Syllabus Book

B. Tech.
(Information Technology)

P P Savani University

School of Engineering

Effective From: 2018-19

Authored by: P P Savani University

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FIRST YEAR B. TECH.

P P SAVANI UNIVERSITY																
SCHOOL OF ENGINEERING																
TEACHING & EXAMINATION SCHEME FOR B. TECH. CE/ IT PROGRAMME AY: 2018-19																
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	SESH1010	Elementary Mathematics for Engineers	SH	3	0	2	5	5	40	60	0	0	50	0	150
	SECV1050	Global Environmental Challenges & Management	CV	2	0	0	2	2	40	60	0	0	0	0	100
	SECV1060	Basics of Engineering Sciences	CV	3	2	0	5	4	40	60	20	30	0	0	150
	SECE1020	Introduction to Computer Programming	CE	3	4	0	7	5	40	60	40	60	0	0	200
	SEIT1020	Logic Building & Problem Solving	IT	0	2	0	2	1	0	0	50	0	0	0	50
	SESH1030	Electronics Workshop	SH	0	2	0	2	1	0	0	50	0	0	0	50
	SEPD1010	Academic English & Technical Writing	SEPD	2	2	0	4	3	40	60	20	30	0	0	150
						Total	**27**	**21**							**850**
2	SESH1020	Linear Algebra & Vector Calculus	SH	3	0	2	5	5	40	60	0	0	50	0	150
	SEME1040	Concepts of Engineering Drawing	ME	2	2	0	4	3	40	60	20	30	0	0	150
	SECE1040	Programming with Python	CE	3	4	0	7	5	40	60	40	60	0	0	200
	SEIT1010	Introduction to Web Designing	IT	0	4	0	4	2	0	0	100	0	0	0	100
	SESH1210	Applied Physics	SH	3	2	0	5	4	40	60	20	30	0	0	150
	SEPD1020	Communication Skills	SEPD	2	2	0	4	3	40	60	20	30	0	0	150
	SESH1050	Solution to Societal Problems: A Community Service Approach	SH	0	2	0	2	1	0	0	50	0	0	0	50
						Total	**31**	**23**							**950**

P P Savani University
School of Engineering

Department of Civil Engineering

Course Code: SECV1030
Course Name: Engineering Mechanics

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	2	0	4	40	60	20	30	0	0	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand different types of forces, systematic evaluation of effect of these forces, behavior of rigid and deformable bodies subjected to various types of forces, at the state of rest or motion of the particles.
- understand the fundamental principles, concepts and techniques, both theoretical and practical, with emphasis on the application of these to the solution of mechanics based suitable problems in all engineering.
- provide a strong foundation and formwork for more advanced study at every higher semester as the subject of engineering mechanics cuts broadly across all branches of engineering profession.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** Definition of rigid body, Deformable body, Scalar and Vector quantities, Fundamental principles of mechanics: Principle of transmissibility, Principle of superposition, Law of parallelogram of forces.	02	6
2.	**Fundamental of Static** Force, types of forces, Characteristics of a force, System of forces, Composition and resolution of forces. **Concurrent Forces:** Resultant of coplanar concurrent force system by analytical and graphical method, Law of triangle of forces, Law of polygon of forces, Equilibrium conditions for coplanar concurrent forces. **Non-Concurrent Forces:** Moments & couples, Characteristics of moment and couple, Varignon's theorem, Resultant of non-concurrent forces by analytical method, Equilibrium conditions of coplanar non-concurrent force system.	10	20

3.	**Friction** Theory of friction, Types of friction, Cone of friction, Angle of repose, Coefficient of friction, Friction on inclined plane, ladder friction, wedge friction, belt and rope friction.	06	14
4.	**Beams and Support Reaction** Types of loads, Types of supports, Types of beams, Determination of support reactions for different types of beam.	04	10
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Truss** Classification of Truss, Perfect and Imperfect truss Analysis of pin-jointed perfect truss using method of joints and Method of section	06	14
2.	**Centroid And Centre of Gravity** Centroid of lines, plane areas and volumes, Examples related to centroid of composite geometry, Pappus – Guldinus theorems.	06	14
3.	**Moment of Inertia** Parallel and Perpendicular axis theorems, Polar moment of inertia, Radius of gyration of areas, Examples related to moment of inertia of composite geometry.	11	22

List of Practical:

Sr. No	Name of Practical	Hours
1.	Equilibrium of coplanar concurrent forces	04
2.	To verify the law of parallelogram of forces	04
3.	To verify the law of polygon of forces	02
4.	To verify the lami's theorem	02
5.	To study effect of friction on flat surface	02
6.	To study effect of friction on angular surface	02
7.	Equilibrium of parallel force system – simply supported beam	02
8.	Solve tutorial on Truss, C.G & M.I	10
9.	Draw sketches for different type of trusses	02

Text Books:

Title	Author/s	Publication
Engineering Mechanics (Statics & Dynamics)	Beer and Johnston	Tata McGraw Hill Education
Mechanics of Structure Vol. I & II	S. B. Junnarkar & H. J. Shah	Charotar Publication
Applied Mechanics	S. B. Junnarkar & H. J. Shah	Charotar Publication

Reference Books:

Title	Author/s	Publication
Engineering Mechanics,	Meriam and Karaige,	Wiley-India
Engineering Mechanics: Statics & Dynamics	S Rajsekaran	Vikas Publication
Engineering Mechanics of Solids	Popov E.P	Prentice Hall of India

Engineering Mechanics Statics	J. L. Meriam, L G. Kraige.	John wiley & Son
Engineering Mechanics	S.S. Bhavikatti & K.G. Rajeshkarappa	New Age Publication
Engineering Mechanics	U.G. Jindal	Made easy Publication
Engineering Mechanics	K.L. Kumar	Tata McGraw Hill
Engineering Mechanics	R.C. Hibbeller	Pearson

Web Material Links:

- http://nptel.ac.in/courses/122104014/
- http://nptel.ac.in/courses/112103108/

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/Tutorial:

- Continuous evaluation consists of performance of practical/tutorial which should be evaluated out of 10 for each practical/tutorial and average of the same will be converted to 10 marks.
- Internal viva component of 10 marks.
- Practical performance/quiz/drawing/test of 15 marks during end semester exam.
- Viva/Oral performance of 15 marks during end semester exam.

Course Outcome(s):

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

- Fundamental principles of mechanics, equilibrium, statics reactions and internal forces in statically determinate beams.
- Application of principles of statics to determine C.G and M.I of a different geometrical shape and Understand basics of friction and its importance.

P P Savani University
School of Engineering

Department of Civil Engineering

Course Code: SECV1050
Course Name: Global Environmental Challenges & Management

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	0	0	0	0	100

CE: Continuous Evaluation, ESE: End Semester Exam

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

- Impart basic knowledge about environment and thereby developing an attitude of concern for environment.
- Create awareness on various environmental pollution aspects and issues.
- Give a comprehensive insight into natural resources, ecosystem and biodiversity.
- Educate the ways and means to protect the environment from various types of pollution.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Environment and Environmental Studies** Terms related to environment, Necessity of Public awareness, Components of Environment, Relationship between the different components of Environment, Man and Environment relationship, Impact of technology on Environment, Objective, Principles, Importance, Scope of Environmental Education,	02	4
2.	**Ecology and Ecosystems** Introduction: Ecology- Objectives and Classification, Concept of an ecosystem- structure and functions of ecosystem Components of ecosystem- Producers, Consumers, Decomposers Bio-Geo- Chemical Cycles- Hydrologic Cycle, Energy Flow in Ecosystem, Food Chains, Food webs, Ecological Pyramids	04	12
3.	**Natural Resources** **Energy Recourses:** Renewable and Nonrenewable resources, exploitation and conservation, Role of individual in conservation of natural resources. **Water resources:** Water sources- Surface and Ground water sources, Indian and global scenario.	06	22

	Forest resources: Definition, Ecological and Economic importance and benefits of forest, Indian scenario, Deforestation: causes and effects, remedial measures. **Food resources:** Sources of food, Global and Indian food demand scenario, Limits of food production, Environmental effects of Agriculture.		
4.	**Global Environmental Challenges** Climate change, Global warming and Greenhouse effect, Greenhouse gases, Acid rain, Depletion of ozone layer, Nuclear accidents and holocaust.	03	12
Section II			
Module No	Content	Hours	Weightage in %
1.	**Environmental Pollution:** Environmental degradation, Pollution, Sources of pollution, Types of environmental pollution. **Water Pollution:** Water quality standards, Sources of water pollution: Industrial, Agricultural, Municipal, Classification of water pollutants, Effects of water pollutants, Eutrophication. **Air Pollution:** Ambient air quality standards, Classification of air pollutants, Sources of common air pollutants, Natural and Anthropogenic sources, Effects of common air pollutants. **Land Pollution:** Land uses, Land degradation: causes, effects and control, soil erosion. **Noise Pollution:** Sound and Noise, Causes and Effects. Role of individual in the prevention of pollution.	05	16
2.	**Effect of Human population on Environment** **Human Population and Environment**: Population Growth, World and Indian scenario, Population and Environmental Degradation, Malthusian theory, Optimum theory, Population explosion – Causes, Effects and Control. **Urbanization:** Urban population growth and Environmental Problems.	04	12
3.	**Environment Management:** Disaster management, Solid waste management, Environment Impact assessment & ISO 14001 standards**.**	06	22

Text Book:

Title	Author/s	Publication
Environmental Studies	Anindita Basak	Pearson Publications

Reference Books:

Title	Author/s	Publication
Basics of Environmental Studies	Prof. N.S. Varandani	LAP - Lambert Academic Publishing
Basics of Environmental Studies	Dr. J. P. Sharma	University Science Press
Basics of Environmental Studies	U. K .Khare	Tata McGraw Hill Publications

Environmental Studies	Anindita Basak	Pearson (India)Pvt. Ltd
Environmental Sciences	Daniel B Botkin & Edward A Keller	John Wiley & Sons Publications
Environmental Studies	Dr. Suresh K Dhameja	K Kataria & Sons Publications
Environmental Studies for Undergraduate Courses	Erach Bharucha	Universities Press (India)
Introduction to Environmental Engineering and Science	Gilbert Masters	Prentice-Hall Publication
Basics of Environmental Studies	S.G. Shah, Gopal N. Shah	Superior Publications

Web Material Links:

- http://nptel.ac.in/courses/122102006/
- http://nptel.ac.in/courses/105104099/
- http://nptel.ac.in/courses/122102006/
- http://nptel.ac.in/courses/120108004
- http://nptel.ac.in/courses/105102089/
- http://nopr.niscair.res.in
- http://www.indiaenvironmentportal.org.in

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 student will be able to understand

- multi-disciplinary nature of the environment, its components, and inter-relationship between man and environment.
- relevance and importance of the natural resources in the sustenance of life on earth and living standard.
- importance of ecosystem, biodiversity and natural bio geo chemical cycle.

P P Savani University
School of Engineering

Department of Civil Engineering

Course Code: SECV1060
Course Name: Basics of Engineering Sciences

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	2	0	4	40	60	20	30	0	0	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- study the fundamentals of mechanical systems.
- study and appreciate significance of mechanical engineering in different fields of engineering.
- carry out simple land survey and recent trends in civil engineering.
- understand components of building, building terminology and construction materials.
- understand the basic electrical component.
- understand the working principle, and applications of DC & AC machines.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Mechanical Engineering: An Overview** Prime Movers - Meaning and Classification; Concepts of Thermodynamics: Definitions, systems and, Laws; Fuels Classification: Solid, liquid and gaseous their application.	07	09
2.	**Basics of Steam Generators** Boilers as per IBR, Classification, Functions of Mountings and Accessories.	LAB	08
3.	**Civil Engineering: An Overview** Introduction, Branches, Scope, Impact, Role of Civil Engineer. **Building Materials And Construction:** Introduction (types and properties) to construction materials like Stone, Bricks, Cement, Sand, Aggregates, Concrete, Steel. Classification of buildings, Types of loads acting on buildings, Building components and their functions, Type of foundation and importance, Symbols used in electrical layout, Symbols used for water supply, plumbing and sanitation.	07	16

4.	**Basic Understanding Of Domestic Wiring** Service mains, meter board and distribution board. Elementary discussion on Circuit protective devices: fuse and Miniature Circuit Breaker (MCB's). Electric shock, precautions against shock, Objectives of earthing, types of earthing; pipe and plate earthing, Residual current circuit breaker (RCCB) **Electromagnetic Induction:** Definition Faradays Laws, Fleming's right hand rule, Lenz's Law, Statically and dynamically induced emf. Self-inductance, mutual inductance and coefficient of coupling. Energy stored in magnetic field. Force on current carrying conductor placed in a magnetic field, Fleming's left hand rule.	08	17
Section II			
Module No	Content	Hours	Weightage in %
1.	**Motion and Power Transmission Devices** Coupling, Clutch and Brakes: Classification Applications and differences, Drives: Classification Applications and differences	08	09
2.	**Basics of I.C Engines** Construction and working of 2 stroke & 4 stroke Petrol & Diesel engine, Difference between 2-stroke -4 stroke engine & petrol-diesel engine.	LAB	08
3.	**Introduction yo Surveying And Leveling** Introduction, Fundamental principles, Classification. **Linear measurement:** Instrument used, Chaining on plane ground. **Angular measurement:** Instrument used, Bearing, and Local attraction. **Leveling:** Instrument used, Basic Terminologies, Types of leveling, and Method of leveling. **Introduction to Modern Surveying Equipment's:** Total Station, GIS, GPS	08	17
4.	**Electrical Circuits** **Three phase:** Necessity and advantages of three phase systems, generation of three phase power. Definition of Phase sequence, balanced supply and balanced load. Relationship between line and phase values of balanced star and delta connections. Power in balanced three-phase circuits, measurement of power by two-wattmeter method. Determination power factor using wattmeter readings	07	16

List of Practical:

Sr. No	Name of Practical	Hours
1.	To understand the concepts of steam generators	06
2.	To understand construction and working 2 –stroke & 4 –stroke Petrol Engines	02
3.	To understand construction and working 2 –stroke & 4 –stroke Diesel Engines	02
4.	Star Delta connections	02
5.	Electrical safety demonstrations	02
6.	Electrical wiring system	02
7.	Verifying ohms law	02
8.	Understanding three phase system	02
9.	Unit Conversation exercise	02
10.	Linear Measurement	02
11.	Angular Measurement	02
12.	Determine R.L of given point by Dumpy level without change point	02
13.	Determine R.L of given point by Dumpy level with change point	02

Text Books:

Title	Author/s	Publication
Elements of Mechanical Engineering	S. B. Mathur, S. Domkundwar	Dhanpat Rai & Sons Publications
Elements of Mechanical Engineering	Sadhu Singh	S. Chand Publications
Elements of Civil Engineering	Anurag A. Kandya	Charotar Publication
Surveying Vol. I & II	Dr. B. C. Punamia	Laxmi Publication
Basic Electrical Engineering	V. N. Mittal and A. Mittal	Tata McGraw Hill

Reference Book:

Title	Author/s	Publication
Thermal Engineering	R. K. Rajput	Laxmi Publications
Basic Mechanical Engineering	T.S. Rajan	Wiley Eastern Ltd., 1996
Surveying and Leveling	N. N. Basak	Tata McGraw Hill
Surveying Vol. I	S. K. Duggal	Tata McGraw Hill
Surveying and Leveling	R. Subramanian	Oxford University
Building Construction and Construction Material	G. S. Birdie and T. D. Ahuja	Dhanpat Rai Publishing
Engineering Material	S.C. Rangwala	Charotar Publication
Electrical Safety, Fire Safety Engineering	S. Rao	Khanna Publications
Electrical Estimating & costing	Surjit Singh	Dhanpat Rai & Co

Web Material Links:

- http://nptel.ac.in/course.php
- http://nptel.ac.in/courses/105107157/
- http://nptel.ac.in/courses/105101087/
- http://nptel.ac.in/courses/105107121/
- http://nptel.ac.in/courses/105104100/
- http://nptel.ac.in/courses/108105053/

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 should be evaluated out of 10 for each practical and average of the same will be converted to 10 marks.
- Internal viva component of 10 marks.
- Practical performance/quiz/drawing/test of 15 marks during end semester exam.
- Viva/Oral performance of 15 marks during end semester exam.

Course Outcome(s):

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

- know the principles and working of basic mechanical systems.
- comprehend importance of mechanical engineering in various fields of engineering.
- know about different civil engineering fields with an overview of building material, building construction and knowledge of surveying equipment in civil engineering.
- understand the importance of safety and the precaution to be taken while working with electrical equipment and accessories.
- understand concepts of three phase circuit.

P P Savani University
School of Engineering

Department of Civil Engineering

Course Code: SECV1070
Course Name: Solid Mechanics
Prerequisite Course(s): Engineering Mechanics (SECV1030)

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	2	0	4	40	60	20	30	0	0	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- the stresses developed under the application of force.
- the physical and mechanical properties of materials.
- behavior of structural element under the influence of various loads.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction: Physical & Mechanical Properties of Material** Introduction, Classification of materials, Properties related to axial, bending, and torsional & shear loading, Toughness, hardness, Ductility, Brittleness. Proof stress, Factor of safety, Working stress, Load factor.	04	8
2.	**Simple Stress and Strain** Definition of stress and strain, Tensile &compressive Stresses: Shear and complementary shear Strains, Linear, shear, lateral, thermal and volumetric. Hooke's law, Stresses and strain in bars of Varying, Tapering & Composite section, Principle of Superposition, Elastic Constants: Modulus of elasticity, Poisson's ratio, Bulk modulus, Shear modulus (Modulus of rigidity), Modulus of rigidity.	06	12
3.	**Bending Stress and Strain** Theory of simple bending, assumptions, derivation of flexural formula, second moment of area of common cross sections(rectangular, I,T,C) with respective centroid & parallel axes, bending stress distribution diagrams, moment of resistance & section modulus calculations. Concept, derivation of shear stress distribution formula, shear stress distribution diagrams	08	20

	for common symmetrical sections, maximum and average shears stresses, shear connection between flange & web.		
4.	**Principle Stress and Strain** Two-dimensional system, stress at a point on a plane, principal stresses and principal planes, Mohr's circle of stress	04	10
	Section II		
Module No	Content	Hours	Weightage in %
1.	**Shear Force and Bending Moment** Introduction, Types of loads, supports and beams, Shear force, Bending Moment, Sign conventions for shear force & Bending moment. Statically determinate beam, support reactions, SFD and BMD for concentrated load and uniformly distributed load, uniformly varying load, Point of contra-flexure.	7	20
2.	**Column and Strut** Introduction, Failure of a column and strut, Euler's column theory, Types of end conditions of columns, Columns with both ends hinged, Columns with one end fixed and the other hinged, Euler's formula and Equivalent length of a column, Slenderness Ratio, Limitations of Euler's Formula.	10	18
3.	**Torsion** Derivation of equation of torsion, Assumptions, application of theory of torsion equation to solid & hollow circular shaft, torsional rigidity, Power Transmitted by shaft, Polar moment of Inertia.	06	12

List of Practical:

Sr. No	Name of Practical	Hours
1.	Tensile test on Ductile materials (Mild steel, Copper, Wood)	04
2.	Tensile test on Brittle Materials (Cast iron, Concrete)	04
3.	Compression test on Ductile materials (Mild steel, Copper, Wood)	04
4.	Compression test on Brittle Materials (Cast iron, Concrete)	04
5.	Determination of hardness of metals (Brinell hardness test)	02
6.	Determination of impact of metals (Izod/Charpy impact test)	02
7.	Tutorials on Principle stress & Principle strain.	04
8.	Tutorials on SFD & BMD.	04
9.	Tutorials on Column & Strut.	02

Text Book:

Title	Author/s	Publication
Strength of Materials (SI Units)	R S Khurmi, N Khurmi	S. Chand& Company Pvt. Ltd.

Reference Books:

Title	Author/s	Publication
Strength of Materials (SI Units)	Er. R . K. Rajput	S. Chand & Company Pvt. Ltd.
Mechanics of Structure-Vol. I	Dr. H.J. Shah & S. B. Junarkar	Charotar Publishing House Pvt. Ltd.
Strength of materials	R. Subramanian	Oxford Publications
Strength of materials	S. Ramamrutham	Dhanpat Rai Publishing Company

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/Tutorial:

- Continuous evaluation consists of performance of practical/tutorial which should be evaluated out of 10 for each practical/tutorial and average of the same will be converted to 10 marks.
- Internal viva component of 10 marks.
- Practical performance/quiz/drawing/test of 15 marks during End Semester Exam.
- Viva/Oral performance of 15 marks during end semester exam.

Course Outcome(s):

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

- Apply mathematical knowledge to calculate the deformation behavior of simple structure.
- Critically analyze problem and solve the problem related to mechanical elements and analyze the deformation behavior for different types of loads.
- Understand the different types of stresses and strains developed in the member subjected to axial, bending, shear & torsional effects.
- Understand the physical properties of materials.

P P Savani University
School of Engineering

Department of Mechanical Engineering

Course Code: SEME1010
Course Name: Engineering Graphics

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	4	0	5	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners

- to know conventions and the methods of engineering drawing.
- how to interpret engineering drawings using fundamental technical mathematics?
- how to construct basic and intermediate geometry?
- to improve their visualization skills so that they can apply these skills in developing new products.
- to improve their technical communication skill in the form of communicative drawings.
- to comprehend the theory of projection.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction** Importance of subject; 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 and Spiral along with normal and tangent to Each.	06	15
3.	**Principles of Projections** Types of Projections; Introduction of Principle Planes of Projections. **Projection of Points & Line:** Projection of Points in all four Quadrants; Projection of Lines with its inclination to one referral plane and two referral planes.	14	30

	Projection of Plane: Projection of Planes (Circular and Polygonal) with inclination to one referral plane and two referral planes; Concept of Auxiliary Projection Method.		
Section II			
Module No	Content	Hours	Weightage in %
1.	**Projection and Section of solids** **Projection of solids:** polyhedral, prisms, pyramids, cylinder, cone, auxiliary projection method, one view, two view and three view drawings. Missing view, rules for selection of views; Sectional view, section plane perpendicular to the HP & VP and other various positions, true shape of sections.	08	20
2.	**Orthographic projection** 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.	07	18
3.	**Isometric projections and isometric drawing** Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing.	07	12

List of Practical:

Sr No	Name of Practical	Hours
1.	Introduction sheet (dimensioning methods, different types of line, construction of different polygon, divide the line and angle in parts, use of stencil, lettering)	08
2.	Plane scale and diagonal scale	04
3.	Engineering curves	08
4.	Projection of Points & Lines	06
5.	Projection of Planes	08
6.	Projection of solid & Section of solid	10
7.	Orthographic projection	08
8.	Isometric projection	08

Text Books:

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

Reference Books:

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

Web Material Links:

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

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/Tutorial:

- Continuous Evaluation Consist of Performance of Practical/Tutorial which should be evaluated out of 10 for each practical/Tutorial and average of the same will be converted to 20 Marks.
- Internal Viva component 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 completion of the course, the student will be able to

- know and understand "Drawing is a language of Engineers."
- interpret general assembly technical drawing.
- create traditions and the strategies for Engineering Drawing.
- evaluate basic and intermediate geometry.
- apply the knowledge of principles of projections.
- develop their hallucination/imagination skills.
- enhance their technical communication skill in the form of talkative drawings.

P P Savani University
School of Engineering

Department of Mechanical Engineering

Course Code: SEME1020
Course Name: Engineering Workshop

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
0	2	0	1	0	0	50	0	0	0	50

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:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction** Introduction to various shops / sections and workshop layouts, Safety norms to be followed in a workshop	-	-
2.	**Fitting Shop** Introduction of Fitting Shop; Safety; Making a Job As per Drawing including Marking and other Performing Operations.	-	-
3.	**Carpentry and Drilling Shop** Introduction of Carpentry Shop; Preparation of Job as per Drawing including Marking and other Performing Operations.	-	-
4.	**Sheet Metal Shop** Introduction of Sheet Metal Shop; Preparation of Job as per Drawing including Marking and other Performing Operations	-	-
5.	**Smithy Shop** Introduction of Sheet Metal Shop; Preparation of Job as per Drawing including Marking and other Performing Operations	-	-
6.	**Introduction to Machine Tools** Introduction and Demonstration of various machine tools like Lathe, Drilling, Grinding, Hack saw Cutting etc.	-	-
7.	**Introduction to Welding & Plumbing** Introduction and Demonstration of Welding process. Introduction and Demonstration of Plumbing Shop.	-	-

List of Practical:

Sr No	Name of Practical	Hours
1.	Introduction and Demonstration of Safety Norms. Different Measuring Instruments	02
2.	To Perform a Job of Fitting Shop	06
3.	To Perform a Job of Carpentry Shop	06
4.	To Perform a Job of Sheet metal Shop	06
5.	To Perform a Job of Black Smithy Shop	04
6.	Introduction and Demonstration of Grinding & Hacksaw Cutting Machine	02
7.	Introduction and Demonstration of Plumbing Shop & welding process	04

Text Books:

Title	Author/s	Publication
Elements of Workshop Technology Vol. I	Hajra Chaudhary S.K	Media promoters & Publishers
Workshop Technology Vol. I and II	Raghuvanshi B. S.	Dhanpat Rai & Sons

Reference Books:

Title	Author/s	Publication
Workshop Technology Vol. I	W.A.J. Chapman	Edward Donald Publication
Workshop Practices	H S Bawa	Tata McGraw-Hill
Basic Machine Shop Practice Vol. I, II	Tejwani V.K	Tata McGraw-Hill

Web Material Links:

- http://nptel.ac.in/course.php

Course Evaluation:

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical/Tutorial and average of the same will be converted to 30 Marks.
- Internal Viva component of 20 Marks.

Course Outcome(s):

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

- use various measuring instruments.
- know the importance of safety norms required in workshop.
- understand the application of various tools required for different operation.
- understand how to manufacture product from given raw material.
- come to know the use of machine tools, hand tools and power tools.

