	40	60	0	0	100	0	200
	CFLS2140	Upper Intermediate Communicative English	AEC	CFLS	2	0	0	2	2	100	0	0	0	0	0	100
	CLSC2020	IPDC-I	VAC	CLSC	2	0	0	2	2	100	0	0	0	0	0	100
							Total	**28**	**25**							**1200**
4	SESH2140	Differential Equations & Statistics	Interdisciplinary	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SECE2231	Computer Organization	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SECE2240	Computer Networks	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT2230	Operating System	Major/Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT2241	Mobile Application Development	Major/Core	IT	0	4	0	4	2	0	0	40	60	0	0	100
	CLSC2030	IPDC-II	VAC	CLSC	2	0	0	2	2	100	0	0	0	0	0	100
							Total	**26**	**21**							**1000**

P P Savani University
School of Engineering
Department of Science & Humanities

Course Code: SESH2130
Course Name: Discrete Structures & Graph Theory
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	--	--	100	--	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- extend concepts of set theory by the 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 the design and analysis of algorithms, database management, software engineering, and computer networks.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Set, Relation & Function** Sets, Set operations, Introduction of Relations, Relations of Sets,Types of Relations, Properties of Relations, Equivalence Relation, Partial Ordering, Hasse Diagram, GLB & LUB, Functions, Classification of functions, Types of functions	08	17
2.	**Lattices** Definition & properties of Lattice, Lattices as Algebraic System, Sublattices, Types of lattices, Distributive lattices, Modular lattices, Complemented lattices, Bounded lattices, Complete lattices, Finite Boolean algebra	07	16
3.	**Group Theory** Binary operations, Properties of Group, Groupoid, semigroup & monoid, Abelian group, Subgroup, Cosets, Normal subgroup, Lagrange's theorem, Cyclic group, Permutation group, Homomorphism & Isomorphism of groups.	08	17
Section II			
Module No.	Content	Hours	Weightage in %
4.	**Mathematical Logic and Proof** Propositions, logical operators, Algebra of proposition,Predicates & quantifiers, Nested Quantifiers, Rules of Inference, Proof Methods, Program Correctness techniques.	06	14
5.	**Graph Theory** Graphs and Graph Models, Graph Terminology and Types of graphs, Representing graphs and Isomorphism, Connectivity, Euler and Hamilton Paths-Circuits, Applications of weighted graphs.	08	18
6.	**Tree**		

	Introduction to Trees, Rooted Tree, Properties of tree, Binary tree, Tree Traversal, Spanning Tree, DFS, BFS, Minimum Spanning Tree, Prim's Algorithm, Kruskal's Algorithm.	08	18
	TOTAL	45	100

List of Tutorial(s):

Sr. No.	Name of Practical	Hours
1.	Problems based on Set, Relation & Function-1	2
2.	Problems based on Set, Relation & Funciton-2	2
3.	Problems based on Set, Relation & Funciton-3	2
4.	Problems based on Lattices	4
5.	Problems based on Group Theory-1	2
6.	Problems based on Group Theory-2	4
7.	Problems based on Mathematical Logic and Proof	2
8.	Problems based on Graph Theory-1	2
9.	Problems based on Graph Theory-2	2
10.	Problems based on Graph Theory-3	4
11.	Problems based on Tree-1	2
12.	Problems based on Tree-2	2
	TOTAL	30

Text Book(s):

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.

Web Material Link(s):

- http://nptel.ac.in/courses/111107058/
- http://nptel.ac.in/courses/111107058/
- http://nptel.ac.in/courses/111104026/

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 tutorial which will be evaluated out of 10 marks for each tutorial and average of the same will be converted to 50 marks.
- Assignment consists of 20 marks.
- Internal viva consists of 30 marks.

Course Outcome(s):

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

SESH2130	DISCRETE STRUCTURES & GRAPH THEORY
CO 1	Summarize the concepts of set theory for understanding & fetching data from a database using query.
CO 2	Classify the basic concepts of spanning tree algorithms namely DFA, BFS, prim's and Kruskal's in the design of networks.
CO 3	Construct the algorithm of group theory for data encryption.
CO 4	Combine the design, foundational concepts of notations and results of graph theory used for better understanding of problems.

Mapping of CO with PO

SESH2130	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	P010	PO11	PO12
CO 1	2	2	1	1								1
CO 2	3	3	1	1								3
CO 3	2	2	1	1								1
CO 4	3	3	1	1								3

Mapping of CO with PSO

SESH2130	PSO1	PSO2	PSO3
CO 1	1	2	
CO 2	2	2	
CO 3	1	1	
CO 4	3	1	2

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	Content	RBT Level
1.	Set, Relation & Function	1,2,4,6
2.	Lattices	1,2,3,4,6
3.	Group Theory	1,2,3,5,6
4.	Mathematical Logic and Proof	1,2,3,4,6
5.	Graph Theory	1,2,3,5,6
6.	Tree	1,2,3,5,6

P P Savani University
School of Engineering
Department of Computer Engineering

Course Code: SECE2210
Course Name: Database Management System
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

- learn the basic concept of database design and development of database management system.
- understand Query processing of SQL.
- understand the importance of back-end design and relational database management System (RDBMS).