P P Savani University
School of Engineering

Department of Mechanical Engineering

Course Code: SEME1040
Course Name: Concepts of Engineering Drawing

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	2	0	3	40	60	20	30	0	0	150

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners

- to know conventions and the methods of engineering drawing.
- how to interpret engineering drawings using fundamental technical mathematics?
- how to construct basic and intermediate geometry?
- to improve their visualization skills so that they can apply these skills in developing new products.
- to improve their technical communication skill in the form of communicative drawings.
- to comprehend the theory of projection.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction** Importance of subject; 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.	07	25
2.	**Engineering Curves** Classification and Application of Engineering Curves; Construction of Conics, Cycloidal Curves, Involutes and Spiral along with normal and tangent to Each.	08	25

Section II			
Module No	Content	Hours	Weightage in %
	Orthographic Projection Types of Projections: Principle of first and third angle projection -applications & Difference; Projection from Pictorial view of Object, View from Front, Top and Sides.	08	25
1.	**Isometric Projections and Isometric Drawing** Isometric Scale, Conversion of orthographic views into isometric projection, isometric view or drawing.	07	25

List of Practical:

Sr No	Name of Practical	Hours
1.	Introduction sheet (dimensioning methods, different types of line, construction of different polygon, divide the line and angle in parts, use of stencil, lettering, Plane scale and diagonal scale)	10
2.	Engineering curves	07
3.	Orthographic projection	07
4.	Isometric projection	06

Text Books:

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

Reference Book:

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

Web Material Links:

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

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/Tutorial:

- Continuous Evaluation Consist of Performance of Practical/Tutorial which should be evaluated out of 10 for each practical/Tutorial and average of the same will be converted to 10 Marks.
- Internal Viva component of 10 Marks.
- Practical performance/quiz/drawing/test of 15 Marks during End Semester Exam.
- Viva/Oral performance of 15 Marks during End Semester Exam.

Course Outcome(s):

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

- know and understand "Drawing is a language of Engineers."
- interpret general assembly technical drawing.
- create traditions and the strategies for Engineering Drawing.
- evaluate basic and intermediate geometry.
- apply the knowledge of principles of projections.
- develop their hallucination/imagination skills.
- enhance their technical communication skill in the form of talkative drawings.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE1010
Course Name: Basics of Computer and Programming
Prerequisite Course(s): Basic Knowledge of Computer

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	2	0	4	40	60	20	30	0	0	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand basic components of computer system.
- identify appropriate approach to computational problems.
- develop logic building and problem-solving skill.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction to computer and its architecture** Introduction and Characteristics, Generation, Classification, Applications, Central Processing Unit and Memory, Communication between various units, processor speed, multiprocessor system	05	10%
2.	**Memory and various Input and Output devices** Introduction to Memory, Memory hierarchy, Primary memory and its type, Secondary memory, Classification of Secondary memory, Various secondary storage devices and their functioning, their merits and demerits	05	10%
3.	**Operating Systems and Computer Languages** Evolution of Operating System, types and functions of operating systems, Evolution and classification of programming language, Selection of a programming language	04	08%
4.	**Introduction to C Programming** Features of C language, structure of C Program, Development of program, Algorithm and flowchart , Types of errors, debugging, tracing/stepwise execution of program, watching variables values in memory	04	10%

5.	**Constants, Variables and data Types** Character Set, C tokens, Keyword, Constants and Variables, Data types - Declaration and initialization, User define type declarations typedef, enum, basic input and output operations, symbolic constants	04	12%
	Section II		
Module No	Content	Hours	Weightage in %
6.	**Operators and Expression and Managing I/O operations** Introduction to Operators and its types, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associatively; Introduction, reading a character, writing a character, formatted input, formatted output.	05	10%
7.	**Conditional statement and branching** Decision Making & branching: Decision making with If & If ... Else statements, If - Else statements (Nested Ladder), The Switch & go-to statements, The turnery (?:) Operator Looping: The while statement, The break statement & The Do. While loop, The FOR loop, Jump within loops - Programs.	07	16%
8.	**Arrays and Strings** Introduction to array, One dimensional array, Two dimensional arrays, Declaring and initializing string variables, Arithmetic operations on Characters, Putting strings together, Comparison of two strings, Basic String Handling Functions	06	12%
9.	**User-Defined Functions, Structure and Unions** Concepts of user defined functions, prototypes, definition of function, parameters, parameter passing, calling a function, recursive function Introduction, Structure definition, declaring and initializing Structure variables, Accessing Structure members, Unions	05	12%

List of Practical/Tutorial:

Sr No	Name of Practical/Tutorial	Hours
1.	Introduction to Unix Commands	04
2.	Word Processing, Spreadsheets and Presentation Exercises	06
3.	Basic C Programs	04
4.	Implementation in C for conditional statement and branching	06
5.	Implementation in C for Array and Strings	06
6.	Implementation in C for Functions, Structures and Unions	04

Text Books:

Title	Author/s	Publication
Programming in ANSI C	E. Balagurusamy	Tata McGraw Hill
Introduction to Computer Science	ITL Education Solutions Limited	Pearson Education

Reference Books:

Title	Author/s	Publication
Programming in C	Ashok Kamthane	Pearson
Let Us C	Yashavant P. Kanetkar	Tata McGraw Hill
Introduction to C Programming	Reema Thareja	Oxford Higher Education
Programming with C	Byron Gottfried	Tata McGraw Hill

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical and average of the same will be converted to 10 Marks.
- Internal Viva component of 10 Marks.
- Practical performance/quiz/test of 15 Marks during End Semester Exam.
- Viva/Oral performance of 15 Marks during End Semester Exam.

Course Outcome(s):

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

- learn the fundamentals of programming.
- develop efficient programs with their own logic & capabilities.
- Understand the syntax and semantics of the 'C' language.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE1020
Course Name: Introduction to Computer Programming
Prerequisite Course(s): Basic Knowledge of Computer

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	4	0	5	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand basic components of computer system.
- identify appropriate approach to computational problems.
- develop logic building and problem solving skills.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction to Computers** Introduction, Central Processing Unit, Main Memory Unit, Interconnection of units, Communication between units of a computer system; Memory representation and hierarchy, Random Access Memory, Read-only Memory, Classification of secondary storage devices, types of I/O devices; Classification of programming languages, generations of programming languages- Machine Language, Assembly Language, High-level Language, 4GL.	04	10
2.	**Introduction to C, Constants, Variables and data Types** Features of C language, structure of C Program, Flow Charts and Algorithms Types of errors, debugging, tracing/stepwise execution of program, watching variables values in memory; Character Set, C tokens, Keyword and Identifiers, Constants and Variables, Data types - Declaration and initialization, User define type declarations - typedef, enum, basic input and output operations, symbolic constants, Overflow and underflow of Data.	06	15

3.	**Operators, Expressions, and Managing I/O operations** Introduction to Operators and its types, Evaluation of expressions, Precedence of arithmetic operators, Type conversions in expressions, Operator precedence and associatively; Introduction, reading a character, writing a character, formatted input formatted output.	05	10
4.	**Conditional statements** Decision Making & branching: Decision making with If and If... Else statements, Nesting of If... Else statements, The Switch and go-to statements, The turnery (? :) Operator Looping: The while statement, The break statement & The Do. While loop, The FOR loop, Jump within loops - Programs.	07	15
Section II			
Module No	Content	Hours	Weightage in %
1.	**Arrays** Introduction, One-dimensional arrays, Two-dimensional arrays, Concept of Multidimensional arrays, Dynamic arrays	05	12
2.	**Strings** Declaring and initializing string variables, Arithmetic operations on Characters, Putting strings together, Comparison of two strings, String Handling Functions	04	10
3.	**User-Defined Functions** Concepts of user defined functions, prototypes, definition of function, parameters, parameter passing, calling a function, recursive function	04	10
4.	**Structure and Unions** Introduction, Structure definition, declaring and initializing Structure variables, Accessing Structure members, Copying & Comparison of structures, Arrays of structures, Arrays within structures, Structures within Structures, Structures and functions, Unions	04	08
5.	**Pointers and File management** Basics of pointers, chain of pointers, pointer and array, Pointer to array, array of pointers; Introduction to file management and its functions	06	10

List of Practical/Tutorial:

Sr No	Name of Practical/Tutorial	Hours
1.	Introduction to Unix Commands	08
2.	Basics C Programs	04
3.	Implementation in C for Control statements	16
4.	Implementation in C for Array and Functions	16
5.	Implementation in C for structure and pointer	10
6.	Implementation in C for file handling operations	06

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

Text Books:

Title	Author/s	Publication
Programming in ANSI C	E. Balagurusamy	Tata McGraw Hill
Introduction to Computer Science	ITL Education Solutions Limited	Pearson Education

Reference Books:

Title	Author/s	Publication
Programming in C	Ashok Kamthane	Pearson
Let Us C	Yashavant P. Kanetkar	Tata McGraw Hill
Introduction to C Programming	Reema Thareja	Oxford Higher Education
Programming with C	Byron Gottfried	Tata McGraw Hill

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical and average of the same will be converted to 30 Marks.
- Internal Viva component of 10 Marks.
- Practical performance/quiz/test of 50 Marks during End Semester Exam.
- Viva/Oral performance of 10 Marks during End Semester Exam.

Course Outcome(s):

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

- learn the fundamentals of programming.
- develop efficient programs with their own logic & capabilities.
- understand the syntax and semantics of the 'C' language.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE1030
Course Name: Programming with Python

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	4	0	5	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help leaners to
- understand basics of object-oriented programming.
- identify appropriate approach to computational problems.
- develop logic building and problem-solving skills.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction** Basic computer architecture, how a program works, including the concepts of stored instructions, and fetch-decode execute cycle, and multi-tasking, Compare and contrast machine language, assembly language, and high-level languages, Data encoding techniques: binary/decimal conversion and the ASCII table, Hello World program.	03	5
2.	**Input, Processing and Output** Designing a program, Input and output functions, Python2 v. Python3, Variable types and assignment, Using mathematical operators, Documenting a program.	06	15
3.	**Decision Structures and Boolean Logic** The Java Environment: Java Program Development, Java Source File Structure, Compilation Executions, Basic Language Elements: Lexical Tokens, Identifiers, Keywords, Literals, Comments, Primitive Data-types, Operators, Introduction to repetition structures, the while loop, The for loop, Calculating a running total, Sentinels, Nested Loops.	05	10

4.	**Functions, Lists and Tuples** Introduction to functions, designing custom functions, Local variables, scope of variables, Passing Arguments to functions, and returning values, Local variables, global variables and global constants, Libraries, Sequences, Lists and list slicing, List methods and built-in functions, Copying and processing lists, Two-dimensional Lists, Tuples.	09	20
Section II			
Module No	Content	Hours	Weightage in %
1.	**Array and Strings** Arrays, Basic strings, String slicing, Testing, searching and manipulating strings.	04	10
2.	**Dictionary and Sets** Dictionaries, Sets, Problem Solving Techniques, Top down design, Bottom Up implementation	05	15
3.	**Object -Oriented Programming Concepts** Procedural and Object -Oriented programming, Classes Working with instances, Designing classes.	06	15
4.	**Files** Introduction to file input and output, Using loops to process files, Processing records, Exceptions.	02	10

List of Practical/Tutorials:

Sr No	Name of Practical/Tutorial	Hours
1.	Introduction to Python Environment and Idles.	02
2.	Class and Functions in Python.	08
3.	Dictionaries, Sets, Tuples and Lists in python.	04
4.	Arrays and Strings in Python	04
5.	File Handling in Python.	06

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

Text Book:

Title	Author/s	Publication
Learning to Program with Python	Richard L. Halter man	Pearson

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical and average of the same will be converted to 30 Marks.
- Internal Viva component of 10 Marks.
- Practical performance/quiz/test of 50 Marks during End Semester Exam.
- Viva/Oral performance of 10 Marks during End Semester Exam.

Course Outcome(s):

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

- learn the fundamentals of object-oriented programming.
- develop efficient programs with their own logic & capabilities.
- understand the syntax and semantics of the 'Python' language.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT1010
Course Name: Introduction to Web Designing

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
0	4	0	2	0	0	50	50	0	0	100

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand basic components of internet.
- learn basic web technologies such as HTML, JavaScript and CSS.
- develop basic knowledge of website designing.

Course Content:

Module	Content	Hours	Weightage
1.	Introduction to World Wide Web, Web Server, Website, Website design principles, planning the website, navigation, Introduction to HTML, CSS, Bootstrap CSS	60	100%

List of Practical/Tutorial:

Sr No	**Name of Practical/Tutorial**	**Hours**
1.	Implementation of HTML tags	20
2.	Designing Websites with basic CSS	5
3.	Designing of Responsive Website Designs using Bootstrap CSS	5
4.	Development of mini project based on HTML, CSS and Bootstrap CSS	30

Reference Book:

Title	**Author/s**	**Publication**
HTML Black Book	Steven Holzner	Dreamtech press

Web Material Links:
https://www.w3schools.com/

Course Evaluation:

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical and average of the same will be converted to 50 Marks.
- Prepared Project during practical hours will be evaluated as a part of end semester evaluation which carries 50 Marks weightages.

Course Outcome(s):

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

- learn the fundamentals of Website designing.
- apply knowledge of HTML, CSS, and JavaScript to build static and dynamic websites.

P P Savani University
School of Engineering

Department of Science & Humanities

Course Code: SESH1010
Course Name: Elementary Mathematics for Engineers
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	-	-	50	0	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- summarize concepts of calculus to enhance ability of analyzing mathematical problems.
- acquire knowledge and ability to work with differentiation and integration for applications of mathematical techniques in engineering.
- make use of multiple integration for finding area, volume and mass of solid objects.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction to Limit, Continuity & Differentiation** Limits, Continuity, Discontinuity, Types of discontinuity, Successive Differentiation, Rolle's Theorem, Lagrange's Mean Value Theorem, Cauchy's Mean Value Theorem	6	15
2.	**Sequence and Infinite Series** Convergence, Divergence of sequence, Divergence of infinite series, Tests for convergence of series (Comparison, Integral, Ratio and Root), Alternating series, Absolute and Conditional convergence, Power series with applications, Taylor's and Maclaurin's series, Indeterminate forms($0/0$, ∞/∞, $\infty.0$, $\infty - \infty$, 0^{∞}, ∞^{0} & 1^{∞}).	10	20
3.	**Curve tracing** Tracing of Cartesian Curves, Polar coordinates, Polar and Parametric form of standard curves, Areas and Lengths in polar coordinates	7	15

Section II			
Module No	Content	Hours	Weightage in %
1.	**Partial Derivatives** Function of several variables, Partial differentiation, Applications, Chain rule, Tangent planes and Linear approximations, Maxima and Minima, Euler's theorem, Lagrange multiplier, Total differentiation.	8	18
2.	**Beta Gama function** Improper Integrals, Beta and Gamma function with their properties and duplications formula without proof.	4	12
3.	**Multiple Integrals** Double integral (in Cartesian and Polar coordinates), Triple integral (in Cartesian, Cylindrical and Spherical coordinates), Change order of integration, Change of variables, Applications of double and triple integrals for evaluation of Area, Volume and Mass.	10	20

List of Tutorial:

Sr No	Name of Tutorial	Hours
1.	Limit, Continuity & Differentiation	4
2.	Sequence and Infinite Series -1	3
3.	Sequence and Infinite Series-2	3
4.	Curve Tracing-1	3
5.	Curve Tracing-2	2
6.	Partial Derivatives-1	3
7.	Partial Derivatives-2	3
8.	Beta Gama Function	2
9.	Multiple Integrals-1	4
10.	Multiple Integrals-2	3

Text Book:

Title	Author/s	Publication
Thomas' Calculus	George B. Thomas, Maurice D. Weir, Joel Hass	Pearson

Reference Books:

Title	Author/s	Publication
Advanced Engineering Mathematics	Erwin Kreyszig	Wiley India Edition
Calculus with Early Transcendental Functions	James Stewart	Cengage Learning
Calculus	Robert T. Smith, Roland B. Minton	Tata McGraw Hill
Engineering Mathematics-1(Calculus)	H. K. Dass, Dr. Rama Verma	S. Chand

Web Material Links:

- http://nptel.ac.in/courses/111104085/
- http://nptel.ac.in/courses/111104095/
- http://nptel.ac.in/courses/111105069/

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.

Tutorial:

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

Course Outcome(s):

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

- make use of concepts of limit, continuity and differentiability for analyzing mathematical problems.
- examine series for its convergence and divergence.
- formulate differential and integral operations.
- evaluate functions like Gamma, Beta functions & their relation which is helpful to evaluate some definite integral arising in various branch of engineering.
- applications of Limit, Derivatives and Integrals.

P P Savani University
School of Engineering

Department of Science & Humanities

Course Code: SESH1020
Course Name: Linear Algebra & Vector Calculus

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	-	-	50	0	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- analyze 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 and vector calculus for solving science and engineering problems.

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 (Homogeneous and Non-homogeneous), Characteristic equation, Eigenvalues, Eigenvector, Diagonalization, Caley-Hamilton theorem,.	9	20
2.	**Vector Space** Vector spaces, Subspaces, Linear Combination, Linear Dependence, Linear Independence, Span, Basis and Dimension, Row space, Column space and Null space, Rank and Nullity	8	18
3.	**Linear Transformation** Introduction Linear Transformation, Kernel and Range, Inverse Linear Transformation, Matrix representation of Linear Transformation	6	12

Section II			
Module No	Content	Hours	Weightage in %
1.	**Inner Product Space** Inner products, Angle and Orthogonality, Orthogonal projection, Orthonormal bases (Gram-Schmidt Process, QR-Decomposition), Least Square Approximation, Change of basis.	8	18
2.	**Vector Calculus and its Applications** Vector & Scalar functions and Fields, Curve, Arc length, Curvature & Torsion gradient of scalar field, Directional derivative divergence of a vector field, Curl of a vector field	7	16
3.	**Integral Calculus** Line integrals, Path Independence of line integrals, Green`s theorem in the plane, Surface integrals, Divergence theorem of Gauss, Stokes`s theorem	7	16

List of Tutorial:

Sr No	Name of Tutorial	Hours
1.	Matrix Algebra-1	4
2.	Matrix Algebra-2	4
3.	Vector Space-1	3
4.	Vector Space-2	2
5.	Vector Space-3	2
6.	Inner Product Space-1	4
7.	Vector Calculus-1	2
8.	Vector Calculus-2	3
9.	Integral Calculus-1	3
10.	Integral Calculus-2	3

Text Books:

Title	Author/s	Publication
Elementary Linear Algebra Applications Version	Howard Anton, Charis Rorres	Wiley India Edition
Thomas' Calculus	George B. Thomas, Maurice D. Weir, Joel Hass	Pearson

Reference Books:

Title	Author/s	Publication
Advanced Engineering Mathematics	Erwin Kreyszig	Wiley India Edition
Higher Engineering Mathematics	B. V. Ramana	Tata McGraw Hill
Linear Algebra and its Applications	David C. Lay	Pearson
Introduction to Linear Algebra with Application	Jim Defranza, Daniel Gagliardi	Tata McGraw Hill
Elementary Linear Algebra	Ron Larson	Cengage Learning

Web Material Links:

- http://nptel.ac.in/courses/111106051/
- http://nptel.ac.in/courses/111108066/
- http://nptel.ac.in/downloads/111102011/
- http://epgp.inflibnet.ac.in/view_f.php?category=1564

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.

Tutorial:

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

Course Outcome(s):

By the end of the course, the student will be able to

- solve linear system using matrices.
- understand the concepts of Vector Space, Linear Transformation and inner product space.
- summarize vector functions, their derivatives, integrals, arc length and curl of vector field.
- apply the fundamental concepts of calculus to understand integrals calculus.

P P Savani University
School of Engineering

Department of Applied sciences & Humanities

Course Code: SESH1030
Course Name: Electronics Workshop

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
0	2	0	1	0	0	40	60	0	0	100

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand basic fundamental electronic circuit.
- learn to use common electronic component.
- understand components of instruments, terminology and applications.

List of Practical:

Sr No	Name of Practical	Hours
1	Understanding of electronic component with specification.	4
2	Basic Circuit Diagram.	2
3	Study of CRO & Measurement of Voltage Amplitude & Frequency	2
4	To construct logic gates AND, NOT, EX-NOR and EX-OR using NANAD gates and verify their truth tables.	4
5	Introduction to Electronic Virtual Laboratory	4
6	Analog to digital converter.	3
7	Digital to analog convertor	3
8	Operational amplifier lab	4
9	Bread board understanding.	2
10	Introduction to CRO.	2

Text Book:

Title	Author/s	Publication
Electronic Principles	Albert Malvino and David J Bates	Mc Graw Hill(7th Edition)

Reference Book:

Title	Author/s	Publication
Electronic Devices	Thomas L. Floyd	Pearson (7th Edition)
Electronic Devices and Circuits	David A. Bell	Oxford Press (5th Edition)
Integrated Electronics	Jacob Millman, Christos	Tata McGraw Hill (2nd Edition)

Course Evaluation:

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical and average of the same will be converted to 10 Marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test of 15 Marks during End Semester Exam.
- Viva/Oral performance of 15 Marks during End Semester Exam.

Course Outcome(s):

- Students will be able to design elementary combinational and sequential circuits.

P P Savani University
School of Engineering

Department of Science & Humanities

Course Code: SESH1210
Course Name: Applied Physics
Prerequisite Course(s): Concept of Physics and Mathematics up to 12th Science

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	2	0	4	40	60	20	30	0	0	150

CE: Continuous Evolution, ESE: End Semester Exam

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

- prepare students for careers in engineering where physics principles can be applied to the advancement of technology.
- think in core concept of engineering application by studying various topics involved in branch specific application.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Quantum Mechanics** Wave-Particle duality, de-Broglie matter wave, phase and group velocity, Heisenberg uncertainty principle and its applications, wave function and its significance, Schrodinger's wave equation, particle in one dimensional box.	08	20
2	**Acousic And Ultrasonic** Introduction, classification and characterization of sound, Absorption Coefficients, Sound Absorbing materials, Sound Insulation, Ultrasonic, Properties of Ultrasonic, Generation of Ultrasonic applications of ultrasonic.	06	15
3	**Solid State Physics** Introduction, Lattice Points and space lattice, unit cells and lattice parameters, Primitive cell, Crystal systems. The Bravais space lattices. Miller indices, X-Ray properties, Diffraction and Bragg's law, Bragg's X-Ray spectrum	07	15

Section II			
Module No	Content	Hours	Weightage in %
1.	**Non-Linear Optics** LASER, Spontaneous and Stimulated emission of light, applications of LASER; Fundamental ideas about Optical fibre, Advantages of Optical fibre of optical fibre, Applications of optical fibre.	06	12
2.	**DC and AC Circuits Fundamentals** Introduction of Electrical Current, Voltage, Power and Energy; Sources of Electrical Energy Inductor and Capacitor, Fundamental laws of electric circuits – Ohm's Law and Kirchhoff's Laws; Analysis of series, parallel and series-parallel circuits. Alternating voltages and currents and their vector and time domain representations, average and RMS values, from factor, phase difference, power and power factor, purely resistive inductive and capacitive circuits, R-L, R-C, R-L-C series circuits, impedance and admittance, circuits in parallel, series and parallel resonance.	12	25
3.	**Electronics** Semiconductors, Intrinsic and Extrinsic Semiconductor Advantages of Semiconductor Devices, Diodes, Transistors, Types of Bipolar Junction Transistor, Unijunction Transistor, FET and MOSFETS.	06	13

List of Practical:

Sr. No.	Name of Practical	Hours
1	Volt-Ampere Characteristics of Light Emitting Diode	02
2	Volt-Ampere Characteristics of Zener Diode	02
3	To determine value of Planck's constant (h) using a photovoltaic cell	02
4	To determine the Hall coefficient (R) and carrier concentration of a given material (Ge) using Hall effect	04
5	To study the Capacitors in series and parallel DC circuit	04
6	To study hysteresis loop for a magnetic material on CRO	02
7	To determine velocity of sound in liquid using Ultrasonic Interferometer	04
8	To study RLC Series circuit	02
9	To determine numerical aperture of an optical fiber	02
10	Determination of Young's Modulus of given material	02
11	Analysis of errors	02

Text Books:

Title	Author / s	Publication
Concept of the Modern Physics	A. Beiser	Tata McGraw-Hill Education
Quantum Mechanics	P.M. Mathew,K. Venkatesan	Tata McGraw-Hill Education
Waves and Acoustics	Pradipkumar Chakrabarti Satyabrata Chawdhary	New Central Book Agency
Lasers and Nonlinear Optics	G.D. Baruah	Pragati Prakashan
Solid State Physics	S.O. Pillai	New Age International Publishers
Basic Electronics for Scientists and Engineers	Dennis L. Eggleston	Cambridge University Press

Web material Link:
http://nptel.ac.in/course.php

Course Evaluation:
Theory:

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

Practical:

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

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

- use appropriate mathematical techniques and concepts to obtain quantitative solutions to problems in physics & electrical.
- perform a literature search, to make use of appropriate computational of laboratory skill, and to make an effective written or oral presentation of the results of the project.

P P Savani University
School of Engineering

Department of Science & Humanities

Course Code: SESH1220
Course Name: Chemistry

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	2	0	4	40	60	25	25	-	-	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- present sound knowledge of chemistry fundamentals, enriching students to understand the role of Chemistry in the field of science and engineering.
- inculcate habit of scientific reasoning to do the task rationally.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Chemical Bonding and Structure of Molecules** **General terms**: Chemical bond, valence, valence electrons, Bonding and Non bonding electrons, Lewis symbols, Octet rule. **Ionic bond**: Definition, Condition for formation of ionic bond, Factors governing formation of ionic bond, examples (NaCl, $MgCl_2$, CaO, Al_2O_3), Characteristics of ionic compounds. **Covalent bond:** Definition, conditions for covalent bond formation, examples [(single covalent bond: H_2, Cl_2, H_2O, NH_3, CH_4) (multiple covalent bond: O_2, N_2, CO_2)], General characteristics of covalent compounds, valence bond approach, formation of H_2 molecule, Concept of hybridization, Hybridization and shape of molecules, Shape of water, ammonia, PCL5 and SF6, Limitations of Valence bond theory, VSEPR theory, Fajan's rules. **Co-ordinate covalent bond:** Definitions, examples (NH_4^+, H_3O^+, BF_4^-, CH_3NO_2, SO_3, $AlCl_3$, SO_4^{-2}, O_3 and CO. **Hydrogen bonding:** Definition, conditions for H-bond formation, examples (HF, H_2O, NH_3, 2-nitrophenol), Types of H-bonds, Characteristics of H-bonded compounds.	09	20

	Metallic bond: Definition, The Electron sea model, explanation to the physical characteristics of metal based on the electron sea model.		
2.	**Electrochemistry** Introduction, Arrhenius ionic theory, De-bye Huckel theory of strong electrolytes, activity and activity co-efficient, Conductivity of electrolytes, Kohlrausch's law of independent migration of ions, Ostwald's dilution law, Acids and bases, Concept of pH and pOH, Buffer solutions, Solubility product, common-ion effect, hydrolysis of salts, conductometric titration, transport number.	04	09
3.	**Reaction Intermediates in organic reaction** (Definition and example only) Homolytic and Heterolytic bond fission, Nucleophiles and electrophiles, Leaving group; Stability, Generation, Reaction and applications of reaction intermediates (Carbocations, Carbanions, Free radicals, Carbenes, Nitrenes, Benzynes)	09	20
Section II			
Module No	Content	Hours	Weightage in %
1.	**Bio Chemistry** Introduction to metabolism in a cell. Overview of metabolic pathways. Regulation of Pathways at : (a) BioChemical Level and (b) Genetic Level. Chemicals from metabolic Pathways using microorganism.	07	15
2.	**Phyto Chemistry** Chemicals from Plants. Secondary Metabolites and their medicinal values. Future prospects of phytochemistry in chemical manufacturing and in the treatment of diseases; Role of Chemical Engineers in the Phytochemical industry	04	10
3.	**Water Treatment** Introduction, Characteristics imparted by impurities in water, Hardness of water, equivalents of calcium carbonate, units of hardness, disadvantages of hard water, scale and sludge formation in boilers, caustic Embrittlement, boiler corrosion, Priming and Foaming, softening methods, Drinking or Municipal water, Desalination of Brackish water.	07	15
4.	**Colloids** Lyophilic and Lyophobic colloids, Characteristics of lyophilic and lyophobic sols, preparation of sols, Dispersion methods, Aggregation methods, Purification of sols, Dialysis, optical properties of sols: Tyndall effect, kinetic properties of sols, Brownian movement, Electrical properties of sols: Electrophersis, Stability of sols, associated colloids, cleansing action of soaps and detergents, emulsions, gels, applications of	05	10

	colloids, determination of molecular weight of macromolecules.		