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to DBMS** Introduction and applications of DBMS, Purpose of DBMS, File system versus DBMS, Advantages of DBMS, Database System architecture, Database users, DBA	04	10
2.	**Entity-Relationship model** Basic concepts, Design process: Attributes, Entity and Relationship, E-R constraints, weak entity sets, extended E-R features: generalization, specialization, aggregation, conversion of E-R diagram into database schema.	07	15
3.	**SQL Concepts** Basics of SQL, Types of SQL language, Using DDL statements to create and manage tables, defining constraints: primary key, foreign key, unique key, Not null, check, Manipulating data using DML statements, Retrieving data using SQL select statement, SQL conditions in where clause, Built-in functions: numeric, date, string functions, Displaying data from multiple tables using Joins, Aggregate functions with group by and having clause, Subqueries with operators, SQL views, TCL commands: Commit, Rollback, Savepoint, DCL commands: Grant, revoke, query processing steps	12	25
Section II			
Module No.	Content	Hours	Weightage in %
4.	**Relational Model** Structure of relational databases, Domains, Relations, Relational algebra: fundamental operators and syntax, inner join, outer join, relational algebra queries	05	12
5.	**Normalization** Functional Dependency: Definition, trivial and non-trivial FD, closure of attributes, closure of FD set, irreducible set of FD, Decomposition	07	15

	using FD, dependency preservation, Database design anomalies, Normalization: 1NF, 2NF, 3NF, BCNF, Multi- valued dependency, 4NF.		
6.	**Transaction Management** Transaction concepts, ACID property of transactions, concurrent executions of transactions and related problems, serializability of transactions, testing for serializability, deadlock, solution to concurrency related problems: Locking mechanism, two-phase locking protocol, System recovery, Log-based recovery, Two- phase commit protocol	07	15
7.	**Basics of PL/SQL** Programming structure of PL/SQL, Datatypes, Exception Handling, Cursor, Stored Procedure, Function, Trigger	03	08
	TOTAL	45	100

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Draw E-R Diagram of any management system with the use of any tools.	02
2.	Installation of database management system e.g MYSQL, ORACLE, etc.	02
3.	Introduction to SQL, DDL, DML, DCL, database and table creation, alteration, defining constraints, primary key, foreign key, unique, not null, check.	06
4.	Implement different operators and inbuilt SQL functions.	02
5.	Implement different types of join operations and relevant features of SQL.	04
6.	Implement aggregate functions with group by, having, order by features of SQL.	04
7.	Implement the sub-queries and views in SQL.	04
8.	Study and use of Transaction control commands, Commit, Rollback, Save point features of SQL.	02
9.	Introduction to PL/SQL concepts and implementation of Cursors.	02
10.	Study and Implementation of stored procedures, stored function and triggers.	02
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Database System Concept	Abraham Silberschatz, Henry F. Korth, S. Sudarshan	McGraw Hill
SQL, PL/SQL-The Programming Language of Oracle	Ivan Bayross	BPB Publications

Reference Book(s):

Title	Author(s)	Publication
Fundamental of Database system	R. Elmasri and S.B Navathe	The Benjamin/Cumming
Oracle: The Complete Reference	George Koch, Kevin Loney	TMH /Oracle Press
An Introduction to Database system	C J Date	Addition-Wesley

Web Material Link(s):

- https://nptel.ac.in/courses/106105175
- https://www.youtube.com/watch?v=c5HAwKX-suM

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 Hour of duration, which will be converted out of 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 practical performance which should be evaluated out of 10 for each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/test consists of 30 marks.
- Viva-voce consists of 30 marks.

Course Outcome(s):
After completion of the course, the students will be able to

SECE2210	DATABASE MANAGEMENT SYSTEM
CO1	Understand the importance of back-end design and relational database management system.
CO2	Apply physical data, conceptual data and its conversion into relational databases.
CO3	Practice various database constraints on relational databases.
CO4	Design and develop database for the software projects.

Mapping of CO with PO

SECE2210	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	P010	PO11	PO12
CO 1	2	1	1	1								
CO 2	2	1	1	1								
CO 3	2	1		1								
CO 4	2	1	1	1								

Mapping of CO with PSO

SECE2210	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	2	1	2
CO 3	2	1	2
CO 4	3	2	2

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	Content	RBT Level
1.	Introduction to DBMS	1,2
2.	Entity-Relationship model	1,2,3
3.	SQL Concepts	4,6
4.	Relational Model	3,4
5.	Normalization	2,3
6.	Transaction Management	2,3,4
7.	Basic of PL/SQL	2,4,6

P P Savani University
School of Engineering
Department of Computer Engineering

Course Code: SECE2221
Course Name: Data Structures
Prerequisite Course(s): Introduction to Computer Programming (SECE1020)

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 its applications.
- analyze various searching and sorting algorithms and its impacts on data structures.
- develop logic building and problem-solving skills.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Data Structures** Basic Terminology, Classification of Data Structures: Primitive and Non-Primitive, Linear and Non-linear, Operations on Data Structures.	04	10
2.	**Array** Array Representation, Array as an Abstract Data Type, Programming Array in C, Sparse Matrices, Sparse Representations, and its Advantages, Row-measure Order and Column-measure Order representation.	04	10
3.	**Searching and Sorting** Linear Search, Binary Search, Bubble Sort, Insertion Sort, Selection Sort, Radix sort.	04	10
4.	**Stack and Queue** Stack Definition and concepts, Operations on stack, Programming Stack using Array in C, Prefix and Postfix Notations and their Compilation, Recursion, Tower of Hanoi, Representation of Queue, Operation on Queue, Programming Queue using Array in C. Types of Queue, Applications of Stack & Queue.	07	15
5.	**Linked List-Part I** Dynamic Memory Allocation, Structure in C, Singly Linked List Doubly Linked List, circular linked list.	03	05
Section II			
Module No.	Content	Hours	Weightage in %
6.	**Linked List-II and Applications of Linked List** Linked implementation of Stack, Linked implementation of Queue, Applications of Linked List.	03	08
7.	**Trees and Graphs** Graph Definition, Concepts, and Representation, Types of Graphs, Tree Definition, concepts, and Representation. Binary Tree, Binary Tree Traversals, conversion from general to Binary Tree. Threaded	12	25

	Binary Tree, Heap, Binary Search Tree. Tree for Huffman coding, Breadth First Search, Depth First Search, Spanning Tree, Kruskal's and Prim's Minimum Cost Spanning Tree Algorithms, Dijkstra's Shortest Path Algorithm.		
8.	**Hashing** The Symbol Table Abstract Data Types, Hash Tables, Hashing Functions, Hash collision Resolution Technique, Linear Probing.	04	10
9.	**Advanced Search Structures** AVL Trees. 2-3 Trees. 2-3-4 Trees. Red-Black Trees. B-Trees. B+ Tree Splay Trees. Digital Search Trees. Tries.	04	07
	TOTAL	45	100

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Working with the array. • Write a program to read numbers and store it in array and display it. • Write a program to demonstrate the concept of one-dimensional array finding the sum of array. • Write a program to insert an element in array. • Write a program to delete an element from an array. • Write a program to add two matrix A and B. • Write a program to concatenate two strings.	04
2.	Write a program to perform Linear Search.	02
3.	Write a program to perform Binary Search.	02
4.	Write a program to perform Bubble sort.	02
5.	Write a program to perform Selection sort.	02
6.	Write a program to perform Insertion sort.	02
7.	Write a program to implement a stack and perform push, pop operation.	02
8.	Write a program to perform the following operations in a linear queue –Addition, Deletion, and Traversing.	02
9.	Write a program to perform the following operations in singly linked list – Creation, Insertion, and Deletion.	04
10.	Write a program to create a binary tree and perform – Insertion, Deletion, and Traversal.	04
11.	Write a program for traversal of graph (B.F.S., D.F.S.).	04
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
An Introduction to Data Structures with Applications	Jean-Paul Tremblay, Paul G. Sorenson	Tata McGraw Hill

Reference Book(s):

Title	Author(s)	Publication
Data Structures using C & C++	Tanenbaum	Prentice-Hall
Fundamentals of Computer Algorithms	E. Horowitz, S. Sahni, and S. Rajsekaran	Galgotia Publication
Data Structures: A Pseudo-code approach with C	Gilberg & Forouzan	Thomson Learning

Web Material Link(s):

● https://nptel.ac.in/courses/106102064/

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

Course Outcome(s):
After completion of the course, the students will be able to

SECE2221	DATA STRUCTURES
CO 1	Differentiate primitive and non-primitive data structures.
CO 2	Understand the concept of dynamic memory management.
CO 3	Apply algorithm for solving problems like sorting, searching, insertion and deletion of data.
CO 4	Describe the hash function and concepts of collision and its resolution methods.

Mapping of CO with PO

SECE2221	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	2	1		2								
CO 2	2	1		1							1	
CO 3	2	2		2	1	2						
CO 4	2	1		2			1				1	

Mapping of CO with PSO:

SECE2221	PSO1	PSO2	PSO3
CO 1		1	
CO 2	2	1	2
CO 3	2	1	1
CO 4	2	2	2

Level of Revised Bloom's Taxonomy in Assessment:

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

Module No	Content	RBT Level
1.	Introduction to Data Structures	1,2,4
2.	Array	1,2,3
3.	Searching and Sorting	2,4,5
4.	Stack and Queue	1,2,3,4
5.	Linked List-Part I	1,2,3
6.	Linked List-II and Applications of Linked List	2,3,6
7.	Trees and Graphs	2,3,4
8.	Hashing	2,3,4
9.	Advanced Search Structures	2,3,4

P P Savani University
School of Engineering
Department of Computer Engineering

Course Code: SEIT2210
Course Name: Object Oriented Programming with Java
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

- Understand the fundamentals of programming such as variables, conditional and iterative execution, methods, etc.
- Understand the fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
- Be aware of the important topics and principles of object-oriented software development.
- Be able to use the Java SDK environment to create, debug and run core Java programs.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Fundamental of Object-Oriented Programming:** History of Java, Basic overview of java, Bytecode, JVM, Buzz- words, Application and applets, Constants, Variables, Data Types, Comments, Operators, Control Flow	04	06
2.	**Class Fundamentals:** General form of class, Creating class Overloading methods, Constructor, Declaring Object, Returning objects, using objects as parameters, assigning object reference variables, Introducing Access control, understanding static, introducing final, the finalize () method, This keyword, Garbage collection.	06	17
3.	**Array & String Handling:** Array basics, String Array, String class, String Buffer class, String Tokenizer Class and Object Class.	06	10
4.	**Inheritance, Interfaces & Packages:** Inheritance: Using super creating multilevel Hierarchy, method overriding, Dynamic method dispatch, abstract classes, using final with Inheritance, Using Package: Defining package, finding package and CLASSPATH, Access protection, importing package, Interface: Defining Interface, Implementing Interface, Variables in Interface.	06	17
Section II			
Module No.	Content	Hours	Weightage in %
5.	**Exceptions Handling:** Exception types, Try…Catch…Finally, Throw, Throws, creating your own exception subclasses.	06	14
6.	**Multithreaded Programming:** Life cycle of thread, thread methods, thread priority, thread	08	18

	exceptions, Implementing Runnable interface, Synchronization.		
7.	**GUI Programming & Lambdas and Streams:** Introduction to Annotation, Byte streams and character streams, Wrapper classes, Why Lambda Expression, Lambda Expression Syntax, where to use lambda expression, Adopting Patterns like matching, finding and filtering, Swing overview, Swing component classes: AbstractButton, ButtonGroup, ImageIcon, JApplet, Jbutton, JcheckBox, JcomboBox, Jlabel, JradioButton, JscrollPane, JtabbedPane, Jtable, JtextField, Jtree.	09	18
	TOTAL	45	100

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to Java Environment and NetBeans	02
2.	Implementation of Java programs with classes and objects	02
3.	Implementation of Java programs to create functions, constructors with overloading and overriding	02
4.	Implementation of Java programs to demonstrate different access specifiers	02
5.	Implementation of Java programs for variables, data types, operators	02
6.	Implementation of Java programs to use arrays and string	02
7.	Implementation of Java programs for inheritance (single, multilevel, hierarchical)	02
8.	Implementation of Java programs to demonstrate the use of super keyword	02
9.	Implementation of Java programs for Interface	02
10.	Implementation of Java programs to demonstrate Java packages	02
11.	Implementation of Java programs for exception handling using all keywords (try, catch, throw, throws and finally)	02
12.	Implementation of Java programs to demonstrate the life cycle of thread	02
13.	Implementation of Java programs for the concepts of thread priority, synchronization, inter-thread communication	04
14.	Implementation of Java AWT programs to Create Registration Form	02
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Java The Complete Reference	Herbert Schildt	McGraw Hill