List of Practical/Tutorial:

Sr. No	Name of Practical	Hours
1.	Introduction to chemistry laboratory – Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Quantitative analysis etc.	2
2.	Demonstration: Preparation of solutions of different concentrations	2
3.	Determination of alkalinity in the given water sample.	2
4.	Determination of temporary and permanent hardness in water sample using EDTA as standard solution.	2
5.	Conduct metric titration of strong acid vs. strong base.	2
6.	Determination of critical micelle concentration of a surfactant using conductometry.	2
7.	Determination of concentration of unknown solution spectrophotometrically.	2
8.	Determining the strength of ferrous ammonium sulfate with the help of $K_2Cr_2O_7$.	2
9.	Determination of dissociation constant of strong acid by pH metric method.	2
10.	To determine the critical micelle concentration of a surfactant using surface tension method.	2
11.	Determination of molecular weight of a polymer by using viscometer.	2
12.	To determine λ max of the solution of (a) $KMnO_4$ (b) $K_2Cr_2O_7$.	2
13.	Determination of cloud point of a surfactant in the presence of salts.	2
14.	To determine the viscosity of given solvents using viscometer.	2
15.	Revision	2

Text Book:

Title	Author/s	Publication
Engineering Chemistry (16th Edition)	P.C. Jain and Monika Jain	Dhanpat Rai publishing company

Reference Books:

Title	Author/s	Publication
Textbook of Engineering Chemistry (4th Edition)	R. Gopalan, D. Venkappaya, S. Nagarajan	Vikas Publishing house Ltd.
A textbook of Chemical technology (Volume-1)	G. N. Pandey	Vikas Publishing house Ltd.
Essentials of Physical Chemistry	A.Bahl, B.S. Bahl and G.d. Tuli	S. Chand Publishing
Concise Inorganic Chemistry	J.D. Lee	Wiley India
Organic Reaction Mechanisms	V. K. Ahluwalia, R. K. Parashar	Norasa Publishing House
Organic Chemistry (6th edition)	Robert Thornnton Morrison Robert Neilson Boyd	Pearson Education

Web Material Link:
https://books.google.co.in/books?id=Z3033BGuMBEC&printsec=frontcover&dq=engineering+chemistry+ebook&hl=en&sa=X&ved=0ahUKEwj9xoiNv3UAhVEL48KHYg7Ak0Q6AEIITAA#v=onepage&q&f=false

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/Tutorial:

- Continuous Evaluation consist of performance of practical which should be evaluated out of 10 for each practical and average of the same will be converted to 15 Marks.
- Internal Viva component of 10 Marks.
- Practical performance of 15 Marks during End Semester Exam.
- Viva performance of 10 Marks during End Semester Exam.

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

- understand the relevance of fundamental and applications of chemical sciences and chemistry in the field of engineering.
- apply the knowledge of types of hardness of water and its estimation.
- apply the knowledge of thermodynamics in studying different chemical systems.
- apply the knowledge of Colloids, metals and alloys, their types and their properties.
- have sound knowledge on Electrochemistry.

P P Savani University
School of Engineering

Centre for Skill Enhancement & Professional Development

Course Code: SEPD1010
Course Name: Academic English and Technical Writing
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	02	00	03	40	60	20	30	--	--	150

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- improve speaking, listening, reading and writing skills in an academic environment.
- write academic texts effectively, as well as improve grammar and vocabulary.
- express ideas clearly and accurately with accurate writing.
- form and practice strategies for reading in the academic contexts quickly and effectively.
- gain confidence in speaking English in an academic context and also analyze and improve pronunciation.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Academic English** • General English Vs Academic English • Academic Vocabulary • Grammar for Academic Purposes	03	10
2.	**Academic Reading** • Introduction to Reading • Types of Reading • Techniques of Reading	06	20
3.	**Academic Listening** • Introduction to Listening • Types of Listening • Techniques of Listening	06	20
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Academic Speaking** • Introduction to Speech and Its importance	07	25

	• Phonetics and Transcription to effective pronunciation • Speaking in various contexts		
2.	**Technical Writing** • Understanding clauses and Syntax • Cohesion and Coherence/ Building Paragraphs • Flow/ structure of Writing • Punctuations • Application/ Letter Writing • Review/ Report Writing • E-mail etiquettes	08	25

List of Practical:

Sr. No	Name of Practical	Hours
1.	Introduction to Academic English – Ice Breaker	02
2.	Introduction to Academic English – Vocabulary Games and Grammar Activity	02
3.	Reading for Summarizing and Paraphrasing	02
4.	Reading for review writing/ Skimming and Scanning Web Resources	02
5.	Comprehensive Listening: Note Taking and Note Making	02
6.	Comprehensive Listening: Summarizing and Paraphrasing	02
7.	Critical Listening: An analysis	02
8.	Speech for Pronunciation	02
9.	Speech for Presentation	02
10.	Speech for Fluency	02
11.	Conversational Skills	02
12.	Academic Writing: Paragraph Building	02
13.	Academic Writing: Critical Review Writing	02
14.	Leave Application/ Request Letter/Business Letter	02
15.	Notice/Memo/Agenda/ Minutes	02

Text Book(s):

Title	Author/s	Publication
Practical Techniques to Develop Communication Skills	Parul Popat & Kaushal Kotadia	Pothi Prakashan, 2015

Reference Book(s):

Title	Author/s	Publication
English for Academic Purposes: A Guide and Resource Book for Teachers	R. R. Jordan	Cambridge University Press, 1997
English for Academic Purposes: An Advanced Resource Book	Ken Hyland	Routledge, 2006
Engineers' Guide to Technical Writing	Kenneth G. Budinski	ASM International, 2001

Communication Skills	Parul Popat & Kaushal Kotadia	Pearson, 2015

Web Material Link(s):

- https://msu.edu/course/be/485/bewritingguideV2.0.pdf
- https://www.khanacademy.org
- http://www.kantakji.com/media/6494/t121.pdf

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 consists of 60 marks.

Practical/Tutorial:

- Continuous Evaluation consists of performance of Practical which should be evaluated out of 10 for each practical and average of the same will be converted to 10 Marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test of 15 marks during End Semester Exam.
- Viva/Oral performance of 15 marks during End Semester Exam.

Course Outcome(s):

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

- effectively use LSRW skills in English in an academic environment.
- write Academic English effectively with improved grammar and vocabulary.
- practice strategies for comprehensive reading in English.
- speak English in an academic context fluently and efficiently.

P P Savani University
School of Engineering

Centre for Skill Enhancement & Professional Development

Course Code: SEPD1020
Course Name: Communication Skills
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	02	00	03	40	60	20	30	--	--	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- hone basic communication skills by exposing them to the key communication techniques, and thereby.
- improvise comprehension and expressional skills which are required for personal, social, academic and professional environment.
- sharpen Communication Skills with reference to Organizational Structure.
- expose to the modern modes of communication.
- show the importance of team work and give practice in Group Communication with reference to Group Dynamics.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Communication Skills** • Concept and Process of Communication • Types of Communication • Principles of Effective Communication • Barriers to Communication	06	20
2.	**Interpersonal Organizational Communication** • Styles of Communication • Flows of Communication • Essentials of Organizational Communication • Kinesics, Proxemics and Chronemics • Cross cultural Communication	06	20
3.	**Team/ Group Dynamics and Leadership** • Introduction to Group Work and Group Dynamics	03	10

	• Types of Groups and Essentials of Group Work and networking • Concept and Types of Leadership • Traits of an Effective Leader		
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Presentation Skills** • Introduction to presentation and its importance • Modes, means and purposes of presentation • Defining purpose, analyzing audience and organizing the contents • Visual aids and nuances of delivery • Body language and effective presentation	08	25
2.	**Communication and Contemporary World** • Introduction to Contemporary personal, social and professional set ups • Modern Day Communication tools and their efficacy • Effective usage of Modern-Day Communication tools for personal and professional growth	07	25

List of Practical:

Sr. No	Name of Practical	Hours
1.	Introduction to Communication: An Ice Breaker	02
2.	Verbal/ Non-Verbal Communication Pros and Cons	02
3.	Principles of Communication	02
4.	Interpersonal Communication	02
5.	Organizational Communication	02
6.	Assertive Vs Aggressive Communication	02
7.	Group Dynamics: A Decision-Making Activity	02
8.	Group Dynamics Working together to achieve organizational vision	02
9.	Leadership: Holding a diverse Group Together	02
10.	Presentation Skills; Video Session	02
11.	Presentations by the Students: Self-Peer-teacher assessment	02
12.	Presentations by the Students: Self-Peer-teacher assessment	02
13.	Discussion on Modern Day Communication	02
14.	Modern Day Communication and Contemporary Society	02
15.	Exploring Innovative Communication Tools for effective communication	02

Text Book (s):

Title	Author/s	Publication
Practical Techniques to Develop Communication Skills	Parul Popat & Kaushal Kotadia	Pothi Prakashan, 2015

Reference Book (s):

Title	Author/s	Publication
Communication Skills	Parul Popat & Kaushal Kotadia	Pearson, 2015
Communication Skills, Second Edition	Sanjay Kumar, PushpLata	Oxford University Press, 2015
Communication Skills for Engineers	Sunita Mishra	Pearson, 2011
Effective Interpersonal and Team Communication Skills for Engineers	Clifford Whitcomb, Leslie E. Whitcomb	John Wiley & Sons, 2012

Web Material Link (s):

- http://www.mindtools.com/page8.html
- http://techpreparation.com/soft-skills.htm?gclid=CJf34fyQv5wCFdMtpAodjjX_tA
- http://lorien.ncl.ac.uk/ming/Dept/Tips/present/comms.htm

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 consists of 60 marks.

Practical/Tutorial:

- Continuous Evaluation consists of Performance of Practical which should be evaluated out of 10 for each practical in the next turn and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test of 15 marks during End Semester Exam.
- Viva/Oral performance of 15 marks during End Semester Exam.

Course Outcome(s):

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

- follow the process of communication and its components in organizational context.
- express themselves and to participate in the classroom discussions and other such academic or academic support activities.
- comprehend whatever they receive from Informal Interactions with the family, teachers and friends; and from Formal Communications taking Place in Lectures, Laboratories and the like.
- communicate effectively using suitable styles and techniques.
- express themselves through the modern modes of communication and to participate in the group discussions and other such academic or academic support activities.
- use language effectively with reference to communication in groups and group behavior.
- understand and use latest and innovative communication tools to enhance their communication efficacy.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT1020
Course Name: Logic Building & Problem Solving

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
1	0	1	2	50	50	0	0	50	50	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

- To understand basic components of logic building.
- To learn and analyze various logical reasoning techniques.
- To develop basic problem-solving skills.

Course Content:

Module No.	Content	Hours	Weightage in %
1	Orientation Formal Deductive Logic, Categorical Propositions Informal Logic, Basic Concepts, meaning and definition, Categorical Syllogisms, Informal fallacies Inductive Logic, Analogy and Legal and moral Reasoning, Propositional Logic Unit, Causality and Mill's Methods, Probability Unit, Natural Deduction in propositional logic, Statistical reasoning, Hypothetical/Scientific reasoning, Science and superstition, Predicate logic.	30	100

Web Material Links:
https://www.coursera.org/learn/logic-introduction#syllabus

Course Evaluation:
Practical:

- Continuous Evaluation consists of performance of tutorial, which should be evaluated out of 10 per each tutorial. At the end of the semester, average of the entire tutorial will be converted to 50 Marks.
- Prepared Problem based Case Study/Assignments during Lecture/Tutorial hours will be evaluated as a part of end semester evaluation which carries 50 Marks weightages.

Course Outcome(s):

- Students will learn the fundamentals of logical reasoning.
- Students can apply knowledge of logical reasoning in solving basic real-world issues.

P P Savani University
School of Engineering

Department of Science & Humanities

Course Code: SESH1050
Course Name: Solution to Societal Problems: A Community Service Approach
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	
0	2	0	1	0	0	50	0	0	0	50

CE: Continuous Evaluation, ESE: End Semester Exam

Objective of the Course:
To help learners to

- Identify the societal problems at ground level
- Understand the concerns and seriousness of the reality at first hand experiences
- Try to find out the solutions and apply them as much as possible
- Comprehend the concept of Community Service while being a professional

Outline of the Project:

Sr. No.	Project Guidelines
1	Identification of Societal Problem
2	Data Collection
3	Literature Review
4	Progress of Project
5	Report Writing
6	Presentation & Question-Answer

Detailed Guidelines:

Module No	Content	Hours	Weightage in %
1.	**Identification of Societal Problem** Outline of identified issue of society shall be prepared by the student/ group of students (Maximum 3).	3	10
2.	**Data Collection** Collection of data for the respective societal issue, societal impact and remedies shall be covered.	3	10
3.	**Literature Review** Mapping of the efforts carried out by the other candidates/authorities/organizations.	3	10

4.	**Progress of Project** The students must report the progress/status of their work every fortnight to their respective supervisor.	12	40
5.	**Report Writing** The report must be prepared as per suggested guidelines consisting of Preamble, Objectives, Scope, Survey Methodology, Data Collection, Data Analysis, Design (if any), Conclusions, Recommendations and Annexure.	6	10 %
6.	**Presentation & Question-Answer** At the end of the semester the student/group of students shall give presentation of their work followed by viva-voce examination.	3	10 %

Instructional Method and Pedagogy:

- The student/group of students (Maximum 3) will identify any societal issue based on their inclination/willingness/interest/experience.
- The project will include visits as per demand of the project, where student/group of students can avail an opportunity to develop understanding based on their first-hand experience of actual scenario of society and its problems.
- Work progress of the project will be assessed and evaluated regularly by the mentor as per the evaluation guidelines.
- The mentor will visit the site of the project carried out by students under him, if need be.
- At the end of the semester, students have to submit the final project report followed by the presentation and Question-Answer. The submission of the project shall be done as per the guidance of the supervisor.
- At the end of the semester, the projects (certified by the supervisor/principal only) will be evaluated as per suggested evaluation criteria.

Course Evaluation:

Sr. No.	Evaluation criteria	Marks
1	Identification of the problem related field work (Within first 30 Days of commencement of semester)	20
2	Presentation of problem & proposed solution (Within 31 to 40 Days of commencement of semester)	20
3	Actual work carried out & impact of solution (Within 41 to 60 Days of commencement of semester)	20
4	Report writing as per guidelines	20
5	Final Presentation & Question-Answer session	20
	Grand Total:	**100**

The entire evaluation will be converted equivalent to 50 Marks.

Course Outcome(s):

By the end of the course, the student will be able to:

- Learn to analyze the societal problems by the methods of survey, observation, statistics, interview and so on.
- Examine the identified issued in order to find best possible solutions

- Formulate and apply the methods to apply the solution
- Study the applications of their respective field for Community Service.

Report Writing Guidelines

A. Report Format:

1. Title Page (to be provided by the respective supervisor)

The title page of the project shall give the following information in the order listed:

- Full title of the project as approved by the Mentor;
- The full name of the student/Group of students with enrollment number;
- The qualification for which the project is submitted;
- The name of the institution to which the project is submitted;
- The month and year of submission.

2. Project Certification Form
   [The form should be duly filled signed by the supervisors.]
3. Acknowledgements
   [All persons (e.g. supervisor, technician, friends, and relatives) and organization/authorities who/which have helped in the preparation of the report shall be acknowledged.]
4. Table of Contents/Index with page numbering
5. List of Tables, Figures, Schemes
6. Summary/abstract of the report.
7. Introduction/Objectives of the identified problem
8. Data Analysis and Finding of Solution
9. Application of the identified solution
10. Future Scope of enhancement of the Project and Conclusion
11. "Learning during Project Work", i.e. "Experience of Journey during Project Duration"
12. References(must)
13. Bibliography
14. Annexures (if any)

B. Guideline for Report Formatting:

- Use A4 size page with 1" margin all sides
- Header should include Project title and footer should contain page number and enrollment numbers
- Chapter Name should be of Cambria font, 20 points, Bold
- Main Heading should be of Cambria font, 14 points, Bold
- Sub Heading should be of Cambria font, 12 points, Bold
- Sub Heading of sub heading should be of Cambria font, 12 points, Bold, Italic
- Paragraph should be of Cambria font, 12 points, no margin at the start of the paragraph
- Line spacing for all content – 1.15, before - 0, after - 0
- No chapter number for references
- Before chapter 1, give page numbers in roman letter

SECOND YEAR B. TECH.

P P SAVANI UNIVERSITY															
SCHOOL OF ENGINEERING															
TEACHING & EXAMINATION SCHEME FOR SECOND YEAR B.TECH. INFORMATION TECHNOLOGY PROGRAMME															
Sem	Course Code	Course Title	Offered By	Teaching Scheme					Examination Scheme						
				Contact Hours				Credit	Theory		Practical		Tutorial		Total
				Theory	Practical	Tutorial	Total		CE	ESE	CE	ESE	CE	ESE	
3	SESH2040	Discrete Mathematics	SH	3	0	2	5	5	40	60	0	0	50	0	150
	SECE2011	Database Management System	CE	3	4	0	7	5	40	60	40	60	0	0	200
	SEIT2010	Object Oriented Programming with Java	IT	3	4	0	7	5	40	60	40	60	0	0	200
	SECE2021	Digital Workshop	CE	1	2	0	3	2	0	0	20	30	0	0	50
	SECE2031	Data Structures	CE	3	2	0	5	4	40	60	20	30	0	0	150
	SEPD2010	Critical Thinking, Creativity & Decision Making	SEPD	2	0	0	2	2	40	60	0	0	0	0	100
	SEPD3040	Integrated Personality Development Course-I	SEPD	2	0	0	2	1	40	60	0	0	0	0	100
	SECE2910 /SEIT2910	Industrial Exposure	CE	2			0	2	0	0	100	0	0	0	100
						Total	**31**	**26**							**1050**
4	SESH2051	Mathematical Methods for Computation	SH	3	0	2	5	5	40	60	0	0	50	0	150
	SEIT2021	Mobile Application Development	IT	3	4	0	7	5	40	60	40	60	0	0	200
	SEIT2031	Operating System	IT	3	2	0	5	4	40	60	20	30	0	0	150
	SECE2040	Computer Organization	CE	3	2	0	5	4	40	60	20	30	0	0	150
	SECE2051	Computer Graphics & Multimedia	CE	3	2	0	5	4	40	60	20	30	0	0	150
	SEPD3050	Integrated Personality Development Course-II	SEPD	2	0	0	2	1	40	60	0	0	0	0	100
	SEPD3030	Foreign Language (German)	SEPD	2			40	60	0	60	0	0	100	0	100
						Total	**31**	**25**							**1000**

P P Savani University
School of Engineering

Department of Science & Humanities

Course Code: SESH2040
Course Name: Discrete Mathematics
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	00	02	05	40	60	00	00	50	00	150

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, Composition of function, Recursive function	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 %
1.	**Mathematical Logic and Proof** Propositions, logical operators, Algebra of proposition, Predicates & quantifiers, Nested Quantifiers, Rules of Inference, Proof Methods, Program Correctness techniques.	06	14
2.	**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
3.	**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

List of Tutorial(s):

Sr. No.	Name of Tutorial	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

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/111106086/
- http://nptel.ac.in/courses/111104026/

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.

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 30 marks.
- MCQ based examination consists of 10 marks.
- Internal viva consists of 10 marks.

Course Outcome(s):

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

- use concepts of set theory for understanding and fetching data from database using query.
- apply knowledge of group theory for data encryption.
- design and use foundational concepts of notations and results of graph theory in information storage and retrieval.
- apply the basic concepts of spanning tree algorithm namely DFA, BFS, Prim's and Kruskal's in the design of networks.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE2011
Course Name: Database Management System
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	04	00	05	40	60	40	60	00	00	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** File Organization, Comparison of File with DBMS, Application of DBMS, Purpose of DBMS, Views of data - level of abstraction, data independence, database architecture, database users & administrators.	04	10
2.	**Relational Model** Structure of relational databases, Domains, Relations, Relational algebra- operators and syntax, Relational algebra queries.	04	10
3.	**SQL Concepts** Basics of SQL, DDL, DML, DCL, Structure: creation, alteration, Defining constraints: Primary key, Foreign key, Unique key, Not null, check, IN operator, Aggregate functions, Built-in functions: numeric, date, string functions, set operations, Subqueries, correlated sub-queries: Join, Exist, Any, All, view and its types. Transaction control commands- Commit, Rollback, Savepoint.	10	22
4.	**Query Processing** Overview, Measures of query cost, Selection operation, Sorting, Join, Evaluation of expressions.	04	8

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Entity Relational Model** Entity-Relationship model: Basic concepts, Design process Constraints, Keys, Design issues, E-R diagrams, Weak entity sets, extended E-R features- generalization, specialization, aggregation, reduction to E-R database schema.	08	20
2.	**Database Design Concepts** Functional Dependency, definition, Trivial and non-trivial FD, Closure of FD set, closure of attributes, Irreducible set of FD, Normalization: 1NF, 2NF, 3NF, Decomposition using FD, Dependency preservation, BCNF, Multivalued dependency, 4NF Join dependency and 5NF, RAID Concepts.	07	14
3.	**Transaction Management** Transaction concepts, Properties of Transactions, Serializability of transactions, Testing for serializability, system recovery, Two-Phase Commit protocol, Recovery and Atomicity, Log-based recovery, Concurrent executions of transactions and related problems, Locking mechanisms, Solution to Concurrency Related Problems, Deadlock, Two-phase locking protocol.	05	10
4.	**PL/SQL Concepts** Cursors, Stored Procedures, Stored Function, Database Triggers, Indices.	03	6

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to DBMS, SQL, and SQL tools.	02
2.	Implementation of a client-server architecture using TightVNC Server and Client software (remote access of a server by clients)	02
3.	Introduction to Data Dictionary concepts.	02
4.	Create all the master tables using Data Definition Language Commands like Create and Describe.	02
5.	Implement the use of alter table command.	02
6.	Introduction to Transaction Control Commands like Commit, Rollback and Save point.	02
7.	Use insert command to add data into created tables.	02
8.	Solve queries using update command.	02
9.	Implement SQL queries based on update and delete command.	02
10.	Write SQL queries to solve problems with the use of the select command.	02
11.	Generate different reports using select command.	02
12.	Introduction to SQL functions.	02
13.	Write SQL scripts to implement the listed queries, which require the usage of numerous SQL functions.	02
14.	Introduction to group functions and demonstration of their usage.	02
15.	Implement queries based on group by and having a clause.	02
16.	Execution of queries based on natural and inner joins.	02
17.	Implement SQL queries based on outer join and self-join.	02

18.	Write SQL queries based on group function and join.	02
19.	Introduction to sub-queries and demonstration of their usage.	02
20.	Write SQL queries based on the concept of single row sub-queries.	02
21.	Write SQL queries based on the concept of multiple row sub-queries.	02
22.	Write SQL scripts to generate desired reports using group by, join and sub-queries.	02
23.	Write SQL script to solve the questions based on all SQL concepts.	02
24.	Write the required SQL scripts to implement all the listed queries using Data Control Commands like Grant and Revoke.	02
25.	Introduction to different objects in SQL and create views based on given scenarios.	02
26.	Write the required SQL script to implement the given triggers.	02
27.	Write the required SQL script to implement the given triggers.	02
28.	Write the required SQL script to implement the given functions and procedures using PL/SQL block scripts.	02
29.	Write the SQL scripts to implement the given cursors.	02
30.	Submission of DBMS Mini Project Design.	02

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
An Introduction to Database system	C J Date	Addition-Wesley
Fundamental of Database system	R. Elmasri and S.B Navathe	The Benjamin/Cumming
SQL, PL/SQL the Programming Language of Oracle	Ivan Bayross	BPB Publications
Oracle: The Complete Reference	George Koch, Kevin Loney	TMH /Oracle Press

Web Material Link(s):

- https://nptel.ac.in/courses/106105175/

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 the performance of practical, which will be evaluated out of 10 marks per each practical and the 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.
- External viva consists of 30 marks.

Course Outcome(s):

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

- convert physical, data, conceptual data into relational databases.
- utilize database design for the development of software projects.
- apply various database constraints on relational databases.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT2010
Course Name: Object Oriented Programming with Java
Prerequisite Course(s): Basic knowledge of Computer Programming

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
03	04	00	05	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 basics of object-oriented programming.
- identify appropriate approach to computational problems.
- develop logic building and problem-solving skills.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** Programming language Types and Paradigms, Flavors of Java, Java Designing Goal, Features of Java Language, JVM –The heart of Java, Java's Magic Bytecode.	03	05
2.	**Object-Oriented Programming Fundamentals** Class Fundamentals, Object and Object reference, Object Lifetime and Garbage Collection, Creating and Operating Objects, Constructor and initialization code block, Access Control, Modifiers, Nested class, Inner Class, Anonymous Classes, Abstract Class and Interfaces, Defining Methods, Method Overloading, Dealing with Static Members, Use of "this" reference, Use of Modifiers with Classes & Methods, Generic Class Types.	06	15
3.	**Java Environment and Data types** The Java Environment: Java Program Development, Java Source File Structure, Compilation Executions; Basic Language Elements: Lexical Tokens, Identifiers, Keywords, Literals, Comments, Primitive Data-types, and Operators.	05	10
4.	**Class and Inheritance** Use and Benefits of Inheritance in OOP, Types of Inheritance in Java, Inheriting Data Members and Methods, Role of	07	15

	Constructors in inheritance, Overriding Super Class Methods, Use of "super", Polymorphism in inheritance, Type Compatibility and Conversion, Implementing interfaces.		
5.	**Java Packages** Organizing Classes and Interfaces in Packages, Package as Access Protection, Defining Package, CLASSPATH Setting for Packages, Making JAR Files for Library Packages, Import and Static Import, Naming Convention for Packages.	02	05
	Section II		
Module No.	Content	Hours	Weightage in %
1.	**Array and String Concepts** Defining an Array, Initializing & Accessing Array, Multi-Dimensional Array, Operation on String, Using Collection Bases Loop for String, tokenizing a String, Creating Strings using String Buffer.	04	10
2.	**Exception Handling** The Idea behind Exception, Exceptions & Errors, Types of Exception, Control Flow In Exceptions, JVM reaction to Exceptions, Use of try, catch, finally, throw, throw in Exception Handling, In-built and User Defined Exceptions, Checked and Un-Checked Exceptions.	05	10
3.	**Thread** Understanding Threads, Needs of Multi-Threaded Programming, Thread Life-Cycle, Thread Priorities, Synchronizing Threads, InterCommunication of Threads.	06	15
4.	**Applet** Applet & Application, Applet Architecture, Parameters to Applet.	03	05
5.	**Input-Output Operations in Java** Streams and the new I/O Capabilities, Understanding Streams, The Classes for Input and Output, The Standard Streams, Working with File Object, File I/O Basics, Reading and Writing to Files, Buffer and Buffer Management, Read/Write Operations with File, Channel, Serializing Objects.	04	10

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	04
3.	Implementation of Java programs to create functions, constructors with overloading and overriding	04
4.	Implementation of Java programs to demonstrate different access specifiers	04
5.	Implementation of Java programs using the concept of inner classes	02

6.	Implementation of Java programs for variables, data types, operators	04
7.	Implementation of Java programs for inheritance (single, multilevel, hierarchical)	04
8.	Implementation of Java programs to demonstrate the use of super keyword	02
9.	Implementation of Java programs for anonymous and abstract classes	02
10.	Implementation of Java programs for Interface	02
11.	Implementation of Java programs to demonstrate Java packages	02
12.	Implementation of Java programs to use arrays and string	06
13.	Implementation of Java programs for exception handling using all keywords (try, catch, throw, throws and finally)	04
14.	Implementation of Java programs to demonstrate the life cycle of thread	02
15.	Implementation of Java programs for the concepts of thread priority, synchronization, inter-thread communication	06
16.	Implementation of Applets, AWT and Web Servers	06
17.	Implementation of file handling operations	04

 # Use of different libraries will be covered during lab session.

Text Book(s):

Title	Author/s	Publication
Core Java Volume I – Fundamentals	Cay Horstmann and Gray Cornell	Pearson

Reference Book(s):

Title	Author/s	Publication
Java the complete reference	Herbert Schildt	McGraw Hill
Thinking in Java	Bruce Eckel	Pearson
Learning Java	Patrick Niemeyer and Jonathan Knudsen	O'Reilly Media

Web Material Link(s):

- https://www.coursera.org/learn/object-oriented-java

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 the performance of practical, which will be evaluated out of 10 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.
- External viva consists of 30 marks.

Course Outcome(s):

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

- learn the fundamentals of object-oriented programming.
- develop efficient programs with their own logic & capabilities.
- understand the syntax and semantics of the 'Java' language.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE2021
Course Name: Digital Workshop
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	
01	02	00	02	00	00	20	30	00	00	50

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the core concepts of digital logic design like number base representation, boolean algebra etc.
- develop the ability to design combinational and sequential circuits.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Binary Systems** Digital Computers and systems, Types of Data representation, Binary Numbers, Number base conversion, Octal and Hexadecimal Numbers, Complements, Binary Codes, Binary Storage and Registers, Binary Logic, Integrated Circuits.	02	-
2.	**Boolean Algebra and Logic Gates** Basic Definitions, Axiomatic Definition of Boolean Algebra, Basic Theorems and properties of Boolean Algebra, Boolean Functions, Canonical and standard Forms, Logic Operations, Digital Logic gates, IC Digital Logic families.	02	-
3.	**Simplification of Boolean Functions** Map method, Product of sum simplification, NAND and NOR implementations, don't care conditions, Tabulation method.	02	-
4.	**Combinational Logic** Introduction, Design Procedure, Adders, Subtractors, Code Conversion, Analysis Procedure, Multilevel NAND Circuits, Multilevel NOR Circuits.	02	-

Section II			
Module	Content	Hours	Weightage in %
1.	**Combinational Logic with MSI and LSI** Introduction, Binary parallel adder, Decimal adder, Magnitude Comparator, Decoders, Multiplexers, Read-Only Memory (ROM), Programmable Logic Array (PLA).	03	-
2.	**Sequential Logic** Introduction, Flip-Flops, Triggering of Flip-Flops, Analysis of Clocked Sequential Circuits, State Reduction, and Assignment, Flip-Flop Excitation Tables, Design Procedure, Design of Counters, Design with state equations.	03	-
3.	**PCB Designing** Drawing and printing layout on board, photo etching process, masking process, PCB manufacturing techniques, Software.	01	-

List of Practical:

Sr. No	Name of Practical	Hours
1.	Study and verification of all logic gates	04
2.	Design and Implementation of Half Adder, Half Subtractor circuits	04
3.	Design and Implementation Full Adder and Full Subtractor circuits	04
4.	Understanding the breadboard connection	02
5.	Design and Implementation of Parity Generator and Checker circuits	04
6.	Verification of De Morgan's theorem, the postulates of Boolean algebra and Realization of Sum of Product and Product of Sum expression using universal gates	06
7.	PCB design of a small circuit with its layout using tapes & etching in the lab	06

Text Book(s):

Title	Author/s	Publication
Digital Electronic Principles and Integrated Circuit	Anil K. Maini	Wiley

Reference Book(s):

Title	Author/s	Publication
Digital Circuits and Logic Design	Samuel C. Lee	Prentice Hall India Learning Pvt Ltd.
Digital Logic and Computer Design	M. Morris Mano	Pearson
Fundamentals of Digital Electronics and Circuits	Anand Kumar	Prentice Hall India Learning Pvt Ltd.
Digital Design and Computer Architecture	David Harris & Sarah Harris	Elsevier
Fundamentals of Logic Design	Charles H. Roth Jr.	Jaico Publishing House

Web Material Link(s):

- https://learndigital.withgoogle.com/digitalworkshop-eu

Course Evaluation:

Practical:

- Continuous Evaluation consists of the performance of practical, which will be evaluated out of 10 per each practical and average of the same will be converted to 10 marks.
- Students have to submit the project which consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks.
- External viva consists of 15 marks.

Course Outcome(s):

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

- learn the fundamentals of digital logic design.

design elementary combinational and sequential circuits using boolean algebra and karnaugh map.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE2031
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	00	04	40	60	20	30	00	00	150

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** Object and Instance, Object-Oriented Concepts, Data types, Types of Data Structure, Abstract Data Types.	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	5
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Linked List-II and Applications of Linked List** Linked implementation of Stack, Linked implementation of Queue, Applications of Linked List.	03	8
2.	**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 Binary Tree, Heap, Binary Search Tree. Tree for Huffman coding, 2-3 Tree, AVL tree, Breadth First Search, Depth First Search, Spanning Tree, Kruskal's and Prim's Minimum Cost Spanning Tree Algorithms, Dijkstra's Shortest Path Algorithm.	12	25
3.	**Hashing** The Symbol Table Abstract Data Types, Hash Tables, Hashing Functions, Hash collision Resolution Technique, Linear Probing.	04	10
4.	**File Structures** Concepts of fields, records and files, Sequential, Indexed, and Relative/Random File Organization.	04	07

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to Dynamic Memory Allocation	02
2.	Implementation of Structure in C.	02
3.	Write a program to perform Insertion sort.	02
4.	Write a program to perform Selection sort.	02
5.	Write a program to perform Bubble sort.	02
6.	Write a program to perform Linear Search.	02
7.	Write a program to perform Binary Search.	02
8.	Write a program to implement a stack and perform push, pop operation.	02
9.	Write a program to perform the following operations in a linear queue – Addition, Deletion, and Traversing.	02
10.	Write a program to perform the following operations in the circular queue – Addition, Deletion, and Traversing.	02
11.	Write a program to perform the following operations in singly linked list – Creation, Insertion, and Deletion.	02
12.	Write a program to perform the following operations in doubly linked list – Creation, Insertion, and Deletion	02
13.	Write a program to create a binary tree and perform – Insertion, Deletion, and Traversal.	02

14.	Write a program to create a binary search tree and perform – Insertion, Deletion, and Traversal.	02
15.	Write a program for traversal of graph (B.F.S., D.F.S.).	02

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, 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 the performance of practical, which will be evaluated out of 10 per each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks.
- External viva consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- differentiate primitive and non-primitive structures.
- design and apply appropriate data structures for solving computing problems.
- implement different data structures.
- apply sorting and searching algorithms to the small and large datasets.
- analyze algorithms for specific problems.

P P Savani University
School of Engineering

Centre for Skill Enhancement & Professional Development

Course Code: SEPD2010
Course Name: Critical Thinking, Creativity and Decision Making
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:
To help learners to

- develop a familiarity with the mechanics of critical thinking and logic.
- understand basic concepts of critical and creative thinking.
- explore and understand critical thinking for the purpose of creativity in the context of the professional, social and personal spectrum.
- explore an application critical thinking and creativity in personal, social, academic, global and professional life.
- understand decision making as a skill to be learned through critical thinking.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Critical Thinking** • Concept and meaning of Critical Thinking • Significance of Critical Thinking in personal, social and professional life • Thinking with arguments, evidences, and language	08	25
2.	**Applied Critical Thinking** • Inductive and Deductive Thinking • Questioning for Generating Ideas • Socratic Questioning and its application	07	25
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Conceptual Thinking** • Second-order thinking • Synthesizing •	03	10

2.	**Creative Thinking and Decision Making** • Problem Solving • Adapting Various Structures of Decision Making	06	20
3.	**Moral Thinking** • Generating and structuring ideas • Designing and Evaluating the solutions • Case Study	06	20

Text Book (s)

Title	Author/s	Publication
Thinking Skills for Professionals	B. Greetham, Palgrave	Macmillan, 2010

Reference Book (s):

Title	Author/s	Publication
An Introduction to Critical Thinking and Creativity: Think More, Think Better	J. Y. F. Lau	John Wiley & Sons., New Jersey
Critical Thinking: A Beginner's Guide to Critical Thinking, Better Decision Making, and Problem Solving	Jennifer Wilson	CreateSpace Independent Publishing Platform, 2017
Creativity and Critical Thinking	edited by Steve Padget	Routledge 2013

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.

Course Outcome(s):

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

- comprehend the concept and application of critical thinking as well as its applications.
- understand the critical thinking in the context of creativity, logical arguments, moral reasoning.
- understand the application of critical thinking for social, academic, global and professional spectrum.
- correlate their thinking skills for better productivity and outcome-based tasks.
- be in a better position to apply the 360^{o} analysis of the situation for decision making.

P P Savani University

Integrated Personality Development Course.

Course Code: SEPD3040
Course Name: IPDC-1

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	01	40	60	00	00	--	--	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- provide students with a holistic education – focused on increasing their intelligence quotient, physical quotient, emotional quotient and spiritual quotient
- provide students with hard and soft skills, making them more marketable when entering the workforce
- educate students on their social responsibilities as citizens of India
- provide students with a value-based education which will enable them to be successful in their family, professional, and social relationships.
- teach self-analysis and self-improvement exercises to enhance the potential of the participants.

Course Content:

Lecture No.	Content	Hours	Weightage in %
1.	• Remaking Yourself - Restructuring Yourself.	02	50
2.	• Remaking Yourself - Power of Habit.	02	
3.	• Remaking Yourself -Developing Effective Habits.	02	
4.	• Learning from Legends - Tendulkar and Ratan Tata	02	
5.	• From House To Home Affectionate Relationship	02	
6.	• Facing Failures - Factors Affecting Failures.	02	50
7.	• Facing Failures - Failures are not Always Bad.	02	
8.	• Facing Failures - Insignificance of Failures.	02	
9.	• Facing Failures - Failures can be Overcome.	02	
10.	• Learning from Legends - Yogiji Maharaj and Nelson Mandela.	02	

Course Evaluation:

Theory:

- Continuous Evaluation consists of 40 marks. There will be a mid-term exam which will assess the current progress of students, it assessed out of 20 marks and will be equivalent to 20 marks of the Continuous Course Evaluation (CCE). There will be a submission consisting 10 marks as per the guidelines of course coordinator and average of the attendance consisting 10 marks (minimum 60 percentage attendance is required).
- End semester exam (ESE) part A 30 marks and part B 30 marks.

Course Outcome(s)

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

- have gained a greater sense of social responsibility
- have gained marketable hard and soft skills that would directly apply to their future careers
- have gained greater insight and ability to navigate their family, social, and professional relationships along with difficult situations which may arise in their life
- have a broader sense of self-confidence and a defined identity
- have greater value for living a moral and ethical life based on principles taught in the course

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE2910/ SEIT2910
Course Name: Industrial Exposure
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	00	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
- get exposed to the industrial spectrum.
- learn the mechanisms of industry/ workplace.
- be aware about work culture and policies of industries.

Outline of the Course:

Sr. No	Content
1.	Selection of Companies
2.	Company Information collection
3.	Report Writing
4.	Presentation & Question-Answer

Course Evaluation:

Sr. No.	Evaluation criteria	Marks
1	Actual work carried & Report Submission	50
2	Final Presentation & Question-Answer session	50
	Grand Total:	**100**

Course Outcome(s):
After completion of the course, the student will be able to
- get acquainted with the industrial scenario.
- be aware about his future prospects in the respective field.
- gain knowledge of work culture and industrial expectations.

Report Writing Guidelines

A. Report Format:

1. Title Page (to be provided by the respective supervisor)

The title page of the project shall give the following information in the order listed:

- Full title of the project as approved by the Mentor;
- The full name of the student/Group of students with enrollment number;
- The qualification for which the project is submitted;
- The name of the institution to which the project is submitted;
- The month and year of submission.

2. Project Certification Form
   [The form should be duly filled signed by the supervisors.]
3. Acknowledgements
   [All persons (e.g. supervisor, technician, friends, and relatives) and organization/authorities who/which have helped in the preparation of the report shall be acknowledged.]
4. Table of Contents/Index with page numbering
5. List of Tables, Figures, Schemes
6. Summary/abstract of the report.
7. Introduction/Objectives of the identified problem
8. Data Analysis and Finding of Solution
9. Application of the identified solution
10. Future Scope of enhancement of the Project and Conclusion
11. "Learning during Project Work", i.e. "Experience of Journey during Project Duration"
12. References(must)
13. Bibliography
14. Annexures (if any)

B. Guideline for Report Formatting:

- Use A4 size page with 1" margin all sides
- Header should include Project title and footer should contain page number and enrollment numbers
- Chapter Name should be of Cambria font, 20 points, Bold
- Main Heading should be of Cambria font, 14 points, Bold
- Sub Heading should be of Cambria font, 12 points, Bold
- Sub Heading of sub heading should be of Cambria font, 12 points, Bold, Italic
- Paragraph should be of Cambria font, 12 points, no margin at the start of the paragraph
- Line spacing for all content – 1.15, before - 0, after - 0
- No chapter number for references
- Before chapter 1, give page numbers in roman letter

P P Savani University
School of Engineering

Department of Science & Humanities

Course Code: SESH2051
Course Name: Mathematical Methods for Computation
Prerequisite Course(s): Elementary Mathematics for Engineers (SESH1010)

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	00	02	05	40	60	00	00	50	00	150

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.
- use Laplace transform methods to solve differential equations.
- 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** 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, ODEs of Second and Higher order, Homogeneous linear ODEs, Linear Dependence and Independence of Solutions, Homogeneous linear ODEs with constant coefficients, Differential Operators Nonhomogeneous ODEs, Undetermined Coefficients, 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.	7	18

3.	**Laplace Transform** Laplace Transform, Linearity, First Shifting Theorem, Existence Theorem, Transforms of Derivatives and Integrals, Unit Step Function, Second Shifting Theorem, Dirac's Delta function, Laplace Transformation of Periodic function, Inverse Laplace transform, Convolution.	6	12
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Fourier Series & Fourier Integral** Periodic function, Euler Formula, Arbitrary Period, Even and Odd function, Half-Range Expansions, Applications to ODEs, Representation by Fourier Integral, Fourier Cosine Integral, Fourier Sine Integral	7	15
2.	**Basics of Statistics** Elements, Variables, Observations, Quantitative and Qualitative data, Corss-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, Regression Analysis, Regression line and regression coefficient, Karl Pearson's method	7	15
3.	**Probability Distribution** Introduction, Conditional probability, Independent events, independent experiments, Theorem of total probability and Bayes' theorem, Probability distribution, Binomial distribution, Poisson distribution, Uniform distribution, Normal distribution.	8	20

List of Tutorials:

Sr No	Name of Tutorial	Hours
1.	Ordinary Differential Equation-1	2
2.	Ordinary Differential Equation-2	2
3.	Ordinary Differential Equation-3	4
4.	Partial Differential Equation-1	2
5.	Partial Differential Equation-2	4
6.	Laplace Transform	2
7.	Fourier Series-1	2
8.	Fourier Series-2	2
9.	Basics of Statistics-1	2
10.	Basics of Statistics-2	4
11.	Probability-1	2
12.	Probability-2	2

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, 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.

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 15 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test of 15 marks during End Semester Exam.
- Viva/Oral performance of 10 marks during End Semester Exam.

Course Outcome(s):

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

- apply the respective 1st and 2nd order ODE and PDE.
- analyze engineering problems (growth, decay, flow, spring and series/parallel electronic circuits) using 1st and 2nd order ODE.
- classify differential equations and solve linear and non-linear partial differential equations.

- apply understanding of concepts, formulas, and problem-solving procedures to thoroughly investigate relevant real-world problems.
- select appropriate method to collect data and construct, compare, interpret and evaluate data by different statistical methods.
- apply concept of probability in decision making, artificial intelligence, machine learning etc.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT2021
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	
03	04	00	05	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand life cycle of an application/activity.
- learn design of responsive mobile applications.
- develop mobile application using open source technologies.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction of Android** Android Operating System, History of Mobile Software Development, Open Handset Alliance (OHA), The Android Platform, Downloading and Installing Android Studio, Exploring Android SDK, Using the Command-Line Tools and the Android Emulator, Build the First Android application, Android Terminologies, Application Context, Application Tasks with Activities, Intents, and Closer Look at Android Activities.	04	05
2.	**Android Application Design and Resource** Anatomy of an Android Application, Android Manifest file, Editing the Android Manifest File, Managing Application's Identity, Enforcing Application System Requirements, Registering Activities and other Application Components, Working with Permissions.	03	05
3.	**Exploring User Interface Screen Elements** Introducing Android Views and Layouts, Displaying Text with TextView, Retrieving Data From Users, Using Buttons, Check Boxes and Radio Groups, Getting Dates and Times from Users, Using Indicators to Display and Data to Users, Adjusting Progress with SeekBar, Providing Users with Options and	08	15

	Context Menus, Handling User Events, Working with Dialogs, Working with Styles, Working with Themes.		
5.	**Designing User Interfaces with Layouts** Creating User Interfaces in Android, View versus View Group, Using Built-In Layout Classes such as Fame Layout, Linear Layout, Relative Layout, Table Layout, Multiple Layouts on a Screen, Data-Driven Containers, Organizing Screens with Tabs, Adding Scrolling Support.	05	15
6.	**Drawing and Working with Animation** Working with Canvases and Paints, Working with Text, Working with Bitmaps, Working with Shapes, Working with Animation.	03	10
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Android Storage APIs** Working with Application Preferences such as Creating Private and Shared Preferences, Adding, Updating, and Deleting Preferences. Working with Files and Directories, Storing SQLite Database such as Creating an SQLite Database, Creating, Updating, and Deleting Database Records, Closing and Deleting a SQLite Database.	07	15
2.	**Content Providers** Exploring Android's Content Providers, Modifying Content Providers Data, Enhancing Applications using Content Providers, Acting as a Content Provider, Working with Live Folders.	04	10
3.	**Networking APIs** Understanding Mobile Networking Fundamentals, Accessing the Internet (HTTP). **Android Web APIs** Browsing the Web with WebView, Building Web Extensions using WebKit, Working with Flash. **Multimedia APIs** Working with Multimedia, Working with Still Images, Working with Video, Working with Audio.	07	15
4.	**Telephony APIs:** Working with Telephony Utilities, Using SMS, Making and Receiving Phone Calls. **Working with Notifications**: Notifying a User, Notifying with Status Bar, Vibrating the Phone, Blinking the Lights, Making Noise, Customizing the Notification, Designing Useful Notification.	04	10

List of Practical:

Sr No	Name of Practical	Hours
1.	Create Hello World Application.	2
2.	Create login application where you will have to validate Email ID and Password.	2
3.	Create an application that will display toast (Message) on specific interval of Time.	2
4.	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.	4
5.	Create an application that will change color of the screen, based on selected options from the menu.	4
6.	Create an application UI component: ImageButton, Togglebutton, ProgressBar,	4
7.	Create an application UI component: Spinner, DatePicker, TimePicker, SeekBar	4
8.	Create an application UI component: Switch, RatingBar	4
9.	Using content providers and permissions, Read phonebook contacts using content providers and display in list.	4
10.	Create an app to send SMS and email	4
11.	Database Connectivity	4
12.	Create an application to make Insert, Update, Delete and Retrieve operation on the database.	6
13.	Create an application that will play a media file from the memory card.	4
14.	Create application using Google speech API	6
15.	Create application using Google maps API	6

Text Book(s):

Title	Author/s	Publication
Introduction to Android Application Development	Joseph Annuzzi Jr., Lauren Darcey, Shane Conder	Pearson Education

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:

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 marks 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 Outcome(s):

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

- understand the differences between Android and other mobile development environments.
- learn how Android applications work, their life cycle, manifest, intents, and using external resources.
- design and develop useful Android applications with compelling user interfaces by using, extending, and creating your own layouts and views and using menus, data storage and other APIs.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE2040
Course Name: Computer Organization
Prerequisite Course(s): Basic Understanding of Computer System

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	20	30	00	00	150

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** Instruction codes, Computer registers, computer instructions Timing and Control, Instruction cycle Memory-Reference Instructions, Input-output and interrupt, Complete computer description, Design of Basic computer, Design of Accumulator Unit.	04	08
2.	**Programming the Basic Computer** Introduction Machine Language, Assembly Language The Assembler, Program loops, Programming Arithmetic and logic operations, subroutines, I-O Programming.	04	08
3.	**Computer Arithmetic** Introduction, Addition and subtraction, Multiplication and Division Algorithms, Floating Point Arithmetic.	05	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).	05	12
5.	**Micro-programmed Control** Control Memory, Address sequencing, Micro-program Example, Design of control Unit	05	10

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Pipeline and Vector Processing** Flynn's taxonomy, Parallel Processing, Pipelining, Arithmetic Pipeline, Instruction, Pipeline, RISC Pipeline, Vector Processing, Array Processors.	07	16
2.	**Input-Output Organization** Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, DMA, Input-Output Processor (IOP), CPUIOP Communication, Serial communication.	06	14
3.	**Memory Organization** Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory.	05	12
4.	**Multiprocessors** Characteristics of Multiprocessors, Interconnection Structures, Inter-processor Arbitration, Inter-processor Communication and Synchronization, Cache Coherence, Shared Memory Multiprocessors.	04	08

List of Practical:

Sr No	Name of Practical	Hours
1.	Study basics of Computer Organization	06
2.	Make all the tables related to an assembler using C.	04
3.	Simulation of Memory Management Technique	06
4.	Make the first pass of an assembler using C.	02
5.	Make the second pass of an assembler using C.	02
6.	Simulation of I/O Device Management	06
7.	Write a program to add two numbers in assembly language.	02
8.	Write a program to print numbers from 1-100 in assembly language.	02

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, 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 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 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/Oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- identify and provide solutions for real-world control problems.
- learn to assemble various computer hardware and middleware.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT2031
Course Name: Operating System
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	00	04	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- learn the principles of operating system design.
- understand architecture of computer based operating systems and its components.
- understand various software hardware processes and its life cycle.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** What is OS? History of OS, Types of OS, Concepts of OS.	02	06
2.	**Processes and Threads** Process Concept, process state, process control block, Threads, Types of Threads, Multithreading	04	08
3.	**Interprocess Communication** Race Conditions, Critical Regions, Mutual exclusion with busy waiting, sleep and wakeup, semaphores, mutexes, monitors, message passing, barriers; CPU Scheduling: CPU-I/O burst cycle, types of schedulers, context switch, Preemptive Scheduling, Dispatcher, Scheduling criteria; Scheduling algorithms: FCFS, SJF, Priority scheduling, Round-Robin scheduling, Multilevel queue scheduling; Classical IPC Problems: The dining philosopher problem, The readers and writers problem.	12	26
4.	**Deadlocks:** Resources, Conditions for Deadlocks, Deadlock modelling, The ostrich algorithm, Deadlock detection and recovery, Deadlock avoidance, Deadlock prevention, Other issues: Two-phase locking, Communication deadlocks, live locks, starvation.	04	10

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Memory Management** Main memory: Background, Swapping, Contiguous memory allocation, Segmentation, Paging, Structure of page table, Virtual memory: Background, Demand paging, copy-on write, page replacement algorithms: Optimal page replacement, not recently used, FIFO, second chance page replacement, Cloak page replacement, LRU; Allocation of frames, Thrashing.	12	25
2.	**Input Output Management** Principles of I/O hardware: I/O devices, device controllers, memory mapped I/O, DMA; Principles of I/O software: goals of I/O software, programmed I/O, Interrupt driven I/O, I/O using DMA; I/O s/w layers: Interrupt handlers, device drivers, device dependent I/O s/w, user space I/O s/w; Disks: RAID, disk arm scheduling algorithms, error handling.	07	15
3.	**File Systems** Introduction; Files: naming, structure, types, access, attributes, operations; Directories: single level, hierarchical, path names, directory operations.	04	10

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 CPU scheduling algorithms. (E.g. FCFS, SJF, Round Robin etc.)	06
5.	Simulate 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 page replacement algorithms. (E.g. FIFO, LRU, Optimal)	04
8.	Simulate disk scheduling algorithms. (E.g. FCFS,SCAN,C-SCAN)	04

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 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/Oral performance consists of 15 Marks during End Semester Exam.