Reference Book(s):

Title	Author(s)	Publication
Core Java Volume I - Fundamentals	Cay Horstmann and Gray Cornell	Pearson
Thinking in Java	Bruce Eckel	Pearson
Learning Java	Patrick Niemeyer & Jonathan Knudsen	O'Reilly Media

Web Material Link(s):

- https://docs.oracle.com/javase/tutorial/tutorialLearningPaths.html
- http://openjdk.java.net/projects/jigsaw/
- https://docs.oracle.com/en/java/javase/14/docs/api/index.html
- https://netbeans.apache.org/download/index.html
- https://download.eclipse.org/eclipse/downloads/

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

Course Outcome(s):
After completion of the course, the students will be able to

SEIT2210	**Object Oriented Programming with Java**
CO 1	Implement Object Oriented programming concept using basic syntaxes of control Structures, strings, and function for developing skills of logic building activity.
CO 2	Use of a variety of basic control structures including selection and repetition; classes and objects in a tiered architecture (user interface, controller, and application logic layers)
CO 3	Demonstrates how to achieve reusability using inheritance, interfaces, and packages and describes faster application development that can be achieved.
CO 4	Demonstrate understanding and use of different exception handling mechanisms and concepts of multithreading for robust faster and efficient application development.
CO 5	Identify and describe common abstract user interface components to design GUI in Java using Swing along with a response to events. Identify, Design & develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture

Mapping of CO with PO

SEIT2210	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	PO11	PO12
CO 1	2	3	3									
CO 2	3	2	3	2	1							
CO 3		2	2	3	2						1	1
CO 4	1	1	1	1	3						2	2
CO 5	1	1	1	2	3			1			2	1

Mapping of CO with PSO

SEIT2210	PSO1	PSO2	PSO3
CO 1			1
CO 2	1	3	
CO 3			1
CO 4	3		
CO 5	2	2	1

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**
1.	Fundamental of Object-Oriented Programming	1,2
2.	Class Fundamentals	1,2
3.	Array & String Handling	3,4
4.	Inheritance, Interfaces & Packages	2,3,4

5.	Exceptions Handling	2,3
6.	Multithreaded Programming	2,3
7.	GUI Programming & Lambdas and Streams	2,3,4

P P Savani University
School of Engineering
Department of Computer Engineering

Course Code: SEIT2220
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	--	--	100	--	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- Study the pioneer of Software Development Life Cycle, Development models, and Agile Software Development.
- Study fundamental concepts in software testing, including software testing objectives, processes, criteria, strategies, and methods.
- Discuss various software testing issues and solutions in software unit tests; integration, regression, and system testing.
- Learn the process of improving the quality of software work products.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Software and Software Engineering** The Evolving Role of Software, A Crisis on the Horizon and Software Myths, Layered Technologies, Processes, Methods and Tools, Generic View of Software Engineering, Study of Different Models-Waterfall model, Incremental model, Evolutionary process models- Prototype, Spiral, and RAD model.	06	15
2.	**Agile Development** Agility and Agile Process model, Extreme Programming, Other process models of Agile Development and Tools.	04	10
3.	**Requirement Analysis and Specification** Problem Recognition, Understanding the Requirement, Requirement Modelling, Requirement Specification (SRS), Requirement Analysis and Requirement Elicitation, Requirement Engineering.	05	10
4.	**Structured Software Design** Design Concepts, Design Model, Software Architecture, Data Design, Architectural Design, Component Level Design (Function Oriented Design, Object Oriented Design), User Interface Design, Web Application Design.	08	20
Section II			
Module No.	Content	Hours	Weightage in %
5.	**Software Coding & Testing** Programming principles, Coding Standards and coding Guidelines, Unit testing; Metrics, Software testing fundamentals, Black-box and white box testing, Basis path testing, Control structure testing, Black-box testing - Graph-	08	20

	based testing method, Boundary value analysis; Testing strategies - A strategic approach to software testing, Test strategies for conventional and object-oriented software, test case generation and tool support, Metrics – Coverage analysis-reliability.		
6.	**Quality Assurance** Quality Control, Assurance, Cost, Reviews, Software Quality Assurance, Approaches to SQA, Reliability, Quality Standards-ISO9000 and 9001.	04	08
7.	**Software Project Management** Scope and Feasibility, Effort Estimation, Schedule and staffing, Quality Planning, Risk management- identification, assessment, control, project monitoring plan, Detailed Scheduling. Six Sigma for SE, Management Spectrum, People –Product – Process- Project, W5HH Principle, Importance of Team Management.	06	10
8.	**Software Maintenance and Configuration Management** Types of Software Maintenance, Re-Engineering, Reverse Engineering, Forward Engineering, The SCM Process, Identification of Objects in the Software Configuration, Version Control and Change Control.	04	07
	TOTAL	45	100

List of Tutorials:

Sr. No.	Name of Tutorial	Hours
1.	To select the project title and apply requirement engineering to it.	01
2.	To perform the system analysis: Requirement analysis, SRS.	01
3.	To perform the function-oriented diagram: DFD and Structured chart.	01
4.	To perform the user's view analysis: Use case diagram.	01
5.	To draw the structural view diagram: Class diagram.	01
6.	To draw the behavioral view diagram: Sequence diagram, Activity diagram.	02
7.	To study various testing tools.	01
8.	To design test cases.	01
9.	To study cost estimation and preparation of timeline chart.	01
10.	To study the different types of performance testing.	01
11.	To study the usage of regression testing.	01
12.	To understand the usage of software metrics.	01
13.	Project Work: Understand the importance of the SDLC approach & various processes.	02
	TOTAL	15

Text Book(s):

Title	Author/s	Publication
Fundamentals of Software Engineering	Fundamentals of Software Engineering	Fundamentals of Software Engineering
Rajib Mall	Rajib Mall	Rajib Mall

Reference Book(s):

Title	Author(s)	Publication
Software Engineering – An Engineering Approach	James F. Peters & Witold Pedrycz	Wiley
Software Engineering	IAN Sommerville	Pearson Education

Web Material Link(s):

- https://nptel.ac.in/courses/106101061/

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 practical performance which should be evaluated out of 10 for each Tutorial and the average will be converted to 50 marks.
- Internal viva consists of 50 marks.

Course Outcome(s):
After completion of the course, the students will be able to

SEIT2220	**Software Engineering**
CO 1	Cite the process of requirement gathering, classification, specification, and validation in the software engineering process.
CO 2	Demonstrate an ability to design the software by applying the software engineering design principles.
CO 3	Discover system design patterns, and agile methodologies for the development of software using UML and Scrum.
CO 4	Devise project planning, cost estimation, and quality management techniques.
CO 5	Assess the software testing process to analyze the functionality of the application.

Mapping of CO with PO

SEIT2220	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	P010	PO11	PO12
CO 1	2	1	2				1					
CO 2	2	2	2		1		2				3	3
CO 3	2	2	2		1		2				3	3
CO 4	2	1	1		1		2				2	3
CO 5	2	1	1		1		2				3	3

Mapping of CO with PSO

SEIT2220	PSO1	PSO2	PSO3
CO 1			2
CO 2	1		2
CO 3	1		2
CO 4	1		2
CO 5	1	1	2

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**
1.	Introduction to Software and Software Engineering	1,2
2.	Agile Development	2,3
3.	Requirement Analysis and Specification	2,3,4
4.	Structured Software Design	2,3,6
5.	Software Coding & Testing	2,3,4
6.	Quality Assurance	1,2
7.	Software Project Management	2,3,4

8.	Software Maintenance and Configuration Management	2,3,4

P P Savani University
School of Engineering
Department of Science & Humanities

Course Code: SESH2140
Course Name: Differential Equations & Statistics
Prerequisite Course(s): --

Teaching & Examination Scheme:

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

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- recall existing knowledge of calculus and apply it for solving engineering problems involving differential equations.
- introduce partial differential equations with different methods of solution.
- understand periodic functions expressed as a Fourier series and applications of Fourier series to odes.
- introduce the basic statistical data analysis and probability distribution.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Ordinary Differential Equation-I** First order ODEs, Formation of differential equations, Solution of differential equation, Solution of equations in separable form, Exact first order ODEs, Linear first order ODEs, Bernoulli Equation **Ordinary Differential Equation-II** ODEs of Second and Higher order, Homogeneous linear ODEs, Linear Dependence and Independence of Solutions, Homogeneous linear ODEs with constant coefficients, Nonhomogeneous ODEs, Variation of Parameters.	10	20
2.	**Partial Differential Equation** Formation of First and Second order equations, Solution of First order equations, Linear and Non-liner equations of first, Higher order equations with constant coefficients, Complementary function, Particular Integrals.	07	18
3.	**Fourier Series** Periodic function, Euler Formula, Arbitrary Period, Even and Odd function, Half-Range Expansions	05	12
Section II			
Module No.	Content	Hours	Weightage in %
4.	**Basics of Statistics** Elements, Variables, Observations, Quantitative and Qualitative data, Cross-sectional and Time series data, Frequency distribution, Dot plot, Histogram, Cumulative distribution, Measure of location, Mean, Median, Mode, Percentile, Quartile, Measure of variability, Range, Interquartile Range, Variance, Standard Deviation, Coefficient of Variation.	07	15

5.	**Correlation & Regression Analysis** Regression Analysis, Regression line and regression coefficient, Karl Pearson's method.	07	15
6.	**Probability Distribution** Introduction, Conditional probability, independent events, independent experiments, Theorem of total probability and Bayes' theorem, Probability distribution, Binomial distribution, Poisson distribution, Normal distribution, Hypothesis.	09	20
	TOTAL	45	100

List of Tutorial(s):

Sr. No.	Name of Tutorial	Hours
1.	Ordinary Differential Equation-1	02
2.	Ordinary Differential Equation-2	02
3.	Ordinary Differential Equation-3	04
4.	Partial Differential Equation-1	02
5.	Partial Differential Equation-2	04
6.	Fourier Series-1	02
7.	Fourier Series-2	02
8.	Basics of Statistics-1	02
9.	Basics of Statistics-2	02
10.	Correlation & Regression Analysis	02
11.	Probability-1	02
12.	Probability-2	02
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Advanced Engineering Mathematics	Erwin Kreyszig	Wiley India Pvt. Ltd. New Delhi.
Probability and Statistics for Engineers	Richard A. Johnson Irwin Miller, John Freund	Pearson India Education Services Pvt. Ltd., Noida.

Reference Book(s):

Title	Author(s)	Publication
Higher Engineering Mathematics	B. S. Grewal	Khanna Publishers, New Delhi
Advanced Engineering Mathematics	R. K. Jain S.R.K. Iyengar	Narosa Publishing House New Delhi.
Differential Equations for Dummies	Steven Holzner	Wiley India Pvt. Ltd., New Delhi.
Higher Engineering Mathematics	H.K. Dass Er. Rajnish Verma	S. Chand & Company Ltd., New Delhi.

Web Material Link(s):

- http://nptel.ac.in/courses/111105035/
- http://nptel.ac.in/courses/111106100/
- http://nptel.ac.in/courses/111105093/
- http://nptel.ac.in/courses/111108081/
- http://nptel.ac.in/courses/111105041/1

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 tutorial, which will be evaluated out of 10 per each tutorial and average of the same will be converted to 50 marks.
- Assignment consists of 20 marks.
- Internal viva consists of 30 marks.