Course Outcome(s):

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

- learn the fundamentals of Operating System design.
- understand and differentiate various operating system architectures and its interfaces.
- perform inter-process communication.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE2051
Course Name: Computer Graphics & Multimedia
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	00	04	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand concepts of computer graphics & multimedia.
- learn basics of graphics and rendering algorithms in 2D and 3D.
- analyze and understand various aspects of computer vision technologies.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Graphics** Basic of Computer Graphics, Applications of computer graphics, Display devices, Random and Raster scan systems, Graphics input devices, Graphics software and standards	07	10
2.	**Graphics Primitives** Points, lines, circles and ellipses as primitives, scan conversion algorithms for primitives, Fill area primitives including scan-line polygon filling, inside-outside test, boundary and flood-fill, character generation, line attributes, area-fill attributes, character attributers.	08	20
3.	**2D Transformation and Viewing** Transformations (translation, rotation, scaling), matrix representation, homogeneous coordinates, composite transformations, reflection and shearing, viewing pipeline and coordinates system, window-to-viewport transformation, clipping including point clipping, line clipping (cohen-sutherland, liang- bersky , NLN), polygon clipping	08	20

Section II			
Module	Content	Hours	Weightage in %
1.	**3D Concepts and Object Representation** 3D display methods, polygon surfaces, tables, equations, meshes, curved lies and surfaces, quadric surfaces, spline representation, cubic spline interpolation methods, Bazier curves and surfaces, B-spline curves and surfaces	08	20
2.	**3D transformation and Viewing** 3D scaling, rotation and translation, composite transformation, viewing pipeline and coordinates, parallel and perspective transformation, view volume and general (parallel and perspective) projection transformations	06	10
3.	**Surface Detection** Visible surface detection concepts, back-face detection, depth buffer method, illumination, light sources, illumination methods (ambient, diffuse reflection, specular reflection), Color models: properties of light, XYZ, RGB, YIQ and CMY color model	06	15
4.	**Multimedia** Characteristics of a multimedia presentation, Uses of Multimedia, Text –Types, Unicode Standard, text Compression, Text file formats, Audio Components of an audio system, Digital Audio, Digital Audio processing, Sound cards, Audio file formats, Audio Processing software, Video-Video color spaces, Digital Video, Digital Video processing, Video file formats.	02	05

List of Practical:

Sr No.	Name of Practical	Hours
1.	Introduction to computer graphics and multimedia tools.	02
2.	To study the various graphics functions in C language.	02
3.	Develop the DDA Line drawing algorithm using C language.	02
4.	Develop the Bresenham's Line drawing algorithm using C language.	04
5.	Develop the Bresenham's Circle drawing algorithm using C language.	04
6.	Develop the C program for to display different types of lines.	04
7.	Perform the following 2D transformation operation Translation, Rotation and Scaling.	02
8.	Perform the Line Clipping Algorithm.	02
9.	Perform the Polygon clipping algorithm.	02
10.	Perform the basic transformations such as Translation, Scaling, Rotation for a given 3D object.	02
11.	Design and development of a mini project in the area of computer graphics and multimedia. (It will include animation in 2D, 3D and various shapes.)	04

Text Book(s):

Title	Author(s)	Publication
Computer Graphics – C Version	D. Hearn, P. Baker	Pearson Education

Reference Book(s):

Title	Author(s)	Publication
Computer Graphics	Foley, van Dam	Pearson Education
Computer Graphics	Sinha, Udai	TMH
Computer Graphics with OpenGL	Hearn, Baker	Pearson

Web Material Link(s):

- https://nptel.ac.in/courses/106106090/

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 should be evaluated out of 10 marks per each practical. At the end of the semester, average of the entire practical will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 10 marks during End Semester Exam.
- Viva/oral performance consists of 20 marks during End Semester Exam.

Course Outcome(s):

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

- learn basics of graphics and rendering algorithms in 2D and 3D.
- analyze and implement various computer vision technology-based applications.
- design and develop various computer graphics & multimedia-based applications.

Integrated Personality Development Course

Course Code: SEPD3050
Course Name: IPDC-2

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	01	40	60	00	00	--	--	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- provide students with a holistic education – focused on increasing their intelligence quotient, physical quotient, emotional quotient and spiritual quotient.
- provide students with hard and soft skills, making them more marketable when entering the workforce.
- educate students on their social responsibilities as citizens of India
- provide students with a value-based education which will enable them to be successful in their family, professional, and social relationships.
- teach self-analysis and self-improvement exercises to enhance the potential of the participants.

Course Content:

Lecture No.	Content	Hours
1.	Remaking Yourself Restructuring Yourself.	02
2.	Essentials of Profession Writing a Resume	02
3.	Financial Wisdom Basics of Financial Planning.	02
4.	Financial Wisdom Financial Planning Process.	02
5.	From House to Home Listening & Understanding.	02
6.	From House to Home Forgive & Forget.	02
7.	From House to Home Bonding the Family.	02
8.	Soft Skills Networking, Decision making & Leadership	02

9.	Soft Skills Teamwork, Harmony & Adaptability.	02
10.	Mass Management Project Management.	02
11.	My India My Pride Glorious Past (Part -1)	02
12.	My India My Pride Glorious Past (Part -2)	02
13.	My India My Pride Present Scenario.	02
14.	My India My Pride An Ideal Citizen-1	02
15.	My India My Pride An Ideal Citizen-2	02

Course Evaluation:
Theory:

- Continuous Evaluation consists of 40 marks. There will be a mid-term exam which will assess the current progress of students, it assessed out of 20 marks and will be equivalent to 20 marks of the Continuous Course Evaluation (CE). There will be a submission consisting 10 marks as per the guidelines of course coordinator and average of the attendance consisting 10 marks (minimum 60 percentage attendance is required).
- End semester exam (ESE) section I (30 marks) and section II (30 marks).

Course Outcome(s):

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

- have gained a greater sense of social responsibility.
- have gained marketable hard and soft skills that would directly apply to their future careers.
- have gained greater insight and ability to navigate their family, social, and professional relationships along with difficult situations which may arise in their life.
- have a broader sense of self-confidence and a defined identity.
- have greater value for living a moral and ethical life based on principles taught in the course.

P P Savani University
School of Engineering

Center for Skill Enhancement and Professional Development

Course Code: SEPD3030
Course Name: Foreign Language (German)
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:
To help learners to

- develop and integrate the use of the four language skills i.e. listening, speaking, reading and writing.
- use the language effectively and appropriately on topics of everyday life situations.
- develop an interest in the appreciation of German.
- develop an intercultural awareness.
- enhance the ability of the candidates to express their ideas and feelings in their own words and for them to understand the use of correct language.
- appreciate the language as an effective means of communication.
- understand language when spoken at normal conversational speed in everyday life situations.
- understand the basic structural patterns of the language, vocabulary and constructions.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	Introduction to German • Alphabets • German accents • German Numbers • What are the similarities and differences between English and German? • Greetings	02	15
2.	German Time • Basic Introduction	02	08
3.	Vocabulary part-1 • The days of the week	02	05

	• The months of the year • Seasons • Directions • Weather		
4.	Vocabulary part-2 • Family • Colors and Shapes • Day/time indicators • Body parts • Clothing	02	07
5.	Vocabulary Part-3 • Food and Meals • Fruits, Vegetables and Meats • Sports and Hobbies	02	05
6.	• Transportation • House and Furniture	02	05
7.	• School Subject • Places • Common Expressions	02	05
Section II			
Module No.	Content	Hours	Weightage in %
1.	German grammar • Verb Sein (to be) • Verb Haben (to have) • Introduction of Regular verbs and Irregular verb • Konjugation of Regular verb • First group verbs ('EN' group)	02	10
2.	• Konjugation of Regular verbs • Second group verbs ('Ten/Den' group) • Konjugation of Irregular verbs • Third group verbs (Stem change verb) • Fourth group verbs (Spell Change Verb)	02	10
3.	• Nicht trennbare und trennbare Verben • Die Modalverben • Personalpronomen-Nominativ	02	10
4.	• W-Frage • Ja/Nein-Fragen • Nomen und Artikel-Nominativ • Die Anrede	02	10
5.	• Nomen-Genusregein • Adjektiv • Nomen und Artikel-Akkusativ • Personalpronomen-Akkusativ	02	10

6.	• Practice of Writing • Practice of Speaking	02	-
7.	• Practice of Listening	2	-
8.	• Practice of Reading	2	-

Text Book(s):

Title	Author/s	Publication
Namaste German	Yoshita Dalal	Yoshita Dalal

Reference Book(s):

Title	Author/s	Publication
Fit In Deutsch	Hueber	Goyal Publication

Web Material Link(s):

- https://www.youtube.com/watch?v=iGovllrEsF8&list=PLRps6yTcWQbpoqIOCmqMeI1HLnLIRmO_t
- https://www.youtube.com/watch?v=GwBfUzPCiaw&list=PL5QyCnFPRx0GxaFjdAVkx7K9TfEklY4sg

Course Evaluation:

Theory:

- Continuous Evaluation consists of a test of 30 marks and 1 hour of duration.
- Faculty evaluation consists of 10 marks as per the guidelines provided by Course Coordinator.
- End Semester Examination consists of 60 marks exam.

Course Outcome(s):

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

- demonstrate speaking, reading, writing and listening in German.
- understand German Technology.
- communicate easily in four Language and they can get good job in German Company.
- demonstrate the level of proficiency necessary to enable them to function in an environment where German is used exclusively.

THIRD YEAR B. TECH.

P P SAVANI UNIVERSITY															
SCHOOL OF ENGINEERING															
TEACHING & EXAMINATION SCHEME FOR B. TECH. INFORMATION TECHNOLOGY PROGRAMME AY: 2018-19															
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**	
5	SEIT3010	Software Engineering	IT	3	0	1	4	4	40	60	0	0	50	0	150
	SEIT3022	Embedded Systems	IT	3	2	0	5	4	40	60	20	30	0	0	150
	SEIT3032	Design & Analysis of Algorithms	IT	3	2	0	5	4	40	60	20	30	0	0	150
	SECE3011	Computer Networks	CE	3	2	0	5	4	40	60	20	30	0	0	150
	SEPD3010	Professional Communication & Soft Skills	SEPD	1	2	0	3	2	0	0	50	50	0	0	100
	SEIT3920	Summer Training	IT	4			0	4	0	0	100	0	0	0	100
		Elective-I		2	2	0	4	3	40	60	20	30	0	0	150
						Total	**26**	**25**							**950**
6	SEIT3041	Web Technology	IT	2	4	0	6	4	40	60	40	60	0	0	200
	SEIT3062	Cryptography & Network Security	IT	3	2	0	5	4	40	60	20	30	0	0	150
	SEIT3071	Advance Java Technology	IT	3	4	0	7	5	40	60	40	60	0	0	200
	SECE3031	Data Warehouse & Data Mining	CE	3	2	0	5	4	40	60	20	30	0	0	150
	SEPD3020	Corporate Grooming & Etiquette	SEPD	1	2	0	3	2	0	0	50	50	0	0	100
	SEIT3910	Minor Project	IT	3			3	3	0	0	100	100	0	0	200
		Elective-II		2	2	0	4	3	40	60	20	30	0	0	150
						Total	**33**	**25**							**1150**

Teaching Scheme
Elective Subjects

Offered in Sem.	Course Code	Course Name	Offered By	Teaching Scheme					Examination Scheme						
				Contact Hours				Credit	Theory		Practical		Tutorial		Total
				Theory	Practical	Tutorial	Total		CE	ESE	CE	ESE	CE	ESE	
5	SECE3511	Programming with .Net	CE	2	2	0	4	3	40	60	20	30	0	0	150
	SEIT3510	System Analysis and Design	IT	2	2	0	4	3	40	60	50	00	0	0	150
	SECE3520	Service Oriented Architecture	CE	2	2	0	4	3	40	60	20	30	0	0	150
6	SECE3531	Wireless Network & Mobile Computing	CE	2	2	0	4	3	40	60	20	30	0	0	150
	SECE3541	Software Testing & Quality Assurance	CE	2	2	0	4	3	40	60	20	30	0	0	150
	SEIT3531	Image Processing	IT	2	2	0	4	3	40	60	20	30	0	0	150

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT3010
Course Name: Software Engineering
Prerequisite Course(s): Basics of Object-Oriented Programming and UML

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	00	01	04	40	60	0	0	20	30	150

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, process, criteria, strategies, and methods.
- discuss various software testing issues and solutions in software unit test; integration, regression, and system testing.
- learn the process of improving the quality of software work products.
- gain the techniques and skills on how to use modern software testing tools to support software testing projects.
- expose Software Process Improvement and Reengineering.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Software Engineering** Study of Different Models, Software Characteristics Components, Applications, Layered Technologies, Processes, Methods and Tools, Generic View of Software Engineering, Process Models- Waterfall model, Incremental, Evolutionary process models- Prototype, Spiral, and Concurrent Development Model.	07	15
2.	**Requirements Engineering** Problem Recognition, Requirement Engineering tasks, Processes, Requirements Specification, Use cases, and Functional specification, Requirements validation, Requirements Analysis, Modeling – different types.	06	15

3.	**Structured System Design** Design Concepts, Design Model, Software Architecture, Data Design, Architectural Styles and Patterns, Architectural Design, Alternative architectural designs, Modeling Component level design and its modeling, Procedural Design, Object Oriented Design.	05	05
4.	**User Interface Design** Concepts of UI, Interface Design Model, Internal and External Design, Evaluation, Interaction, and Information Display Software.	02	05
5.	**Planning a Software Project** Scope and Feasibility, Effort Estimation, Schedule and staffing, Quality Planning, Risk management- identification, assessment, control, project monitoring plan, Detailed Scheduling.	03	10
	Section II		
Module No.	Content	Hours	Weightage in %
1.	**Quality Assurance** Quality Control, Assurance, Cost, Reviews, Software Quality Assurance, Approaches to SQA, Reliability, Quality Standards-ISO9000 and 9001.	04	10
2.	**Coding and Unit Testing** Programming principles and guidelines, Programming practices, Coding standards, Incremental development of code, Management of code evaluation, Unit testing- procedural units, classes, Code Inspection, Metrics – size measure, complexity metrics, Cyclomatic Complexity, Halstead measure, Knot Count, Comparison of Different Metrics.	07	15
3.	**Testing** Concepts, Psychology of testing, Levels of testing, Testing Process- test plan, test case design, Execution, Black-Box testing – Boundary value analysis – Pairwise testing- state-based testing, White-Box testing – criteria and test case generation and tool support, Metrics – Coverage analysis-reliability.	07	15
4.	**Software Project Management** Management Spectrum, People –Product – Process- Project, W5HH Principle, Importance of Team Management.	02	05
5.	**Case Tools and Study** Introduction to CASE Building Blocks of CASE, Integrated CASE Environment.	02	05

List of Tutorial:

Sr. No.	Name of Tutorial	Hours
1.	To identify the role of the software in today's world across a few significant domains related to day to day life.	01
2.	To identify the problem related to software crisis for a given scenario.	01
3.	To identify the suitable software development model for the given scenario.	01
4.	To identify the various requirement development activities viz. elicitation, analysis, specification and verification for the given scenarios.	01
5.	To identify the various elicitation techniques and their usage for the Banking case study.	01
6.	To classify the requirement into functional and non-functional requirements.	01
7.	Identify the elements in software Requirements Specification document.	01
8.	To verify the requirements against the quality attributes.	01
9.	Identify the elements and relationship by analyzing the class diagram of Shop Retail Application case study.	01
10.	Identify the design principle that is being violated in relation to the given scenario.	01
11.	To identify the usage of stubs or drivers in the context of an integration testing scenario.	01
12.	Identify the different types of performance testing.	01
13.	To identify the usage of regression testing.	01
14.	To understand usage of software metrics.	01
15.	Project Work: Understand importance of SDLC approach & various processes.	01

Text Book(s):

Title	Author/s	Publication
Fundamentals of Software Engineering	Rajib Mall	PHI Learning
Software engineering: A Practitioner's Approach	Roger Pressman	McGraw Hill Education

Reference Book(s):

Title	Author/s	Publication
Software Engineering – An Engineering Approach	James F. Peters & Witold Pedrycz	Wiley
Software Engineering – Principles and Practice	Waman Jawadekar	McGraw Hill Education

Web Material Link(s):

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

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Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- prepare SRS (Software Requirement Specification) document and SPMP (Software Project Management Plan) document.
- apply the concept of functional oriented and object-oriented approach for software design.
- recognize how to ensure the quality of software product, different quality standards, and software review techniques.
- apply various testing techniques and test plan in.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SEIT3022
Course Name: Embedded Systems
Prerequisite Course(s): Digital Workshop (SECE2021) and Computer Organization (SECE2040)

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	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the microcontroller architecture and design.
- program microcontroller for a specific task.
- design and build a microcontroller based embedded system.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Computer architecture and the 8051 Microcontroller.** • Computer organization and architecture • The difference between microprocessor and microcontroller • The MCS51 Microcontroller family • The 8051 microcontroller Hardware Structure • Edsim51 software installation and familiarizing	05	10
2.	**Type of Memory of the 8051 Microcontroller.** • Code Memory, Internal and external RAM and ROM • Special Function Registers (SFRs) & Bit Memory • Basic Registers (ACC, Rn, PC, SP and DPTR)	05	10
3.	**Timers and I/O Programming:** • Working of 8051 • TMOD SFRs and TCONSFRs • Initializing and Reading of Timer	04	08
4.	**Arithmetic and Logic Instruction** • Arithmetic Instruction (ADD, ADDC, DA, SUBB, MUL, DIV) • Logic and Compare Instruction • Rotate Instruction and Data serialization • BCD	04	10

5.	**Interfacing of 8051 microcontroller:** • Interfacing into7-Segments; • Interfacing into 4x3 Keypad; • Interfacing into LCD • Interfacing into sensors, ADC and DAC • Interfacing into external memory RAM and ROM	04	12
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Arduino Microcontroller Board** • Introducing the Arduino Board • Installing and familiarizing the Arduino IDE • Project Development with Arduino Uno	08	15
2.	**Interfacing the Arduino Uno into Keypad and 7-Segment** • Connection Diagram • Arduino Program Code	05	11
3.	**Interfacing the Arduino Uno into Keypad and LCD:** • Connection Diagram • Arduino Program Code	05	12
4.	**Interfacing the Arduino Uno into Sensor, and DC-Motor** • Connection Diagram • Arduino Program Code	05	12

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Arduino board introduction and LED	02
2.	Arduino Light Sensor	04
3.	Arduino 7 Segment Display	04
4.	Arduino Distance sensor	04
5.	Arduino DC Motor Control	04
6.	Pir Motion Sensor	04
7.	Arduino Relay connectivity	04
8.	Arduino Temperature sensor	04

Text Book(s):

Title	Author/s	Publication
The 8051 Microcontroller and Embedded Systems: Using Assembly and C.	Mazidi, Muhammad Ali and Mc Kinlay Rolin	Pearson Education
Arduino Cookbook, 2nd Edition	Michael Margolis	O'Reilly Media

Reference Book(s):

Title	Author/s	Publication
Computer Organization and Architecture, 10th Edition	William Stallings	Pearson Education

Web Material Link(s):

- www.keil.com
- http://www.8051projects.net/
- http://www.microcontroller-project.com/
- www.8051project.org/
- https://www.pjrc.com/tech/8051/

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical, which will be evaluated out of 10 marks per each practical and the average of the entire practical will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks.
- External viva consists of 15 marks.

Course Outcome(s):

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

- analyse the digital logic circuit containing combinatorial and sequential logic system.
- distinguish between microprocessor and microcontroller.
- design an embedded system using a microcontroller.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT3032
Course Name: Design and Analysis of Algorithms
Prerequisite Course(s): Introduction to Computer Programming (SECE1020), and Data Structures (SECE2031)

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	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- develop logic building and problem-solving skills.
- understand how to calculate time complexity and space complexity of any algorithm.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in%
1.	**Fundamental concept of Algorithm Design & Analysis** Algorithm: characteristics, specifications, Writing Pseudo-Code, Frequency count and its importance in analysis of an algorithm, Asymptotic Notations: Time complexity & Space complexity of an algorithm, Big 'O'& 'Ω' notations, Best, Worst and Average case analysis of an algorithm, Analysis of searching algorithms: sequential, binary search, Analysis of sorting methods: bubble, insertion, selection, heap sort, Analysis of each sorting technique for best, worst and average case, Concept of Internal & External sorting.	06	15
2.	**Divide and Conquer Algorithmic Design Method** Divide and conquer: basic algorithm and characteristics, Binary Search: method and analysis of binary search for best, worst and average case for searches, Quick Sort, Merge Sort: method and analysis of algorithms, Finding the largest and smallest number in a list, Matrix Multiplication.	06	15
3.	**Greedy Method** The Greedy Method: basic algorithm and characteristics, Fractional Knapsack Problem solving using greedy method, Optimal merge patterns and optimal storage on tapes, Job	06	10

	sequencing with deadlines, Huffman Coding: greedy method, Minimum cost spanning trees: Prim's and Kruskal's Algorithm, Single source shortest path.		
4.	**Dynamic Programming Method** Dynamic Programming Method: basic algorithm and characteristics, 0/1 Knapsack Problem solving using DP method, Multistage graphs, Optimal binary search trees, Travelling salesperson problem.	05	10
	Section II		
Module No.	Content	Hours	Weightage in%
1.	**Backtracking Method** Backtracking Method: basic algorithm and characteristics, Solving n-queens problem, Sum of subsets problem, Graph coloring, Hamiltonian cycle (TSP).	06	15
2.	**Branch and Bound technique** Branch and bound: basic algorithm and characteristics, solving n-queens using branch & bound, FIFO Branch and Bound & Least Cost Branch & Bound, Least Cost Search, 15-puzzle, Solving Travelling salesperson problem using branch & bound.	08	15
3.	**String Matching** Introduction, The naive string-matching algorithm, The Rabin-Karp algorithm, String Matching with finite automata, The Knuth-Morris-Pratt algorithm.	04	12
4.	**Introduction to NP-Completeness** The class P and NP, Polynomial reduction, NP- Completeness Problem, NP-Hard Problems. Travelling Salesman problem, Hamiltonian problem, Approximation algorithms.	04	08

List of Practical:

Sr No	Name of Practical:	Hours
1.	Implementation and Time analysis of Bubble sort.	02
2.	Implementation and Time analysis of Selection sort.	02
3.	Implementation and Time analysis of Insertion sort.	02
4.	Implementation and Time analysis of Merge sort.	02
5.	Implementation and Time analysis of Quick sort.	02
6.	Implementation and Time analysis of searching algorithm.	04
7.	Implementation of a dynamic programming.	04
8.	Implementation of shortest path algorithm.	02
9.	Implementation of graph traversal technique.	02
10.	Implementation of Minimum Cost Spanning Tree.	02
11.	Implementation of backtracking.	02
12.	Implementation of Rabin-Karp algorithm.	02
13.	Implementation of greedy algorithm.	02

Text Book:

Title	Author/s	Publication
Fundamentals of Computer Algorithms	Ellis Horowitz, Sarataj Sahni, S.Rajasekaran	Universities Press

Reference Book(s):

Title	Author/s	Publication
Introduction to Algorithms	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein	PHI Learning
Algorithm Design	Michael Goodrich, Roberto Tamassia.	Wiley Student Edition

Web Material Link(s):

- http://www.personal.kent.edu/~rmuhamma/Algorithms/algorithm.html
- https://nptel.ac.in/courses/106101060

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 per each practical and average of the entire practical will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance consists of 15 marks during End Semester Exam.
- External viva consists of 15 marks in End Semester Exam.

Course Outcome(s):

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

- analyze and design algorithms and to appreciate the impact of algorithm design in practice.
- understand how the worst-case time complexity of an algorithm is computed.
- understand how asymptotic notation is used to provide a rough classification of algorithms.
- design time and space efficient algorithms using different techniques.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE3011
Course Name: Computer Networks
Prerequisite Course(s): Operating System (SEIT2031)

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	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the concept of data communication.
- understand the concepts and layers of OSI and TCP-IP reference models.
- get familiar with different protocols and network components.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** Overview of network and data communication, Data Communications, Computer Networking, Protocols and Standards, types of Network, 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** Data and transmission techniques, Multiplexing, Transmission media, 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	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 %
1.	**Network Layer** A network Layer design issue, Routing algorithms, and protocols, Congestion Control Algorithms, Internetworking, Addressing, N/W Layer Protocols and recent developments.	08	20
2.	**Transport Layer** Transport services, Design issues, transport layer protocols, Congestion Control, QOS and its improvement.	06	15
3.	**Application Layer** Client-Server Model, DNS, SMTP, FTP, HTTP, WWW, and recent development	08	15

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Implement Packet Generation having information of packet number (2-dig), Total no of packets (2 dig), & data itself in the packet.	08
2.	Implementation flow control algorithms, CRC, VRC, LRC	06
3.	Implement CSMA/CD between two machines	06
4.	Implement Token ring between 3 machines.	06
5.	Study of switches, Hubs, Routers, and gateway.	04

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):

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

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- be familiar with the basics of data communication.
- be familiar with various types of computer networks.
- understand the concepts of protocols, network interfaces, and performance issues in networks.
- have experience in network tools and network programming.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE3500
Course Name: Seminar
Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
00	02	00	02	00	00	50	00	00	00	50

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the current trend or technology.
- aware of future technologies.
- try to learn new technologies and apply them as much as possible.

Outline of the Seminar:

Sr. No.	Seminar Guidelines
1.	Selection of Title
2.	Literature Review
3.	Progress of study
4.	Report Writing
5.	Presentation & Question-Answer

Detailed Guideline(s):

Sr. No.	Content	Hours	Weightage in %
1.	**Selection of Title** Select a topic according to the specialization of students or future technology. After selecting the topic and proposed title, get approval from the concerned faculty.	03	10
2.	**Literature Review** Study of various technology or area to select a topic of the seminar.	06	10
3.	**Progress of study** The students must report the progress/status of their work every fortnight to their respective supervisor.	12	40

4.	**Report Writing** The report must be prepared as per suggested guidelines consisting of Preamble, Objectives, Scope, Introduction, Conclusions, Recommendations and Annexure.	06	10
5.	**Presentation & Question-Answer** At the end of the semester, the student/group of students shall give a presentation of their work followed by a viva-voce examination.	03	30

Course Evaluation:

Sr. No.	Evaluation criteria	Marks
1.	Selection of the topic related field (Within first 30 Days of commencement of semester)	20
2.	Initial Presentation of the topic (Within 31 to 40 Days of commencement of semester)	20
3.	An actual study carried out (Within 41 to 60 Days of commencement of semester)	20
4.	Report writing as per guidelines	20
5.	Final Presentation & Question-Answer session	20
	Grand Total:	**100**

The entire evaluation will be converted equivalent to 50 Marks.

Course Outcome(s):

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

- get information about various existing and future technologies.
- learn the technology of choice.
- apply knowledge in the field.

P P Savani University
School of Engineering

Centre for Skill Enhancement & Professional Development

Course Code: SEPD3010
Course Name: Professional Communication & Soft Skills
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	
1	2	0	2	0	0	50	50	0	0	100

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the multifaceted professional speaking process.
- learn the writing etiquettes for professional purposes
- gain basic knowledge, skills and the right attitude to succeed in the future professional working environment.
- develop confidence, enhance their professional communication ability in civilized, harmonized manner.
- sharpen communication skills with reference to organizational structure
- expose themselves to the modern modes of communication

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Self-Management & Career Building** • Self-Evaluation, discipline, and criticism • SWOT analysis to identify personal strength/ weakness • Planning & Goal Setting • MBTI test for self-analysis • Profiling on Online Platforms	01	07
2.	**Interpersonal Organizational Communication** • Interpersonal Behavioral Skills • Understanding empathy and comprehend other's opinions/ points of views, Managing Positive and negative emotions • Healthy and Unhealthy expression of emotions. • Mutuality, Trust, Emotional Bonding and handling situation in interpersonal relationship	04	25

3.	**Professional Communication (Speaking) - I** • Professional Communication and Rhetorics • Art of Telephonic Conversation • Public Speaking	03	18
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Professional Communication (Speaking) – II** • Group Discussion (Concept, importance, Methods, Dos and Don'ts, Paralinguistic and Nonverbal Etiquettes) • Personal Interview (Concept, Importance, Methods, Dos and Don'ts, Type, Paralinguistic and Nonverbal Etiquettes)	03	20
2.	**Professional Communication (Writing)** • Cover Letter and Resume Building • Email writing • Report Building • Technical/ Academic Writing (Reference/ citation/ plagiarism)	04	30

List of Practical:

Sr. No.	Name of Practical	Hours
1.	SWOT Analysis & Profiling	04
2.	MBTI Test	02
3.	Interpersonal Organizational Communication	02
4.	Group Discussion	04
5.	Personal Interview	04
6.	Cover Letter and Resume	06
7.	Email and Report Writing	04
8.	Technical Academic Writing	04

Reference Book(s):

Title	Author/s	Publication
Professional Communication	Sheekha Shukla	2010, WordPress
Professional Communication Skills	Rajesh Kariya	Paradise Publication, Jaipur
Soft Skills and Professional Communication	Petes S. J., Francis.	Tata McGraw-Hill Education, 2011
Effective Communication and Soft Skills	Nitin Bhatnagar	Pearson Education India
Behavioural Science: Achieving Behavioural Excellence for Success	Dr. Abha Singh	John Wiley & Sons, 2012
The Hard Truth about Soft Skills	Klaus, Peggy, Jane Rohman & Molly Hamaker	London: Harper Collins

Course Evaluation:

Practical:

- 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 student will be able to

- understand the importance of self-analysis for career building.
- learn tactics of communication in professional/ organizational ambiance.
- master the art of conversation and public speaking
- expose themselves for placement processes
- develop writing etiquettes pertaining to placement and organizational context

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT3910
Course Name: Summer Training
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	00	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

- have first-hand experience the real time situations in industrial scenario.
- get familiar with engineering applications in industrial spectrum
- learn to adapt themselves in professional scenario

Outline of the Course:

Sr. No	Content
1.	Selection of Companies
2.	Company Information collection
3.	Report Writing
4.	Presentation & Question-Answer

Course Evaluation:

Sr. No.	Evaluation criteria	Marks
1	Actual work carried & Report Submission	50
2	Final Presentation & Question-Answer session	50
	Grand Total:	**100**

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

- apply their theoretical knowledge into reality.
- learn to adapt the workplace situations when they will be recruited.
- be prepared for the real world situations in their future.

Report Writing Guidelines

A. Report Format:

1. Title Page (to be provided by the respective supervisor)

The title page of the project shall give the following information in the order listed:

- Full title of the project as approved by the Mentor;
- The full name of the student/Group of students with enrollment number;
- The qualification for which the project is submitted;
- The name of the institution to which the project is submitted;
- The month and year of submission.

2. Project Certification Form
   [The form should be duly filled signed by the supervisors.]
3. Acknowledgements
   [All persons (e.g. supervisor, technician, friends, and relatives) and organization/authorities who/which have helped in the preparation of the report shall be acknowledged.]
4. Table of Contents/Index with page numbering
5. List of Tables, Figures, Schemes
6. Summary/abstract of the report.
7. Introduction/Objectives of the identified problem
8. Data Analysis and Finding of Solution
9. Application of the identified solution
10. Future Scope of enhancement of the Project and Conclusion
11. "Learning during Project Work", i.e. "Experience of Journey during Project Duration"
12. References(must)
13. Bibliography
14. Annexures (if any)

B. Guideline for Report Formatting:

- Use A4 size page with 1" margin all sides
- Header should include Project title and footer should contain page number and enrollment numbers
- Chapter Name should be of Cambria font, 20 points, Bold
- Main Heading should be of Cambria font, 14 points, Bold
- Sub Heading should be of Cambria font, 12 points, Bold
- Sub Heading of sub heading should be of Cambria font, 12 points, Bold, Italic
- Paragraph should be of Cambria font, 12 points, no margin at the start of the paragraph
- Line spacing for all content – 1.15, before - 0, after - 0
- No chapter number for references
- Before chapter 1, give page numbers in roman letter

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT3041
Course Name: Web Technology
Prerequisite Course(s): Introduction to Web Designing (SEIT1010)

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	04	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 of PHP.
- understand working knowledge of dynamic web site design.
- Learn the use cookies and sessions.
- understand how to work with form data.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to PHP** Client-Server Model, Scripting Languages vs. Programming Language, PHP, MySQL, WAMP/XAMPP installation, Usage of PHP in IT industry. Evaluation of PHP, Basic Syntax, Defining variable and constant, Data type, Operator and Expression.	04	08
2.	**Decisions and loop** Making Decisions, Doing Repetitive task with looping, Mixing, Decisions, and looping.	03	12
3.	**Function** What is a function, define a function, Call by value and Call by reference, Recursive function, PHP include () and require (), String, Creating and accessing, String Searching & Replacing String, Formatting String, String, Related Library function?	04	15
4.	**Array** Anatomy of an Array, creating an index based and Associative array Accessing array, Element Looping with Index based array, looping with associative array using each () and foreach (), Some useful Library function.	04	15

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Handling Html form with PHP** Capturing Form, Data Dealing with Multi-value filed, and Generating File uploaded form, redirecting a form after submission. Working with file and Directories: Understanding file& directory, Opening, and closing, a file, Coping, renaming and deleting a file, working with directories, Creating and deleting the folder, File Uploading & Downloading.	06	20
2.	**Session and Cookie** Introduction to Session Control, Session Functionality, Cookies, Setting Cookies with PHP. Using Cookies with Sessions, Deleting Cookies, Registering Session variables, Destroying the variables and Session.	04	10
3.	**Database Connectivity with MySql** Introduction to RDBMS, Connection with MySql Database, performing basic database operation (DML- Insert, Delete, Update, Select), Setting query parameter, Executing query-Join (Cross joins, Inner joins, Outer Joins, Self-joins.)	05	20

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to PHP.	02
2.	Basics of PHP • Data Types • Operators • Conditional Statements • Loops	08
3.	Implementation of functions • Types of functions	08
4.	Implementation of Arrays	06
5.	Implementation of forms. • Validation	04
6.	Implementation of file operations • Creation of file, open, read, write	06
7.	Implement of string functions.	02
8.	Implementation of cookies. • Create, modify, delete	08
9.	Implementation of session • Start, get values, modify values, destroy	06
10.	Implementation of database connectivity.	06
11.	Create an application.	04

Text Book(s):

Title	Author/s	Publication
Learning PHP, MySQL & JavaScript	Michele Davis, Jon Phillips	O' Reilly Media

Reference Book(s):

Title	Author/s	Publication
PHP for the Web: Visual QuickStart Guide	Larry Ullman	Peachpit Press.
PHP, MySQL, and Apache All in One	Juliea C. Meloni	SAMS series, Pearson Education

Web Material Link(s):

- https://www.lynda.com/PHP-training-tutorials/282-0.html
- https://www.w3schools.com/php/php_ref_overview.asp

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical which 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/test consists of 30 marks during End Semester Exam.
- External viva consists of 30 marks in End Semester Exam.

Course Outcome(s):

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

- understand the structure of open source technologies.
- gain the PHP programming skills needed to successfully build interactive, data-driven sites.
- work with form data.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT3062
Course Name: Cryptography & Network Security
Prerequisite Course(s): Computer Network (SECE3011) and Mathematical Methods for Computation (SESH2051).

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	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand cryptography theories, algorithms and systems.
- understand necessary approaches and techniques to build protection mechanisms in order to secure computer networks.

Course Content:

Section – I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** Symmetric Cipher Model, Cryptography and Cryptanalysis, Types of Security, Security Services, Security Attacks and Security Mechanisms, Substitution and Transposition techniques.	02	05
2.	**Classical Encryption Techniques** Substitution Ciphers, Permutation/Transposition Ciphers, PlayFair and Hill Ciphers, Polyalphabetic Ciphers, OTP and Machine Ciphers.	03	05
3.	**Mathematics of Cryptography 1** Integer arithmetic, modular arithmetic.	02	05
4.	**Stream Ciphers and Block Ciphers** Stream ciphers and block ciphers, Block Cipher structure, Data Encryption standard (DES) with example, strength of DES, Design principles of block cipher, AES with structure, its transformation functions, key expansion, example and implementation.	05	10
5.	**Multiple Encryption and Triple DES** Multiple encryption and triple DES, Electronic Code Book, Cipher Block Chaining Mode, Cipher Feedback mode, Output Feedback mode, Counter mode.	02	05

6.	**Mathematics of Cryptography 2** Algebraic Structures, GF (2^n) fields.	02	05
7.	**Public Key Cryptosystems** Public Key Cryptosystems with Applications, Requirements and Cryptanalysis, RSA algorithm, its computational aspects and security, Diffie-Hillman Key Exchange algorithm, Man-in-Middle attack.	04	10
8.	**Key Management and Distribution** Key management and distribution, symmetric key distribution using symmetric and asymmetric encryptions, distribution of public keys, X.509 certificates, Public key infrastructure.	02	05
Section – II			
Module No.	Content	Hours	Weightage in %
1.	**Cryptographic Hash Functions** Cryptographic Hash Functions, their applications, Simple hash functions, its requirements and security, Hash functions based on Cipher Block Chaining, Secure Hash Algorithm (SHA).	05	05
2.	**Message Authentication Codes** Message Authentication Codes, its requirements and security, MACs based on Hash Functions, Macs based on Block Ciphers.	02	05
3.	**Digital Signature, its properties** Digital Signature, its properties, requirements and security, various digital signature schemes (Elgamal and Schnorr), NIST digital Signature algorithm.	02	05
4.	**Remote User Authentication with Symmetric and Asymmetric Encryption** Remote user authentication with symmetric and asymmetric encryption, Kerberos.	02	05
5.	**Network Security** What is Network Security? Introduction to TCP/IP protocol stack, Security at various layers of TCP/IP, Types of Network Attacks: Active Attacks and Passive Attacks.	02	05
6.	**Firewalls and Web Security** Packet filters, Application level gateways, Encrypted tunnels, Cookies, Web security problems.	02	05
7.	**Application Layer Security** Electronic Mail Security: Distribution lists, Establishing keys, Privacy, source authentication, message integrity, non-repudiation, proof of submission, proof of delivery, message flow confidentiality, anonymity, Pretty Good Privacy (PGP).	02	05
8.	**Security at Network Layer** SSL and TLS. IPSec, AH, ESP, IKE.	04	10
10.	**Advanced Topics** Intruders, Virus, Trojans, Malware, Ransomware.	02	05

List of Practical:

Sr. No.	Name of Practical	Hours
6.	Write a program to implement Ceaser cipher.	02
7.	Write a program to implement the Playfair cipher.	02
8.	Write a program to implement the columnar transposition cipher.	02
9.	Write a program to implement rail fence transposition cipher.	02
10.	Write a program to implement Vernam cipher.	02
11.	Write a program to implement n-gram Hill Cipher.	02
12.	Write a program to implement the Vigenere Cipher.	02
13.	Write a program that implements the Extended Euclidean Algorithm to find inverse of a given number in the Galois field.	02
14.	Write a program to implement DES Cipher.	04
15.	Write a program to implement AES Cipher.	04
16.	Write a program to implement RSA Cryptosystem.	04
17.	Demonstration of Wireshark for Packet Capturing.	02

Text Book(s):

Title	Author/s	Publication
Cryptography and Network Security: Principles and Practice, 5/e	William Stallings	Prentice Hall

Reference Book(s):

Title	Author/s	Publication
Cryptography and Network Security	Behrouz A. Forouzan	McGraw-Hill Education
Network Security: Private Communications in a Public World, 2nd Edition	Charlie Kaufman, Radia Perlman and Mike Speciner	Prentice Hall
Handbook of Applied Cryptography	Alfred J. Menezes, Jonathan Katz, Paul C. van Oorschot, Scott A. Vanstone	CRC Press
Computer Security, 3/e	Dieter Gollmann	Wiley

Web Material Link(s):

- http://ggu.ac.in/download/Class-Note14/public%20key13.02.14.pdf
- https://onlinecourses.nptel.ac.in/noc19_cs28/preview

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 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- learn the concepts related to applied cryptography, including plaintext, cipher text, symmetric cryptography, asymmetric cryptography, and digital signatures.
- learn the theory behind the security of different cryptographic algorithms.
  learn common network vulnerabilities and attacks, defense mechanisms against network attacks, and cryptographic protection mechanisms.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SEIT3071
Course Name: Advance Java Technology
Prerequisite Course(s): Object oriented programming with Java

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	4	0	5	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective of the Course:
To help learners to

- understand J2EE architecture.
- construct web application using servlets, Java Server pages.
- learn advanced java programming concepts like hibernate, struts, Java server faces, Enterprise java beans, etc.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Client Server Technology** Introduction to Single Tier Architecture, Two Tier Architecture, Multitier Architecture, HTTP protocol: Request and Response, Web Container, Web Server, Overview of J2EE, J2EE Architecture, J2EE Technology, Introduction to Ajax, XML HTTP Request & Response, Introduction to RMI, RMI Architecture.	05	10
2.	**Servlets Programming** Introduction, Servlet Implementation, Servlet configuration, Servlet life cycle, servlet session, Context and Collaboration, Web Archive files, Deployment Descriptor, Deployment Configuration.	09	20
3.	**Java Server Page** **JSP:** Overview, lifecycle, Architecture, **JSP Elements:** Directives, Scripting, Action tags, Implicit Objects, Comments, Custom Tags, page, **Scope:** page, request, session, JSP Exception Handling.	09	20

Section II			
Module No.	Content	Hours	Weightage in %
1.	**J2EE and JDBC:** J2EE architecture, Enterprise application concepts, n-tier application concepts, J2EE platform, HTTP protocol, Web application, Web containers and application servers, Introduction to java database programming, JDBC driver types, Steps to connect JDBC, JDBC statement interface, JDBC prepared statement interface, JDBC callable statement interface, Transaction management, Java beans.	06	15
2.	**Web Services and Java MailbWeb Services:** Introduction, Web Service Technology, J2EE for web service, developing web services. **Java Mail:** Mail Protocols, Components of the Java mail, Sending mail, reading mail, saving and loading mail.	06	15
3.	**Hibernate & Struts** **Hibernate:** Introduction, Hibernate Architecture, component of Hibernate, Hibernate query Language, Hibernate O/R mapping. **Struts:** MVC Architecture, Struts, framework, working of struts, Struts controller, action class, Struts validator framework.	06	10
4.	**JSF and EJB :** **Java server faces:** Introduction**,** JSF architecture, components of JSF, JSF lifecycle, JSF configuration. **EJB:** Enterprise bean architecture, Benefits of enterprise bean, types of beans, Accessing beans, packaging beans.	04	10

List of Practical(s):

Sr. No	Name of Practical	Hours
1.	Introduction to client-server architecture	04
2.	Study and implementation of servlet programming	08
3.	Study and implementation of Java Server Page	12
4.	Study and implementation of web service	08
5.	Study and implementation of Java Mail	04
6.	Study and implementation of hibernate	08
7.	Study and implementation of struts	08
8.	Study and implementation of JSF	04
9.	Study and implementation of EJB	04

Reference Book(s):

Title	Author/s	Publication
Complete Reference J2EE	James Keogh	mcgraw
Spring in Action 3rd edition	Craig walls	Manning
JDBC™ API Tutorial and Reference	Maydene Fisher, Jon Ellis, Jonathan Bruce	Addison Wesley

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical which 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/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 student will be able to

- understand Client-Server Architecture.
- design web applications using a servlet, Java Server Pages.
- understand fundamentals of all advance Java concepts.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE3031
Course Name: Data Warehousing & Data Mining
Prerequisite Course(s): Database Management System (SECE2011)

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	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- identify the key processes of data mining as part of the knowledge discovery process.
- discover the knowledge imbibed in the high dimensional system.
- apply data mining techniques to solve real-time problems.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** Motivation and Importance, Different kinds of Data, Data Mining Functionalities, Classification of data mining systems, Major issues in Data Mining.	03	10
2.	**Data Pre-processing** Overview, need for pre-processing, Issues related to efficient data handling (Extraction, Transformation, And updating of large databases), Data Summarization, Data Cleaning, Data Integration and Transformation, Data Reduction, Data Discretization and Concept Hierarchy.	08	15
3.	**Data Warehouse and OLAP Technology** Multidimensional data model, Data warehouse Architecture, Data warehouse implementation, Efficient methods for data cube computation, Attributes Oriented Induction.	06	15
4.	**Mining Frequent Patterns, Associations and Correlations** Basic concept, Efficient and scalable frequent itemset mining methods, Mining Association Rules, Association Mining to Correlation Analysis, Constraint-Based Association mining.	05	10

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Classification** Introduction, Issues regarding classification, Classification by decision tree induction, Bayesian classification, rule-based classification, classification by back propagation, support vector machines, associative classification, lazy learners.	06	16
2.	**Prediction** Classification vs. prediction, issues of prediction, linear regression, nonlinear regression, accuracy and error measures, evaluation of the accuracy of a classifier or predictor, ensemble methods.	06	14
3.	**Cluster Analysis** Types of data in cluster analysis, a categorization of major clustering methods, partitioning methods, hierarchical methods, density-based methods, grid-based methods, model-based clustering methods, clustering high dimensional data, outlier analysis.	11	20

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to data mining tool: Weka	04
2.	Solve classification problems using WEKA	04
3.	Solve clustering problems using WEKA	04
4.	Introduction to data mining tool: XL Miner	02
5.	Introduction to data mining tool: Rapid Miner	02
6.	Introduction to data mining tool: Orange	02
7.	Introduction to data mining tool: R	02
8.	Introduction to data mining tool: Knime	02
9.	Introduction to data mining tool: Tanagra	02
10.	Tools to create different data warehouse schemas	06

Text Book(s):

Title	Author/s	Publication
Data Mining Concepts and Techniques	Jiawei Han, Micheline Kamber Jian Pei	Elsevier

Reference Book(s):

Title	Author/s	Publication
Data Mining	Arun K. Pujari	University Press
Data Warehousing Fundamentals	Paulraj Ponnian	John Willey & Sons
Introduction to Data Mining	Tan, Steinbach, Karpatne, Kumar	Addison-Wesley

Web Material Link(s):

- https://www.cs.waikato.ac.nz/ml/weka
- https://ocw.mit.edu/courses/sloan-school-of-management/15-062-data-mining-spring-2003/
- https://www.tutorialspoint.com/dwh/dwh_data_warehousing.htm

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical, which will be evaluated out of 10 marks per each practical and the average of the entire practical will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks.
- External viva consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- learn to discover interesting patterns from large amounts of data to analyze predictions and classification.
- understand warehousing architectures and tools for systematically organizing data and use the data to make strategic decisions.
- develop a data mining application for data analysis using various tools.

P P Savani University
School of Engineering

Centre for Skill Enhancement & Professional Development

Course Code: SEPD3020
Course Name: Corporate Grooming & Etiquette
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	
01	02	00	02	00	00	50	50	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

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

- learn corporate and professional structure and mannerisms.
- acquire self-development skills to balance casual and formal situation.
- polish their personal skills for apt behavior in the context of corporate structure.
- develop adequate Skill set required for the workplace.
- become aware of the professional etiquettes and tactics to follow them.

Course Content:

Section – I			
Module No.	Content	Hours	Weightage in %
1.	**Corporate Grooming** • Introduction to corporate culture • Corporate Expectations • Need of Self-Grooming to the Corporate Expectations • Understanding and importance of Professionalism	03	25
2.	**Personal Skills** • Behavioral skills • Language Skills • Knowledge Skills • Problem Solving Skills • Developing professional attitude	04	25
Section – II			
Module No.	Content	Hours	Weightage in %
1.	**Management Skills** • Self-management • Time management • Work-life balance	04	25

2.	**Organizational Etiquettes** • General Workplace Etiquettes • Presentation Etiquettes • Meeting Etiquettes	04	25

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Corporate Grooming (Video session/ Role Play/ Skit)	04
2.	Personal Skills (Games/ Quiz/ Activities)	08
3.	Management Skills (Management Activities/ Video Sessions)	06
4.	Organizational Etiquettes (Case Study/ Activities/ Video Sessions)	06
5.	Computer Assisted Activities of Corporate Grooming	06

Reference Book(s):

Title	Author/s	Publication
Grooming and Etiquette for Corporate Men and Women	John Chibaya Mbuya, Bulelwa Monica Maphela	Lambert Academic Publishing
Effective Communication Skills for Public Relations	Andy Green	Kogan Page Ltd.
Personality Development and Soft Skills	Barun Mitra	Oxford University Press, 2016
The EQ Edge: Emotional Intelligence and Your Success	Stein, Steven J. & Howard E. Book	Jossey-Bass,3rd Edition 2011.
Cross Cultural Management: Concepts and Cases	Shobhana Madhavan	Oxford University Press, 2016
Corporate Grooming and Etiquette	Sarvesh Gulati	Rupa Publications India Pvt. Ltd., 2012
Behavioral Science: Achieving behavioral Excellence for Success	Dr. Abha Singh	Wiley & Sons, 2012

Course Evaluation:

Practical

- Continuous Evaluation consists of the performance of practical to be evaluated out of 10 marks for each practical and average of the same will be converted to 30 marks.
- Internal viva consists of 20 marks.
- Practical performance/quiz/drawing/test/submission consists of 25 marks during End Semester Exam.
- Viva/oral performance consists of 25 marks during End Semester Exam.

Course Outcome(s):

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

- understand the importance of professional etiquettes and ways to improve the same.
- gain the knowledge and practice of skill sets required in corporate set up.
- learn personal management skills in the organizational context.
- develop an awareness about the corporate etiquettes.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE3910
Course Name: Minor Project
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	03	00	03	00	00	100	100	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the current trend or technology.
- aware of future technologies.
- try to learn new technologies and apply them as much as possible.

Outline of the Seminar:

Sr. No.	Seminar Guidelines
1.	Selection of Title
2.	Literature Review
3.	Gap Identification
4.	Proposed Scheme
5.	Implementation of the proposal
6.	Report Writing
7.	Presentation & Question-Answer

Detailed Guideline(s):

Sr. No.	Content	Hours	Weightage in %
1.	**Selection of Title** Select a topic according to the specialization of students or future technology. After selecting the topic and proposed title, get approval from the concerned faculty.	06	10
2.	**Literature Review** Study of various technology or area to select a topic of the seminar.	12	10
3.	**Gap identification and Proposal** Students must identify the gaps in the existing research and design a proposal which will help in overcome the same.	10	40

4.	**Implementation** Students must implement their proposal in any of the programming languages.	08	20
5.	**Report Writing** The report must be prepared as per suggested guidelines consisting of Preamble, Objectives, Scope, Introduction, Conclusions, Recommendations and Annexure.	04	10
6.	**Presentation & Question-Answer** At the end of the semester, the student/group of students shall give a presentation of their work followed by a viva-voce examination.	05	10

Course Evaluation:

Sr. No.	Evaluation criteria	Marks
1.	Selection of the topic related field (Within first 30 Days of commencement of semester)	40
2.	Initial Presentation of the topic (Within 31 to 40 Days of commencement of semester)	40
3.	An actual work carried out (Within 41 to 60 Days of commencement of semester)	40
4.	Report writing as per guidelines	40
5.	Final Presentation & Question-Answer session	40
	Grand Total:	**200**

The entire evaluation will be converted equivalent to 200 Marks.

Course Outcome(s):

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

- get information about various existing and future technologies.
- learn the technology of choice.
- apply knowledge in the field.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE3511
Course Name: Programming with .NET
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	
02	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:
To help learners to
- understand the .NET framework and its applications.
- understand the basics of C#.
- understand ASP.NET web services and web service security.