Course Outcome(s):

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

SESH2140	DIFFERENTIAL EQUATIONS & STATISTICS
CO 1	Describe 1st and 2nd order ODEs and PDEs.
CO 2	Classify differential equations and evaluate linear & non-linear partial differential equations.
CO 3	Demonstrate Fourier series to study the behavior of periodic functions and their applications in system communications, digital signal processing and field theory.
CO 4	Elaborate analysis of categorial data and quantitative data.
CO 5	Adapt the knowledge of various probability distribution and their applications in mathematical models, sport strategies and insurance.

Mapping of CO with PO

SESH2140	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	P010	PO11	PO12
CO 1	3	2	1									3
CO 2	3	2	1									3
CO 3	3	2	1									3
CO 4	2	1	1									1
CO 5	2	1	1									1

Mapping of CO with PSO

SESH2140	PSO1	PSO2	PSO3
CO 1	2	1	
CO 2	2	1	
CO 3	2	1	
CO 4	2		1
CO 5	1		

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	Content	RBT Level
1.	Ordinary Differential Equation	1, 2, 3, 5
2.	Partial Differential Equation	1, 2, 4, 5
3.	Laplace Transform	1, 2, 4, 5
4.	Fourier Series & Fourier Integral	1, 2, 3, 4, 5
5.	Basics of Statistics	1, 2, 3, 4, 5
6.	Probability Distribution	1, 2, 3, 4, 5

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE2231
Course Name: Computer Organization
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	--	04	40	60	40	60	--	--	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- provide a comprehensive knowledge of overall basic computer hardware structures.
- learn architectures of various internal and external input output systems.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Basic Computer Organization and Design** Data Representation: Decimal, Binary, Octal and Hexadecimal numbers, Instruction codes, Computer registers, Computer Instructions, Timing and Control, Instruction cycle Memory-Reference Instructions, Input-output and interrupt, Design of Accumulator Unit.	06	15
2.	**Programming the Basic Computer** Introduction Machine Language, Assembly Language, Assembler, Program loops, Programming Arithmetic and logic operations, subroutines, I-O Programming.	05	08
3.	**Computer Arithmetic** Introduction, Addition and subtraction, Multiplication and Division Algorithms, Floating Point Arithmetic.	06	12
4.	**Central Processing Unit** Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC).	06	15
Section II			
Module No.	Content	Hours	Weightage in %

5.	**Pipeline Control and Parallel Processing** Flynn's taxonomy, Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline Hazards, Pipeline Performance, RISC Pipeline.	08	20
6.	**Input-Output Organization** Types of Peripherals, Input-Output Interface, Asynchronous Data Transfer, Modes ofTransfer, Priority Interrupt, DMA	06	15
7.	**Memory Organization** Memory Hierarchy, Main Memory, Auxiliary Memory,Associative Memory, Cache Memory, Virtual Memory.	08	15
	TOTAL	45	100

List of Practical:

Sr No	Name of Practical	Hours
1.	Study and implement programs on number system	08
2.	Study and implement programs on conversion	04
3.	Study and build different logic gates using Logisim.	04
4.	Study and build different circuits using Logisim.	14
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Computer System Architecture	M. Morris Mano	Pearson
Structured Computer Organization, 6th Edition	Andrew S. Tanenbaum and Todd Austin	PHI

Reference Book(s):

Title	Author/s	Publication
Computer Architecture & Organization	M. Murdocca & V. Heuring	WILEY
Computer Architecture and Organization	John Hayes	McGrawHill

Web Material Link(s):

- https://nptel.ac.in/courses/106106092/

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 Hour of duration, whichwill be converted out of 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 should be evaluated outof 10 marks per each practical and average of the same will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/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 student will be able to

SECE2231	COMPUTER ORGANIZATION
CO 1	Describe the design and working of basic components used to build computer system.
CO 2	Visualize and understand the working of cpu, different instruction formats, addressing modes, pipeline and vector processing and evaluate the performance of pipeline approach.
CO 3	Describe the requirements of different memories and evaluate memory management techniques.
CO 4	Examine the working mechanism of input and output devices and information transfer.

Mapping of CO with PO

SECE2231	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	P010	PO11	PO12
CO 1	3	3	1	1								1
CO 2	3	2	1									1
CO 3	3	2	1	1								
CO 4	3	2	1									1

Mapping of CO with PSO

SECE2231	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	2	1	2
CO 3	2	1	2
CO 4	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	Basic Computer Organization and Design	2,4
2	Programming the Basic Computer	2,3,4
3	Computer Arithmetic	2,4.5
4	Central Processing Unit	1,2,5
5	Micro-programmed Control	1,2
6	Pipeline and Vector Processing	2,5
7	Input-Output Organization	2,3,4
8	Memory Organization	2,5,6
9	Multiprocessors	2

P P Savani University
School of Engineering
Department of Computer Engineering

Course Code: SECE2240
Course Name: Computer Networks
Prerequisite Course(s): Discrete Mathematics, Data and File Structures

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 communication network design.
- understand state-of-the-art in network protocols, architectures.
- learn to develop an understanding of different components of computer networks, various protocols, technologies and their applications.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** Overview of network and data communication, types of Networks, Network Topology, Protocol hierarchies, and design issues of layers Interfaces, and services. Reference Model: The OSI reference model, TCP/IP reference model, network standards.	04	10
2.	**Physical Layer** Transmission media, Data and transmission techniques, Multiplexing, Asynchronous Communication, Wireless transmission, ISDN, ATM, Cellular Radio, Switching techniques issues.	07	15
3.	**Data Link Layer** Layer design issues, services provided to network layers, Framing, Error control, and Flow control, Data link control and protocols – Simplex protocol, sliding window protocol, Utopia, Stop N Wait, Automatic Repeat Request. Go Back N, Selective Repeat Protocols.	07	15
4.	**Medium Access Sub Layer** Channel Allocations, Multiple Access protocols- ALOHA, CSMA, CSMA/CD protocols, Collision-free protocols, Limited contention protocols, LAN architectures, IEEE 802 and OSI, Ethernet (CSMA/CD), Bus, Token Ring, DQDB, FDDI, Bridges and recent developments.	05	10
Section II			
Module No.	Content	Hours	Weightage in %
5.	**Network Layer** A network Layer design issue, Routing algorithms, and protocols – OSPF, BGP, RIP, Congestion Control Algorithms, Internetworking – IPV4 & IPV6, Addressing, N/W Layer Protocols, and subnets.	09	20
6.	**Transport Layer** Transport services, Design issues, transport layer protocols – TCP & UDP, Congestion Control, QOS and its improvement.	07	15

7.	**Application Layer** Client-Server Model, WWW, HTTP, DNS, DHCP, FTP, and Email Protocol – IMAP, POP3, SMTP	06	15
	TOTAL	45	100

List of Practical:

Sr. No.	Name of Practical	Hours
1.	To study and prepare LAN cables (cross and straight) using crimping tool, to configure LAN.	02
2.	To study and Physical examine different network device and their usage.	02
3.	Configure switch and router in small network and identify the difference.	02
4.	To Study of network IP – IPv4 & IPv6.	02
5.	Configure Network Topology using Cisco Packet tracer.	04
6.	To monitor network traffic using Wire Shark	02
7.	To get the MAC or Physical Address of the system Using Address Resolution Protocol.	02
8.	To Configure network using Routing Information Protocol (RIP)	04
9.	To configure network state routing protocol (OSPF).	02
10.	To configure Border Gateway Protocol.	02
11.	To configure Application Layer protocols: DHCP and DNS and understand its functionality in Wireshark/ Packet tracer.	02
12.	Understand functionality of TCP & UDP using Wireshark/ Packet Tracer.	02
13.	Understand functionality of HTTP & FTP using Wireshark/ Packet Tracer.	02
	TOTAL	30

Text Book(s):

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

Reference Book(s):

Title	Author(s)	Publication
Computer Networks	Andrew S Tanenbaum	PHI Learning
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):

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

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

Course Outcome(s):

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

SECE2240	COMPUTER NETWORKS
CO 1	Distinguish the working of network protocols, application and OSI reference model and TCP/IP reference model.
CO 2	Comprehend functionality of various protocols and algorithms with various architecture layer.
CO 3	Design computer network configuration.
CO 4	Recognize the technological trends of Computer Networking

Mapping of CO with PO

SECE2240	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	P010	PO11	PO12
CO 1	2	1	1	1	2							1
CO 2	3	1	1	2	1					1	1	1
CO 3	2	2	2		1					1		
CO 4		2	2	1	1	2	2	1	1	1		1

Mapping of CO with PSO

SECE2240	PSO1	PSO2	PSO3
CO 1	1	1	
CO 2	2	2	1
CO 3	1	1	
CO 4	2		2

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	Content	RBT Level
1.	Introduction	2,4
2.	Physical Layer	1,2,4
3.	Datalink Layer	2,4
4.	Medium Access Layer	1,2
5.	Network Layer	2,3,5,6
6.	Transport Layer	2,4
7.	Application Layer	2,5

P P Savani University
School of Engineering
Department of Computer Engineering

Course Code: SEIT2230
Course Name: Operating System
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 provide a fundamental understanding of the operating system functions, architecture, services, and interconnections among services within operating systems.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Operating System** Basics of Operating System: Definition, Types of Operating System, Operating System Structure, Operating System Services, Concept of Virtualization.	03	07
2.	**Processes and Threads Management** Concept of Process: Definition, Process State, Process State Transition, Process Control Block, CPU Scheduling: CPU-I/O Burst Cycle, Types of Schedulers, Context Switching, Preemptive and Non- Preemptive Scheduling, Scheduling Criteria, Process Scheduling Algorithms: FCFS, SJF, Priority, Round- Robin, Multilevel Queue, and Lottery Scheduling; Threads, Types of Threads, Multithreading	09	20
3.	**Inter Process Communication** Race Conditions, Critical Regions, Mutual Exclusion with Busy Waiting, Sleep and Wakeup, Semaphores, Mutexes, Monitors, Message Passing, Classical IPC Problems: The Dining Philosopher Problem, The Readers and Writers Problem	07	15
4.	**Deadlocks** Resources, Conditions for Deadlocks, Deadlock Modelling, , Deadlock Detection and Recovery, Deadlock Avoidance, Deadlock Prevention.	04	08
Section II			
5.	**Memory Management** Main memory: Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging: Introduction to Paging, Translation look-aside buffer (TLB), Structure of Page Table, Virtual memory: Background, Demand Paging, Page Replacement Algorithms: FIFO, Optimal Page Replacement, Least Recently Used, Not Recently Used, Second Chance Page Replacement, Thrashing.	11	25
6.	**File Management** File Concepts: File Types, File Attributes, File Access Methods, File Operations, Directories: Directories Structure, Path Types, Directory Operations; File Allocation Methods: Contiguous, Linked, Indexed Allocation.	05	12

7.	**Disk Management** Disk structure, Disk Scheduling Algorithms: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK, Disk Free Space Management, RAID Levels.	06	13
	TOTAL	45	100

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Study of basic commands of Linux.	02
2.	Study of Advance commands and filters of Linux/UNIX.	02
3.	Write shell scripts to perform several computations like add numbers, subtract numbers, find average, percentage. Also find factorial of a given number. Generate Fibonacci series etc.	04
4.	Simulate any two CPU scheduling algorithms. (E.g. FCFS, SJF, Round Robin etc.)	04
5.	Simulate any two contiguous memory allocation techniques. (E.g. Worst-fit, Best-fit, Next-fit, First-fit)	04
6.	Simulate banker's algorithm for deadlock avoidance.	04
7.	Simulate any two page replacement algorithms. (E.g. FIFO, LRU, Optimal)	04
8.	Simulate any two disk scheduling algorithms. (E.g. FCFS,SCAN,C-SCAN)	04
9.	Case studies: OS in Industries, Protection and Role-based Access Controls of OS.	02
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Operating System Principles	Silberschatz A., Galvin P. and Gagne G	Wiley
Modern Operating System	Andrew S. Tanenbaum	Pearson

Reference Book(s):

Title	Author(s)	Publication
Operating Systems: Internals and Design Principles	William Stallings	Pearson
UNIX and Shell Programming	Behrouz A. Forouzan, Richard F. Gilberg	Cengage Learning
Operating Systems	Dhamdhere D. M	Tata McGraw Hill

Web Material Link(s):
https://nptel.ac.in/courses/106106144

Course Evaluation:
Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 Hour of duration, which will be converted out of 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 10 per each practical. At the end of the semester, average of the entire practical will be converted to 20 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/test consists of 30 marks during End Semester Exam.
- Viva/Oral performance consists of 30 Marks during End Semester Exam.