Course Content:

Section – I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to .NET Framework** .NET Overview, NET framework, course mechanics, CLR, Assemblies (monolithic vs. component-based applications), Execution Model, Client-Side vs. Server-Side Programming.	05	16
2.	**Basics and Console Applications in C#** Name Spaces, Constructors, Destructors, Function Overloading, Inheritance, Operator Overloading, Modifier Properties, Indexers, Attributes, Reflection API, Console Applications, Generating Console Output, Processing Console Input.	05	16
3.	**C#.NET** Language Features and Creating .NET Projects, Namespaces Classes and Inheritance, Namespaces Classes and Inheritance, C, Exploring the Base Class Library, Debugging and Error Handling, Data Types, Exploring Assemblies and Namespaces, String Manipulation, Files and I/O, Collections.	05	18

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Windows Forms and Controls in details** The Windows Forms Model, Creating Windows Forms Windows Forms Properties and Events, Windows Form Controls, Menus, Dialogs, Tool Tips, Printing - Handling Multiple Events, GDI+, Creating Windows Forms Controls.	04	14
2.	**ASP.NET** Introduction to ASP.NET, Working with Web and HTML Controls, Using Rich Server Controls, Login controls, Overview of ASP.NET Validation Controls, Using the Simple Validations, Using the Complex Validators Accessing Data using ADO.NET, Using the Complex Validators Accessing Data using ADO.NET, Configuration Overview, ASP.NET state management, tracing, caching, error handling, security, deployment.	04	12
3.	**Managing State** Preserving State in Web Applications and Page-Level State, Using Cookies to Preserve State, ASP.NET Session State, Storing Objects in Session State, Configuring Session State, Setting Up an Out-of-Process State Server, Storing Session State in SQL Server, Using Cookieless Session IDs, Application State Using the DataList and Repeater Controls, Overview of List-Bound Controls, Creating a Repeater Control and DataList Control.	07	24

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to .NET.	04
2.	Working with .NET and C#.	02
3.	Write C# code to convert infix notation to postfix notation.	02
4.	Write a C# code to convert the following currency conversion. Dollar to Rupee, Euro to Rupee, Pound to Rupee.	02
5.	Working with ASP.NET.	02
6.	Write a program to Enable-Disable Textbox and change the width of Textbox programmatically in ASP.NET.	02
7.	Write a program to increase and decrease the font size.	02
8.	Session and Cookie.	04
9.	Write ASP.NET program to Store Objects in Session State and Storing Session State in SQL Server.	04
10.	Write a C# code to Perform Celsius to Fahrenheit Conversion and Fahrenheit to Celsius conversion.	02
11.	Simple Object Access Protocol (SOAP) and Web Services.	04

Text Book(s):

Title	Author/s	Publication
Professional C#4.0 and .Net 4	Christian Nagel, Bill Evjen, Jay Glynn, K. Watson, M. Skinner	Wrox Publication
C# The Basics	Vijay Mukhi.	BPB Publications

Reference Book(s):

Title	Author/s	Publication
ASP.NET Complete Reference.	Matthew Macdonald and Robert Standefer	McGraw Hill Education

Web Material Link(s):

- https://teamtreehouse.com/learn/csharp
- https://www.asp.net/aspnet/videos
- https://www.asp.net/web-forms/videos/aspnet-35

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- use .NET framework architecture, various tools, and validation techniques, use of different templates available in Visual Studio, implementation and testing strategies in real-time applications.
- understand the development and deployment cycles of enterprise applications.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT3510
Course Name: System Analysis and Design
Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total
				CE	ESE	CE	ESE	CE	ESE	
02	02	00	03	40	60	50	00	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- gather data to analyze and specify the requirements of a system.
- build general and detailed models that assist programmers in implementing a system.

Course Content:

Section – I			
Module No.	Content	Hours	Weightage in %
1.	**Data and Information** Types of information – operational, tactical, strategic and statutory, why do we need information systems? management structure, requirements of information at different levels of management.	05	16
2.	**Systems Analysis and Design Life Cycle** Requirements determination, requirements specifications, feasibility analysis, final specifications, hardware and software study, system design, system implementation, system evaluation, system modification. Role of systems analyst, attributes of a systems analyst, tools used in system analysis.	05	16
3.	**Information gathering** Strategies, methods, case study, documenting study, system requirements specification – from narratives of requirements to classification of requirements as strategic, tactical, operational and statutory.	05	18

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Feasibility analysis** Deciding project goals, examining alternative solutions, cost, benefit analysis, quantifications of costs and benefits, payback period, system proposal preparation for managements, parts and documentation of a proposal, tools for prototype creation.	04	14
2.	**Tools for systems analysts** Data flow diagrams, case study for use of DFD, good conventions, leveling of DFDs, leveling rules, logical and physical DFDs, software tools to create DFDs.	04	12
3.	**Data oriented systems design** Entity relationship model, E-R diagrams, relationships cardinality and participation, normalizing relations, various normal forms and their need, some examples of relational data base design.	04	14
4.	**Structured systems analysis and design** Procedure specifications in structured English, examples and cases, decision tables for complex logical specifications, specification-oriented design vs procedure-oriented design.	03	10

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Prepare a Context level DFD diagram and as many sublevel DFDs by identifying the processes, the entities and arrows to show how the information is passed from one process to another.	06
2.	Prepare a Data Flow Diagram that is drawn for a Food Ordering System. It should contain a process that represents the system. It should also show the participants who will interact with the system	06
3.	Prepare an E-R Diagram showing the relationships one-to-one, one-to-many and many-to-many listing assumptions to justify your answer.	06
4.	The owner is thinking to add a 24-automated rental machine to facilitate his customers to rent any movie at any time of the day, 365 days of the year but before taking his decision he would like to see the response of his customers of how much they would welcome such a facility. As a systems analyst you currently do not have any customer response and you are required to prepare a questionnaire of your own choice i.e. open, closed, bipolar, etc. to gather a fair customer response regarding a24-automated rental machine.	06
5.	Case Study on feasibility analysis.	06

Text Book(s):

Title	Author/s	Publication
System Analysis and Design	Allen Dennis, Barbara Haley Wixom, Roberta M. Roth	Wiley
Modern System Analysis and Design	Jeffery A. Hoffer, Joey F. George, Joseph H. Valacich, Prabin K. Panigrahi	Pearson
Analysis and Design of Information systems	V. Rajaraman	PHI publication

Reference Book(s):

Title	Author/s	Publication
System Analysis and Design Methods	Jeffery L. Whitten, Lonnie D. Bentley.	McGraw Hill Education

Web Material Link(s):

- https://nptel.ac.in/courses/106108102/
- https://www.oreilly.com/library/view/systems-analysis
- https://www.w3computing.com/systemsanalysis/

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical, which will be evaluated out of 10 per each practical. At the end of the semester, the average of the entire practical will be converted to 30 marks.
- Internal submission consists of viva and presentation of the case study document/report prepared as per guidelines of the course coordinator to be evaluated out of 20 marks.

Course Outcome(s):

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

- analyze business problems and develop a requirements document, written in clear and concise business language.
- present this document to a business audience.

School of Engineering

Department of Computer Engineering

Course Code: SECE3520
Course Name: Service Oriented Architecture
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	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- explain the underlying principles of Service Oriented Architecture.
- describe and understand different terminologies used in Service Oriented Architecture.
- apply the different concepts of SOA to build different applications.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction** Fundamental SOA, Characteristics of contemporary SOA, Misperception timeline, Continuing evolution of SOA, Roots of SOA Service-orientation and object-orientation, Web Services, Key Principles of SOA.	03	10
2.	**Enterprise architectures** Integration versus interoperation, J2EE, .NET, Model Driven Architecture, Concepts of Distributed Computing, XML.	04	20
3.	**Basic Concepts** Web services framework, Services (Web services: Definition, Architecture, and standards), Service descriptions with WSDL, Messaging with SOAP, UDDI.	08	20
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Principles of Service-Oriented Architecture** Message Exchange Pattern, Coordination, Atomic Transactions, Business Activities, Orchestration, Choreography, WS-Addressing, WS-Reliable Messaging, WS-Policy (including WS-Policy Attachments and WS-Policy Assertions), WS-Metadata	07	20

	Exchange, WS-Security (including XML-Encryption, XML-Signature, and SAML).		
2.	**Principles of Service-Oriented Computing** RPC versus Document Orientation, Service Life Cycle, Service Creation, Service Design and Build, Service Deployment, Publish Web service using UDDI, Service Discovery, Service Selection, Service Composition, Service Execution, and Monitoring, Service Termination.	08	30

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Develop DTD and XSD for University Information System having Exam Enrollment from the beginning of Semester, along with Exam Registration and Marks submission by Teachers to University from Various Colleges and Results in Sheets Generation by University on Online Report.	02
2.	Develop Mark sheet XML Document and display Mark sheet based on CSS and XSL presentation Format.	04
3.	Develop Java Based Program using JAXP or XML API in reading XML file for Students Information and Display HTML Table.	02
4.	Develop Java Based Web Service using REST and SOAP-Based web service in NetBeans for University Course List and Search Course based Course Title and Course ID.	04
5.	Create DTD file for student information and create a valid well-formed XML document to store student information against this DTD file.	02
6.	Create XMS schema file for student information and create a valid well-formed XML document to store student information against this DTD file.	04
7.	Create web calculator service in .NET Beans and create Java client to consume this web service.	02
8.	Develop same web service using JX-WS.	04
9.	Create web calculator service in .NET and Create java client to consume web service developed using Apache AXIS.	02
10.	Using WS –GEN and WS-Import develop the java web service & call it by Java Client.	04

Text Book(s):

Title	Author/s	Publication
Service Oriented Architecture: Concepts, Technology, and Design	Thomas Erl	Pearson education

Reference Book(s):

Title	Author/s	Publication
Applied SOA	Michael Rosen, Boris L, Kevin S., Marc J. B.	Wiley Publication.
SOA based Enterprise Integration	Waseem Roshen	TMH Publication

Web Material Link(s):

- https://www.service-architecture.com/articles/web-services/service-oriented_architecture_soa_definition.html

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal Viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- understand the concepts of Service Oriented Architecture along with the evolution of SOA.
- understand primary concepts of SOA.
- know the integration of SOA technological points with Web Services.
- implementation of SOA in the development cycle of Web Services.
- integrate SOA technologies with Web Services paradigms.
- can learn the reference model of Service Oriented baseline backend design for the cloud environment.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE3531
Course Name: Wireless Network and Mobile Computing
Prerequisite Course(s): Computer Networks (SECE3011)

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	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- explain the various terminology, principles, devices, schemes, concepts, algorithms and different methodologies used in Wireless Communication Networks.
- learn the basics of Wireless voice and data communication technologies.
- build knowledge on various Mobile Computing Algorithms.
- build skills in working with Wireless application Protocols to develop mobile content applications.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Mobile Computing Architecture** Types of Networks, Architecture for Mobile Computing, 3-tier Architecture, Design Considerations for Mobile Computing, Applications. **Wireless Transmission** Signals, Antennas Signal propagation, Multiplexing, Modulation, Cellular Systems. **Medium Access Control** Motivation for a specialized MAC, SDMA, FDMA, TDMA, CDMA.	03	05
2.	**Wireless Networks – 1** GSM and SMS, Global Systems for Mobile Communication (GSM and Short Service Messages SMS), GSM Architecture, Protocols, Call routing in GSM, Handover, Security, Introduction to SMS, SMS Architecture, SM MT, SM MO, SMS as Information bearer, applications.	04	15

3.	**Wireless Networks – 2** GPRS, GPRS and Packet Data Network, GPRS Network Architecture, GPRS Network Operations, Data Services in GPRS, Applications for GPRS, Billing and Charging in GPRS.	04	15
4.	**Wireless Networks –3** 3G,4G, and 5G Networks, WiMAX, Third Generation Networks, Fourth Generation Networks, Vision of 5G,3G vs. 4G vs. 5G, Features and Challenges, Introduction to WiMAX.	04	15
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Mobile network layer** Mobile IP, Dynamic Host Configuration protocol, Mobile ad-hoc networks **Mobile Transport layer** Traditional TCP, classical TCP improvements, TCP over 3G/4G wireless networks	04	10
2.	**Mobile OS and Computing Environment** Smart Client Architecture, The Client: User Interface, Data Storage, Performance, Data Synchronization, Messaging. The Server: Data Synchronization, Enterprise Data Source, Messaging. Mobile Operating Systems, The Development Process,	04	15
3.	**Building Mobile Internet Applications** Thin client: Architecture, the client, Middleware, Messaging Servers, Processing a Wireless request, Wireless Applications Protocol (WAP) Overview, Wireless Languages: Markup Languages, HDML, WML, HTML, cHTML, XHTML, VoiceXML.	04	15
4.	**The architecture of future Networks, Wireless Sensor Network, IoT**	03	10

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Setup & Configuration of Wireless Access Point (AP)	04
2.	Implementation of Wireless Network with a number of nodes and different parameters using Simulator.	04
3.	Study of WLAN: Ad Hoc & Infrastructure Mode	04
4.	GSM modem study and SMS client-server application	04
5.	Mobile Internet and WML	04
6.	Design and Program Income Tax and Loan EMI Calculator for Mobile Phones	04
7.	Implementation of Mobile Network using Network Simulator (NS2)	06

Text Book(s):

Title	Author/s	Publication
Mobile Communications	Schiller	Pearson
Wireless Communications & Networks	William Stallings	Pearson

Reference Book(s):

Title	Author/s	Publication
Principles of Mobile Computing	UIWE Hansman, Other Merk, Martin-S-Nickious, Thomas Stohe	Springer international Edition
Mobile Computing	Ashok K. Teludkar	TMH
Mobile AdHoc Networks	Chai K.Toh	Prentice Hall
Mobile Computing	Sipra DasBit,Biplab K. Sikdar	PHI,2009

Web Material Link(s):

- http://alphace.ac.in/downloads/notes/cse/10cs831.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 the performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- understand the fundamentals of wireless communications.
- analyze security, energy efficiency, mobility, scalability, and their unique characteristics in wireless networks.
- demonstrate basic skills for cellular networks design.
- apply knowledge of TCP/IP extensions for mobile and wireless networking.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE3541
Course Name: Software Testing & Quality Assurance
Prerequisite Course(s): Software Engineering (SEIT3010)

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	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- identify correctness, completeness and quality of developed Software.
- identify the importance of software testing in Software Development Life-Cycle.
- gain knowledge about various types of software testing.
- train students to create good test cases and improve the quality of software.
- study software testing process and various automated software testing tools.
- develop an application and test it using any automated testing tool.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Basic of software testing & Terminology** Software Development & Software Testing Life Cycle- role and activities, Necessity and Objectives of testing, Quality Concepts, Quality Control, McCall's factor model, Different Software Development Model, Object– oriented testing, Web testing, GUI testing, Elements of Software quality assurance, Quality Assurance Activities, Statistical Quality Assurance, Software Reliability, SQA plan, Testing Standards:-IEEE, CMM, ANSI	5	10
2.	**Levels of Testing** Verification and Validation Model, Techniques of Verification:- Peer Review, Walkthrough, Inspection, FTR, Unit testing, Integration testing, Function Testing, System testing**,** Installation Testing, Usability Testing, Regression testing, Performance testing**:-**Load Testing**,** Stress Testing**,** Security testing**,** Volume testing, Acceptance testing**:-**Alpha testing, Beta testing, Gamma testing.	6	20

3.	**Testing Methods** Black Box methods**: -**Equivalence partitioning**,** Boundary-value analysis**,** Error guessing, graph-based testing methods, Decision Table Testing. White Box methods**: -**Statement coverage**,** Decision coverage**,** Condition coverage, Path testing, Data flow testing.	4	20
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Testing Tools** Features of test tool, Guidelines for selecting a tool, Tools and skills of tester, Static testing tools, Dynamic testing tools, Advantages and disadvantages of using tools, Introduction to open source testing tool.	4	15
2.	**Test Planning & Documentation** Development plan and quality plan objectives, Testing Strategy: -type of project, type of software, Test Management, Strategic Management, Operational Test Management, Managing the Test Team, Test Plans, Test Case, Test Data, Risk Analysis.	6	15
3.	**Defect Management and Test Reporting** Defect Classification, Defect Management Process, Defect Management Tools, Defect life cycle, Defect Reporting, Test reporting, Qualitative and quantitative analysis, Fagan Inspection.	5	20

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Study of manual and automated Testing	02
2.	Introduction to open source testing tool	04
3.	Recording test in analog and context sensitive mode	02
4.	Synchronizing test	02
5.	Checking GUI Objects	02
6.	Checking Bitmap Objects	02
7.	Creating data driven test	02
8.	Maintaining test script	02
9.	Project (Creating test report in Bugzilla)	10
10.	Developing test cases for a particular task	02

Text Book(s):

Title	Author/s	Publication
Software testing principles, Techniques and Tools	M.G.Limaye	Tata McGraw Hill
Software testing	Ron Pattorn	Tech Publications
Software Engineering- a practitioner's approach	Roger Pressman	McGraw Hill

Reference Book(s):

Title	Author/s	Publication
Software testing	Rex Black,	Wrox Publications
Software testing techniques	Boris Bezier	Dreamtech Publications
Effective Methods for Software Testing	William E. Perry	Wiley Publications

Web Material Link(s):

1. https://nptel.ac.in/courses/106105150/
2. https://www.tutorialspoint.com/software_testing/software_testing_qa_qc_testing.htm
3. https://www.softwaretestinghelp.com/web-application-testing/

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of the performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- to understand the importance of software testing in software development process.
- to generate test cases from software requirements.
- to identify the inputs and deliverables of the testing process.
- to understands the importance of automated software testing tools.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT3531
Course Name: Image Processing
Prerequisite Course(s): Computer Graphics & Multimedia (SECE2051

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	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the fundamentals of image processing.
- apply various processes on images for image understanding.
- understand the design aspects and realization of image processing applications.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction and Digital Image Fundamentals** Digital Image Fundamentals, Human visual system, Image as a 2D data, Image representation – Grayscale and Color images, image sampling and quantization.	03	15
2.	**Image enhancement in the Spatial domain** Basic gray level Transformations, Histogram Processing Techniques, Spatial Filtering, Low pass filtering, High pass filtering.	05	15
3.	**Filtering in the Frequency Domain:** Preliminary Concepts, Extension to functions of two variables, Image Smoothing, Image Sharpening, Homomorphic filtering.	03	10
4.	**Image Restoration and Reconstruction:** Noise Models, Noise Reduction, Inverse Filtering, MMSE (Wiener) Filtering.	04	10
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Color Image Processing:** Color Fundamentals, Color Models, Pseudo color image processing.	02	10

2.	**Image Compression** Fundamentals of redundancies, Basic Compression Methods: Huffman coding, Arithmetic coding, LZW coding, JPEG Compression standard.	03	10
3.	**Morphological Image Processing** Erosion, dilation, opening, closing, Basic Morphological Algorithms: hole filling, connected components, thinning, skeleton.	02	10
4.	**Image Segmentation** point, line and edge detection, Thresholding, Regions Based segmentation, Edge linking and boundary detection, Hough transform.	04	10
5.	**Object Recognition and Case studies** Object Recognition- patterns and pattern classes, recognition based on decision-theoretic methods, structural methods, case studies – image analysis, Application of Image processing in process industries.	04	10

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to Image Processing Toolbox.	04
2.	Read an 8bit image and then apply different image enhancement techniques: (a) Brightness improvement (b) Brightness reduction (c) Thresholding (d) Negative of an image (e) Log transformation (f) Power Law transformation.	02
3.	Implement different interpolation techniques using MATLAB/ Scilab.	02
4.	Read an image, plot its histogram then do histogram equalization and comment about the result.	02
5.	(a) Implement Gray level slicing (intensity level slicing) in to read cameraman image. (b) Read an 8bit image and to see the effect of each bit on the image. (c) Read an image and to extract 8 different planes i.e. 'bit plane slicing."	04
6.	Implement various Smoothing spatial filter	02
7.	Read an image and apply (1) Gaussian 3x3 mask for burring (2) High pass filter mask with different masks (3) Laplacian operator with center value positive and negative (4) High boost filtering.	02
8.	Write a program to implement various low pass filters and high pass filter in the frequency domain.	02
9.	Write a program for erosion and dilation, opening & closing using inbuilt and without inbuilt function.	02
10.	Implement and study the effect of Different Mask (Sobel, Prewitt, and Roberts)	02
11.	Implement various noise models and their Histogram	02

12.	Implement inverse filter and Wiener filter over image and comment on them	02
13.	Implement Image compression using DCT Transform	02

Text Book(s):

Title	Author/s	Publication
Digital Image Processing	Rafael C. Gonzalez, Richard E. Woods	Pearson Education
Fundamentals Digital Image Processing	Jain Anil K.	Prentice Hall India Learning

Reference Book(s):

Title	Author/s	Publication
Image Processing, Analysis and Machine Vision	Milan Sonka, Vaclav Hlavac, Roger Boyle	CL Engineering
Biomedical Image Analysis	Rangaraj M. Rangayyan	CRC Press
Digital Image Processing	William K. Pratt	John Wiley & Sons

Web Material Link(s):

- https://nptel.ac.in/courses/106105032/

Course Evaluation:

Theory:

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

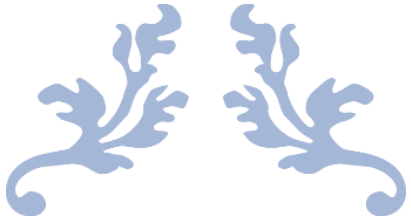
Practical:

- Continuous Evaluation consists of the performance of practical which will be evaluated out of 10 for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- apply knowledge of mathematics for image understanding and analysis.
- design and analysis of techniques/processes for image understanding.
- design, realize and troubleshoot various algorithms for image processing case studies.
- select the appropriate hardware and software tools (Contemporary) for image analysis.



FOURTH YEAR B. TECH.

P P SAVANI UNIVERSITY																
SCHOOL OF ENGINEERING																
TEACHING & EXAMINATION SCHEME FOR B. TECH. INFORMATION TECHNOLOGY PROGRAMME AY: 2018-19																
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**	
7	SEIT4013	Data Science	IT	3	2	0	5	4	40	60	20	30	0	0	150
	SECE4022	Cloud Computing & Applications	CE	3	2	0	5	4	40	60	20	30	0	0	150
	SECE4031	Internet of Things	CE	2	4	0	6	4	40	60	40	60	0	0	200
	SECE4042	Artificial Intelligence	CE	3	2	0	5	4	40	60	20	30	0	0	150
	SEIT4920	Major Project	IT	3			3	3	0	0	100	100	0	0	200
	SEPD4010	Creativity, Problem Solving & Innovation	SEPD	3	0	0	3	3	40	60	0	0	0	0	100
	SEIT4910	Summer Internship / Project 4 Weeks	IT	5	0	0	0	5	0	0	100	100	0	0	200
		Elective-III		2	2	0	4	3	40	60	20	30	0	0	150
						Total	**31**	**30**							**1300**
8	SEIT4930	Project	IT	25			25	25	0	0	200	300	0	0	500
						Total	**25**	**25**							**500**

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

TEACHING & EXAMINATION SCHEME FOR FOURTH YEAR B.TECH. INFORMATION TECHNOLOGY PROGRAMME (ELECTIVE COURSES)

Sem	Course Code	Department Elective 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	
7	SECE4523	Machine Learning	CE	2	2	0	4	3	40	60	20	30	0	0	150
	SECE4530	Research Methodology	CE	2	0	1	3	3	40	60	0	0	50	0	150
	SEIT4521	Blockchain Technology	IT	2	2	0	4	3	40	60	20	30	0	0	150
	SEIT4530	Cyber Security	IT	2	2	0	4	3	40	60	20	30	0	0	150
	SEIT4541	Automata Theory & Language Processor	IT	2	2	0	4	3	40	60	20	30	0	0	150

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT4013
Course Name: Data Science
Prerequisite Course(s): SECE2011 - Database Management System
SECE2031 - Data Structures
SECE3031 - Data Warehouse & Data Mining

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	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- study fundamentals of data analytics and data science pipeline.
- apply statistical methods, regression techniques, and machine learning algorithms to make sense out of both large and small data sets.
- understand various Data Visualization techniques and their applications.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Data Science** Introduction, Terminology, Data Science Process, Data Science Toolkit, Types of Data, Examples and Applications	06	10
2.	**Data collection and management** Introduction, Sources of Data, Data Collection and APIs, Exploring and Fixing Data, Data Storage and Management, Using Multiple Data Sources	07	15
3.	**Statistics for Data Science** Terminology and Concepts of Probability, Introduction to Statistics, Central Tendencies and Distributions, Variance, Outliner Analysis(Box Plot), Distribution Properties and Arithmetic, Inferential Statistics, Introduction to Testing of Hypothesis, Chi-squared test, ANOVA test	10	25

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Machine Learning Algorithm** Linear Regression, Logistic Regression, Decision Tree, Naïve Bayes, Support Vector Machines, Random Forest, Radial Bases Functions -Appropriate problems for Algorithms	10	25
2.	**Data Visualization** Introduction, Types of Data Visualization, Data for Visualization: Data Types, Data Encodings, Retinal Variables, Mapping Variables to Encodings, Visual encodings, Applications of Data Science, Technologies for Visualization.	07	15
3.	Recent Trends in Various Data Collection and Analysis Techniques, Application Development Methods used in Data Science	05	10

List of Practical:

Sr. No	Name of Practical	Hours
1.	Basics of Python for Data Analysis • Why learn Python for data analysis? • Python 2.7 v/s 3.4 • How to install Python? • Running a few simple programs in Python	04
2.	Python libraries and data structures • Python Data Structures • Python Iteration and Conditional Constructs • Python Libraries	06
3.	Exploratory analysis in Python using Pandas • Introduction to series and data frames • Analytics of dataset- Loan Prediction Problem	06
4.	Data Munging in Python using Pandas	04
5.	Building a Predictive Model in Python • Logistic Regression • Decision Tree • Random Forest	10

Text Book(s):

Title	Author/s	Publication
Data Mining: Concepts and Techniques	Jiawei Han, Micheline Kamber and Jian Pei	Morgan Kaufmann
Doing Data Science: Straight Talk from the Frontline	Cathy O'Neil and Rachel Schutt	O'REILLY
Data Science and Big Data Analytics: Discovering, Analyzing, Visualizing and Presenting Data	EMC Education Services	Wiley

Reference Book(s):

Title	Author/s	Publication
Introduction to Data Science: Big Data, Machine Learning, and More Using Python Tools	Arno D. B. Meysman Davy Cielen and Mohamed Ali	Manning Publications
The Data Science Handbook	Field Cady	Wiley
Data Science	John D. Kelleher and Brendan Tierney	MIT Press
Practical Data Science with R	Nina Zumel and John Mount	Manning Publication

Web Material Link(s):

- https://www.edureka.co/blog/what-is-data-science/
- https://www.analyticsvidhya.com/blog/2016/01/complete-tutorial-learn-data-science-python-scratch-2/
- https://www.ngdata.com/top-tools-for-data-scientists/
- https://towardsdatascience.com/intro-to-data-science-part-2-data-wrangling-75835b9129b4
- https://www.allerin.com/blog/top-5-sources-of-big-data
- https://www.tutorialspoint.com/excel_data_analysis/data_analysis_overview.htm
- https://www.tutorialspoint.com/statistics/data_collection.htm
- https://docs.bokeh.org/en/latest/