Course Outcome(s):
After completion of the course, the students will be able to

SEIT2230	OPERATING SYSTEM

CO 1	Understand the basic principles of operating system.
CO 2	Illustrate the concepts of operating systems services and its components.
CO 3	Evaluate the performance of operating system algorithms and achieve a comprehensive understanding of memory management during process execution.
CO 4	Comprehend how an operating system manages file systems, mass storage, and I/O operations.

Mapping of CO with PO

SEIT2230	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P010	PO11	PO12
CO 1	2	0	0	1	3	2	0	0	0	0	0	2
CO 2	2	2	0	3	2	0	1	0	0	0	0	2
CO 3	2	2	0	2	1	0	1	0	0	0	0	1
CO 4	1	2	0	1	1	2	0	0	0	0	0	2

Mapping of CO with PSO

SEIT2230	PSO1	PSO2	PSO3
CO 1	0	0	0
CO 2	2	1	1
CO 3	1	1	1
CO 4	0	2	0

Level of Revised Bloom's Taxonomy in Assessment

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

Module No	**Content**	**RBT Level**
1.	Introduction to Operating System	1, 2, 4
2.	Processes and Threads Management	1, 2, 3, 5, 6
3.	Inter Process Communication	2, 3, 4, 5
4.	Deadlock	2, 3, 4, 6
5.	Memory Management	1, 2, 3, 4, 6
6.	File Management	1, 2, 3
7.	Disk Management	1, 2, 3, 4, 5

P P Savani University
School of Engineering
Department of Information Technology

Course Code: SEIT2241
Course Name: Mobile Application Development
Prerequisite Course(s): -- Object Oriented Programming with Java (SEIT2010)

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	00	02	--	--	40	60	--	--	100

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.

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Create Hello World Application.	02
2.	Create an application to perform addition, subtraction, multiplication, division operation on given two numbers entered by user.	02
3.	Create an application to convert temperature from Fahrenheit to Celsius.	02
4.	Create a login application to validate Email ID and Password. Display Toast Message on successful login or error message if not login.	04
5.	Create an application UI component: Image Button, Toggle button, Progress Bar, Spinner, Date Picker, Time Picker, Seek Bar , Switch, Rating Bar.	08
6.	Create an application that will change color of the screen, based on selected options from the menu.	04
7.	Create an UI such that, one screen have list of all friends. On selecting of any name, next screen should show details of that friend like Name, Image, Interest, Contact details etc.	04
8.	Create an android app to draw red color circle & blue color rectangle using paint & canvas class.	04
9.	Create an app to send SMS and email.	06
10.	Create an application that will play a media file from the memory card.	04
11.	Create application using Google speech API.	06
12.	Create an application to make Insert, Update, and Delete operation on the database.	04
13.	Android Studio Setup for flutter Development	04
14.	Create an application to demonstrate Dialogs & Expansion tile card in a flutter	06
	TOTAL	60

Text Book(s):

Title	Author/s	Publication
Introduction to Android Application Development	Joseph Annuzzi Jr., Lauren Darcey, Shane Conder	Pearson Education
Beginning Android 4 Application Development	Wei Meng Lee	Wrox

Reference Book(s):

Title	Author(s)	Publication
Android Application Development for Dummies, 3rd Edition	Donn Felker	Wiley Publication

Web Material Link(s):

- https://nptel.ac.in/courses/106106156/

Course Evaluation:

Practical:

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

Course Outcome(s):

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

SEIT2241	MOBILE APPLICATION DEVELOPMENT
CO 1	Develop user friendly mobile applications by implementing different practicals.
CO 2	Understand the concepts of front-end development using various technologies
CO 3	Analyze and implement frameworks, database and design patterns in mobile applications.
CO 4	Create a small but realistic working mobile application using different application programming interface.

Mapping of CO with PO

SEIT2241	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO 1	1	2	1	1	3	2			1	2	1	1
CO 2	2	1	2	2	3	2			1	1	1	2
CO 3	0	2	3	2	3	2			1	2	2	3
CO 4	3	3	3	2	3	3			3	3	3	3

Mapping of CO with PSO

SEIT2241	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	2	3	1
CO 3	3	3	3
CO 4	3	3	3

Level of Revised Bloom's Taxonomy in Assessment

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

Practical No	Content	RBT Level
1.	Introduction of Android	1,2,3
2.	Android Application Design and Resource	2,3,4
3.	Exploring User Interface Screen Elements	2,3,4
4.	Designing User Interfaces with Layouts	2,3,6
5.	Working with Widgets & Control	2,4,5,6
6.	Drawing & Working with Animation	3,4,6
7.	Designing Application , Working with Android	2,6

	Manifest file	
8.	Canvas & Paint Class, Multimedia APIs.	1,2,6
9.	Networking APIs, Android Web APIs.	1,2,5,6
10.	Working with Media Controller.	2,3
11.	Working with Speech to Text & Text to Speech.	3,6
12.	Storage APIs, Working with Database.	4,3,6
13.	Cross Platform Mobile Application using flutter.	2,3
14.	Demonstrate UI Components in flutter	2,3,6