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 out of 30 marks.
- Submission of assignment which consists of 5 questions to be answered under each module and it consists of 10 marks.
- 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 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva/oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- Understand the key concepts in data science, including their real-world applications and the toolkit used by data scientists;
- Understand how data is collected, managed and stored for data science;
- Understand how data is analyzed, evaluated and visualized.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE4022
Course Name: Cloud Computing & Applications
Prerequisite Course(s): SECE3011 - Computer Networks
SEIT2031 - Operating System

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	05	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand the principles and paradigm of Cloud Computing
- understand the Service Model with reference to Cloud Computing
- appreciate the role of Virtualization Technologies
- gain ability to design and deploy Cloud Infrastructure
- understand cloud security issues and solutions

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Cloud Computing** Overview, Roots of Cloud Computing, Layers and Types of Cloud, Desired Features of a Cloud, Benefits and Disadvantages of Cloud Computing, Cloud Infrastructure Management, Infrastructure as a Service Providers, Platform as a Service Providers, Challenges and Risks	05	10
2.	**Cloud Architecture, Services and Applications** Exploring the Cloud Computing Stack, connecting to the Cloud, Infrastructure as a Service, Platform as a Service, Saas Vs. Paas, Using PaaS Application Frameworks, Software as a Service, Cloud Deployment Models, Public vs Private Cloud, Cloud Solutions, Cloud ecosystem, Service management, Identity as a Service, Compliance as a Service	05	10
3.	**Virtualization, Abstraction and Cloud Platform** Introduction to Virtualization Technologies, Load Balancing and Virtualization, Understanding Hypervisors, Understanding Machine Imaging, Porting Applications, Virtual Machines	07	15

	Provisioning and Manageability Virtual Machine Migration Services, Virtual Machine Provisioning and Migration in Action, Provisioning in the Cloud Hypervisors		
4.	**Cloud Infrastructure and Cloud Resource Management** Architectural Design of Compute and Storage Clouds, Layered Cloud Architecture Development, Design Challenges, Inter Cloud Resource Management, Resource Provisioning and Platform Deployment, Global Exchange of Cloud Resources. Administrating the Clouds, Cloud Management Products, Emerging Cloud Management Standards	06	15
Section II			
Module	Content	Hours	Weightage in %
1.	**Cloud Security** Security Overview, Cloud Security Challenges and Risks, Software-as-a- Service Security, Cloud computing security architecture: Architectural Considerations, General Issues Securing the Cloud, Securing Data, Data Security, Application Security, Virtual Machine Security, Identity and Presence, Identity Management and Access Control, Autonomic Security Establishing Trusted Cloud computing, Secure Execution Environments and Communications, , Identity Management and Access control Identity management, Access control, Autonomic Security Storage Area Networks, Disaster Recovery in Clouds	06	15
2.	**AWS Programming, Management Console and Storage** Basic Understanding APIs - AWS programming interfaces, Web services, AWS URL naming, Matching interfaces and services, Elastic block store - Simple storage service, Define the AWS Cloud and its value proposition, Identify aspects of AWS Cloud economic, List the different cloud architecture design principles, Security and Compliance, Define the AWS shared responsibility model, Define AWS Cloud security and compliance concepts, Identify AWS access management capabilities, Identify resources for security support	09	20
3.	**AWS Technology, Billing and Pricing** Define methods of deploying and operating in the AWS Cloud, Define the AWS global infrastructure, Identify the core AWS services, identify resources for technology support, Compare and contrast the various pricing models for AWS, Recognize the various account structures in relation to AWS billing and pricing, Identify resources available for billing support	07	15

List of Practical:

Sr. No.	Name of Practical	Hours
1	Write pros and cons of Cloud Computing.	04
2	Summarize Cloud service models with real time examples.	04
3	Define Virtualization. Also list and explain different Hypervisors.	04
4	Discuss performance evaluation of service over cloud.	04
5	Software study on Hadoop, MapReduce and HDFS.	04
6	Create an AMI for Hadoop and implementing short Hadoop programs on the Amazon Web Services platform.	06
7	Create a scenario that use Amazon S3 as storage on cloud.	04

Text Book(s):

Title	Author/s	Publication
Cloud Computing Bible	Barrie Sosinsky	John Wiley & Sons

Reference Book(s):

Title	Author/s	Publication
Amazon Web Services for Dummies	Bernard Golden	Dummies
Amazon Web Services in Action	Michael Wittig and Andreas Wittig	Dreamtech Press
Building Applications in the Cloud: Concepts, Patterns and Projects	Christopher M. Moyer	Pearson Addison-Wesley Professional
Cloud Computing Design Patterns	Thomas Erl	Prentice Hall

Web Material Link(s):

- CloudSim 3.0.3
- http://www.cloudbus.org/
- https://aws.amazon.com/
- http://aws.amazon.com/documentation/
- http://docs.aws.amazon.com/IAM/latest/UserGuide/getting-started.html

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation Consist of Performance of Practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal Viva consists of 10 marks.
- Practical performance/quiz/test of 15 marks during End Semester Exam.
- Viva/Oral performance of 15 marks during End Semester Exam.

Course Outcome(s):

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

- explain the core concepts of the cloud computing paradigm: how and why this paradigm shift came about, the characteristics, advantages and challenges brought about by the various models and services in cloud computing.
- apply the fundamental concepts in datacenters to understand the tradeoffs in power, efficiency and cost by Load balancing approach.
- discuss system virtualization and outline its role in enabling the cloud computing system model.
- illustrate the fundamental concepts of cloud storage and demonstrate their use in storage systems such as Amazon S3 and HDFS.
- analyze various cloud programming models and apply them to solve problems on the cloud.
- understand various management and other distinguish services of AWS.
- analyze the billing of resources and other paradigm: how to deal with disasters.
- understand security and compliances for AWS.
- deploy applications over commercial cloud computing infrastructures such as Amazon

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE4031
Course Name: Internet of Things
Prerequisite Course(s): SEIT3022 - Embedded Systems

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	04	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

- learn how to interface sensors and Actuators with embedded IoT devices
- select connectivity and communication IoT protocols
- implement IoT applications

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	Introduction Introduction to Internet of things, end-to-end IoT Architecture, Requirement of IoT challenges and issues of IoT , selection of hardware and software, case studies of IoT applications.	02	06
2.	Embedded IoT Devices Choosing criteria for embedded IoT devices, Enlist MCU based and MPU based IoT devices, Comparison between Aruino Uno, NodeMCU and ESP32, Architecture of ESP8266, variants of ESP8266, Arduino C, GPIO programming.	05	20
3.	Sensors & Actuators Types of sensors, working principles of actuators, Interfacing & Programming of digital, analog, protocol based sensors and actuators	04	12
4.	Networking IoT platform Raspberry Pi and its variant, Raspberry Pi programming, Choosing a right board, IoT gateway, Tools, Sensing IoT Environments.	04	12

Section II			
Module No.	Content	Hours	Weightage in %
1.	**RFID and iBeacons** Introduction to RFID and iBeacon, Hardware & Software, Hardware used for IoT RFID, Connection to Serve, Data on RFID Server and Classic distributed the problem.	04	14
2.	**IoT connectivity protocols** Networks layer protocols: RPL and 6LowPAN, WiFi, Bluetooth, BLE, LORAwan, NFC, cellular, zegbee, and Ethernet	04	14
3.	**IoT communication protocol: MQTT** Existing cloud platforms, Various application layer IoT protocols, MQTT protocol, Building online server using MQTT, data exchange and storage in cloud, User Interface development.	04	14
4.	**IoT Security** IOT Security, Dangers, Assigning values to Information, Security Components, Key Management, Update Management.	03	08

List of Practical:

Sr. No	Name of Practical	Hours
1.	Getting started with Arduino IDE, add ESP8266 and ESP32 in the Arduino IDE. GPIO Interfacing and programming	04
2.	Digital on/off sensor (PIR and IR) Interfacing programming	04
3.	Analog sensors Interfacing (Accelerometer and gyroscope) & programming	04
5.	Interfacing and programming of actuators	04
6.	Walk through existing library for ESP8266. Configure ESP8266 in station and access mode.	02
7.	Development of an offline server using http protocol	04
8.	Development of an online server	04
9.	Experimenting with existing cloud platforms	04
10.	Development of Android applications suitable for IoT	04
11.	Exchange information using MQTT protocol	04
12.	Getting started with Raspberry Pi and OS Installation	04
13.	Experimenting with Raspberry Pi using Python	04
14.	Dashboard development using visual programming: NodeRED	06
15.	IoT based mini project	08

Text Book(s):

Title	Author/s	Publication
Beginning Arduino (2nd Edition)	Michael McRoberts	TIA
Raspberry Pi IoT Projects	John C. Shovic	Apress

Reference Book(s):

Title	Author/s	Publication
Mastering Internet of Things: Design and create your own IoT applications using Raspberry Pi 3	Peter Waher	Packt

Web Material Link(s):

- https://www.ibm.com/blogs/internet-of-things/what-is-the-iot/
- https://www.tutorialspoint.com/internet_of_things/
- https://www.tutorialspoint.com/arduino/
- https://pythonprogramming.net/introduction-raspberry-pi-tutorials/

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 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/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 student will be able to

- understand the fundamentals of the Internet of Things.
- understand IoT architecture, hardware, and software.
- develop projects of the Internet of Things.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE4042
Course Name: Artificial Intelligence
Prerequisite Course(s): SECE2031 - Data Structures
SESH2051 - Mathematical Methods for Computation

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	05	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand basics of AI
- develop roles in future and also introduce the intelligence of machine
- design AI

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**What is AI?** What is an AI Technique? The AI Problems and applications, Major areas of Artificial Intelligence, History of AI	04	10
2.	**Problems, State Space Search & Heuristic Search Techniques** Defining the Problems as a State Space Search, Production Systems: control & search strategies, Depth first and Breadth first search, Hill Climbing, Best first search, A* algorithm	08	20
3.	**Knowledge Representation Issues** Representations and Mappings, Approaches to Knowledge Representation, Using Propositional logic and Predicate Logic, Resolution, Semantic network, Frame based knowledge	06	10
4.	**Representing Knowledge Using Rules** Procedural Versus Declarative Knowledge, Forward Reasoning, Backward Reasoning. Symbolic Reasoning, Under Uncertainty: Introduction to Non Monotonic Reasoning, Logics for Non-monotonic Reasoning	05	10

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Uncertain Reasoning and alternatives** Probability and Bayes' Theorem, Certainty Factors and Rule-Base Systems, Bayesian Networks, Dempster Shafer Theory, Fuzzy sets, Fuzzy Logic, Fuzzy systems, Hidden Markov model	08	20
2.	**Game Theory** Introduction to Game playing, The Minimax search procedure, Alpha-Beta procedure, Refinements, Iterative Deepening	05	10
3.	**Natural Language Processing** Introduction, Syntactic Processing, Semantic Analysis, Discourse and Pragmatic Processing, Spell Checking.	05	10
4.	**Connectionist Models** Introduction to Hopfield Network, Learning in Neural Network, Application of Neural Networks, Recurrent Networks, Introduction to multilayer Neural networks	04	10

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Overview of Artificial Intelligence systems.	02
2.	Write a program to implement BFS (for 8 puzzle problem or Water Jug problem or any AI search problem)	02
3.	Write a program to implement DFS (for 8 puzzle problem or Water Jug problem or any AI search problem)	02
4.	Write a program to Implement A* Algorithm.	04
5.	Explore different python packages which are applicable in AI.	04
6.	Write a program to construct a Bayesian network from given data.	04
7.	Write a program to infer from the Bayesian network.	04
8.	Hidden Markov model implementation using python.	04
9.	Character recognition application using python.	02
10.	NLP application using python.	02

Reference Books for AI:

Title	Author/s	Publication
Artificial Intelligence	By Elaine Rich And Kevin Knight	(2nd Edition) Tata McGraw-Hill
Artificial Intelligence: A Modern Approach	Stuart Russel, Peter Norvig, PHI	

Web links:

- https://nptel.ac.in/courses/106106126/
- https://www.edureka.co/post-graduate/machine-learning-and-ai?utm_source=google&utm_medium=cpc&utm_campaign=ET-PGPINML-05-Search-AI-High-Intent-Minus-18-24&gclid=EAIaIQobChMI55v6_uC55wIVjx0rCh001wW5EAAYAyAAEgJcyfD_BwE

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation Consist of Performance of Practical which should be evaluated out of 10 for each practical and average of the same will be converted to 10 Marks.
- Internal Viva component of 10 marks.
- Practical performance/quiz/test of 15 Marks during End Semester Exam.
- Viva/Oral performance of 15 Marks during End Semester Exam.

Course Outcome(s):

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

- learn the fundamentals of distributed environment.
- develop efficient distributed system with their own logic & capabilities.
- understand the security aspects in distributed environment.

P P Savani University
School of Engineering

Center for Skill Enhancement and Professional Development

Course Code: SEPD4010
Course Name: Creativity, Problem Solving & Innovation

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	00	00	03	100	00	00	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

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

- achieve expertise with the technicalities of creativity and problem solving.
- advance an assertiveness for innovation.
- advance creative thinking skills using shaft of learning components leading to understanding of plans of creativity, problem solving and innovation
- discuss uses of the concepts of creativity and problem-solving skills in personal, social, academic, and profession life.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Creativity, Problem Solving and Innovation** • Definitions of Problem Solving, Creativity and Innovation • Need for Problem Solving and Innovation & Scope of Creativity • Types and Styles of Thinking • Strategies to Develop Creativity, Problem Solving and Innovation Skills	08	17
2.	**Questioning and Learning** • Introduction to Questioning, Learning and Visualization and its Strategies • Sources and Methods of Questioning and Learning • Finding Perspective, Visualizing thinking • Mind Mapping	07	16
3.	**Creative Thinking and Problem Solving** • Need of Creative Thinking • Cracking Creativity - Reversals, Reversing Perspective, seeing all sides, Looking in other world, • Finding what you are not looking for and following up • Fishbone Diagram • SCAMPER Technique	08	17
Section II			

Module No.	Content	Hours	Weightage in %
1.	**Logic and Reasoning** • Basic Concept of Logic • Divergent Vs Convergent Thinking, Inductive Vs Deductive Thinking • Fusion of Ideas for Problem Solving • Moral Reasoning • Improvisation	08	17
2.	**Practices of Playing** • Collaboration and Brainstorming • The Spirit of Koinonia • QFT Model • Connecting the Unconnected • Making Novel Combinations	07	16
3.	**Review Strategies for Creative problem-solving methods** • A Heuristic Technique • Problem-Solving Strategies: Why Bother? • Five Building Blocks as per Fogler & LeBlanc • Strategy for Critical Thinking for Choosing • Lateral Thinking • Six Thinking Hats by Edward De Bono • Design Thinking	07	17

Text Book(s):

Title	Author/s	Publication
Thinker Toys	Michael Michalko	Random House Publication 2006
Crackling Creativity, The Secrets of Creative Genus	Michael Michalko	Ten Speed Press 2001

Reference Book(s):

Title	Author/s	Publication
Zig Zag, The Surprising Path to Greater Creativity	R Keith Sawyer	Jossy-Bass Publication 2013
De Bono's Thinking Course	Edward De Bono	Penguin Publication 1994
Six Thinking Hats	Edward De Bono	Penguin Publication 1999
How to Mind Map	Tony Buzan	Thorsons Publication 2002
The Myths of Innovation	Scott Berkum	Berkun Publication 2010
Creative confidence: Unleashing the creative Potential within Us all	Tom Kelly and David Kelly	William Collins Publication 2013
The all Laughed	Ira Flatow	Harper Publication 1992
The Ultimate Lateral & Critical Thinking Puzzle book	Paul Sloane, Des MacHale & M.A. DiSpezio	Sterling Publication 2002

Course Evaluation:

Section	Module No.	Evaluation Criteria	Marks
1	1	Group Activity on Brainstorming	15
	2	Mind Mapping Activity	10
	3	Chart Preparation on 'Practicality of Fishbone Diagram'	15
		Group presentation on 'SCAMPER Technique & its applications'	10
2	1	Group Presentation on Critical Analysis of a Govt. scheme/ policy/ budget (merit/ demerit, pros/cons etc)	15
	2	Group Discussion/ Debate/ Elocution	10
	3	Problem Solving Activity (Individual)	10
		Presentation (Learning Outcomes)	15
		Grand Total	**100**

Course Outcome(s):

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

- establish creativity in their day to day actions and educational output.
- solve all types of problems with an optimistic and an impartial attitude.
- reflect innovatively and work towards problem solving in a tactical way.
- initiate different and advanced practices in their selected field of profession.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SECE4523
Course Name: Machine Learning
Prerequisite Course(s): Data Structures (SECE2031),
Design and Analysis of Algorithms (SEIT3032),
Mathematical Methods for Computation (SESH2051)

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	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- master the concepts of supervised and unsupervised learning, recommendation engine, and time series modeling.
- implement models such as support vector machines, kernel SVM, naive Bayes, decision tree classifier, random forest classifier, logistic regression, K-means clustering and more in Python.
- comprehend the theoretical concepts and how they relate to the practical aspects of Machine Learning.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Artificial Intelligence and Machine Learning** Learning Problems, designing a learning system, Issues with machine learning. Concept Learning, Version Spaces and Candidate Eliminations, Inductive bias.	04	10
2.	**Supervised learning** Decision Tree Representation, Appropriate problems for Decision tree learning, Algorithm, Hypothesis space search in Decision tree learning, inductive bias in Decision tree learning, Issues in Decision tree learning, Radial Bases, Functions, Case Based Reasoning.	06	20
3.	**Artificial Neural networks and genetic algorithms** Neural Network Representation, Appropriate problems for Neural Network Learning, Perceptrons, Multilayer Networks	05	20

	and Back Propagation Algorithms, Remarks on Back Propagation Algorithms. Case Study: face Recognition.		
Section II			
Module No.	Content	Hours	Weightage in %
1.	**Bayesian Learning** Bayes Theorem, Bayes Theorem and Concept Learning, Maximum Likelihood and Least squared Error Hypothesis, Maximum likelihood hypothesis for Predicting probabilities, Minimum Description Length, Principle, Bayes Optimal Classifier, Gibbs Algorithm, Naive Bayes Classifier. Case Study: Learning to classify text.	06	20
2.	**Unsupervised learning** Unsupervised learning, Applications, challenges, K- Nearest Neighbor Learning Locally Weighted Regression, SVM, Apriori Algorithm, EM Algorithm.	05	20
3.	**Overview** Typical application areas, such as Recommender System.	04	10

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction	02
2.	Classifying with distance measures	02
3.	Constructing Decision trees	02
4.	Classification using Decision Trees	02
5.	K-means	02
6.	Classification with k-Nearest Neighbors	02
7.	Random Forest	02
8.	Support vector machines	02
9.	Expectation Maximization	02
10.	Page Rank	04
11.	Naive Bayes Classification	04
12.	CART	04

Text Book(s):

Title	Author/s	Publication
Machine Learning	Tom M Mitchell	McGraw Hill

Reference Book(s):

Title	Author/s	Publication
Pattern Recognition and Machine Learning	Christopher Bishop	Springer-Verlag New York Inc.
Real-World Machine Learning	Henrik Brink, Joseph Richards, Mark Fetherolf	DreamTech
Machine Learning in Action	Peter Harrington	DreamTech

Web Material Link(s):

- https://nptel.ac.in/courses/106/105/106105152/
- https://in.mathworks.com/campaigns/offers/machine-learning-with-matlab.html?gclid=EAIaIQobChMIrv2dqpOh5wIVkoiPCh0t9g8CEAAYASAAEgKl-fD_BwE&ef_id=EAIaIQobChMIrv2dqpOh5wIVkoiPCh0t9g8CEAAYASAAEgKl-fD_BwE:G:s&s_kwcid=AL!8664!3!281794527296!b!!g!!%2Bmachine%20%2Blearning&s_eid=psn_57384022552&q=+machine%20+learning
- https://wqu.org/programs/datascience/?utm_source=datawrkz&utm_medium=search&utm_campaign=datascience&gclid=EAIaIQobChMIr_TK5ZOh5wIVzQorCh0YdQBvEAAYASAAEgLb5PD_BwE

Course Evaluation:

Theory:

- Continuous Evaluation consists of two tests each of 30 marks and 1 Hour of duration, and average at 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 performance of practical which will be evaluated out of 10 marks for each practical and average of the same will be converted to 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test consists of 15 marks during End Semester Exam.
- Viva/ Oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- Learn the concept of Machine learning and range of problems that can be solved by machine learning.
- Compare different types of learning algorithms and apply machine learning concepts in real life problems.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT4521
Course Name: Blockchain Technology
Course Prerequisite(s): SECE2031 - Data 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	
02	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand blockchain and its applications.
- analyze IBM's strategy in blockchain platform.
- understand security in blockchain based networks.

Course Content:

Section I			
Module No	Content	Hours	Weightage in %
1.	**Introduction to Blockchain** Blockchain types, Public key cryptography, Hashing, Digital Signature, Business networks, Assets, Ledgers, Transactions and Contracts, the problem with existing networks, how blockchain solves this problem, Requirements of a blockchain for business.	05	10
2.	**Blockchain Networks** Overview of active networks, TradeLens - Improving global trade, IBM Food Trust - Supply Chain Transparency, IBM World Wire - Global Payments, Decentralised and Trusted Identity, Further Examples by Industry, Key Players for Blockchain Adoption	05	20
3.	**IBM and Blockchain** How IBM can help with a Blockchain Project, IBM's Blockchain strategy, the IBM Blockchain Platform, The Linux Foundation's Hyperledger Project, Hyperledger Fabric, Continuing your Blockchain Journey	05	20

Section II			
Module No	Content	Hours	Weightage in %
1	**Blockchain composed** What is Hyperledger Composer, Components and Structure of Composer, An example Business Network: Car Auction Market, Extensive, Familiar, Open Tool Set	05	10
2.	**Blockchain fabric development** Participants and Components Overview, Developer Considerations	05	20
3.	**Blockchain architecture** Administrator (operator) Considerations, Security: Public vs. Private Blockchains, Architect Considerations, Network Consensus Considerations	05	20

List of Practical:

Sr No	Name of Practical	Hours
1.	Demo - Vehicle Lifecycle Demo: Transfer assets in blockchain	04
2.	Demo of Hyperledger Composer	04
3.	Create a Hyperledger Composer solution	06
4.	Write your first blockchain application	08
5.	Build your own network	08

Text Book:

Title	Author/s	Publication
Blockchain Basics – A Non-Technical Introduction in 25 Steps.	Daniel Drescher	Apress

Reference Book:

Title	Author/s	Publication
Mastering Blockchain	Imran Bashir	Packt
The Business Blockchain – Promise, practice, and application of the next internet technology.	William Mougayar	Wiley

Web Material Link(s):

- https://www.udemy.com/course/blockchain-and-bitcoin-fundamentals/
- https://cognitiveclass.ai/courses/blockchain-course
- https://www.coursera.org/courses?query=blockchain

Course Evaluation:

Theory:

- Continuous Evaluation Consists of Two Tests; evaluation of each test consists of 15 marks. The duration of each test is 60 minutes.
- Students have to appear for a quiz/group discussion, which consists of 10 marks.
- End Semester Examination will consist of 60 Marks.

Practical:

- Continuous Evaluation consists of performance of practical, which should be evaluated out of 10 per each practical. At the end of the semester, average of the entire practical will be converted to 10 Marks.
- Internal Viva consists of 10 marks.
- Practical performance/quiz/test of 15 Marks during End Semester Exam.
- Viva/Oral performance of 15 Marks during End Semester Exam.

Course Outcome(s):

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

- understand blockchain and its applications.
- create their own Hyperledger composer solution.
- create their own Blockchain application.
- build their own network.

P P Savani University
School of Engineering

Department of Information Technology

Course Code: SEIT4530
Course Name: Cyber Security
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	02	00	03	40	60	20	30	00	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- identify and classify various cybercrimes with respect to organizational weaknesses in order to mitigate the security risk and estimate the impact on society and world.
- interpret and apply Indian IT laws in various legal issues.

Course Content:

Section – I			
Module No.	Content	Hours	Weightage in %
1.	**Introduction to Cyber Security** Overview of Cyber Security, Internet Governance – Challenges and Constraints, Cyber Threats: - Cyber Warfare-Cyber Crime-Cyber Terrorism-Cyber Espionage, need for a Comprehensive Cyber Security Policy, need for a Nodal Authority, Need for an International convention on Cyberspace, Security Standards.	03	10
2.	**Cyber Security Vulnerabilities and Cyber Security Safeguards** Cyber Security Vulnerabilities-Overview, vulnerabilities in Software, System Administration, Complex Network Architectures, Open Access to Organizational Data, Weak Authentication, Unprotected Broadband communications, Poor Cyber Security Awareness, Cyber Security Safeguards-Overview, Access Control, Audit, Authentication, Biometrics, Cryptography, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Intrusion Detection System, Response, Scanning, Security Policy, Threat Management	06	20
3.	**Securing Web Application, Services and Servers**	03	10

	Introduction, Basic security for HTTP Applications and Services, Basic Security for SOAP Services, Identity Management and Web Services, Authorization Patterns, Security Considerations, Challenges		
4.	**Intrusion Detection and Prevention** Intrusion, Physical Theft, Abuse of Privileges, Unauthorized Access by Outsider, Malware infection, Intrusion detection and Prevention Techniques, Anti-Malware software, Network based Intrusion detection Systems, Network based Intrusion Prevention Systems, Host based Intrusion prevention Systems, Security Information Management, Network Session Analysis, System Integrity Validation	03	10
Section – II			
Module No.	Content	Hours	Weightage In %
1.	**Cryptography and Network Security** Introduction to Cryptography, Symmetric key Cryptography, Asymmetric key Cryptography, Message Authentication, Digital Signatures, Applications of Cryptography. Overview of Firewalls- Types of Firewalls, User Management, VPN Security Security Protocols: - security at the Application Layer- PGP and S/MIME, Security at Transport Layer- SSL and TLS, Security at Network Layer-IPSec	05	17
2.	**Cyberspace and the Law** Introduction, Cyber Security Regulations, Roles of International Law, the state and Private Sector in Cyberspace, Cyber Security Standards. The INDIAN Cyberspace, National Cyber Security Policy 2013	05	17
3.	**Cyber Forensics** Introduction to Cyber Forensics, Handling Preliminary analysis, Investigating Investigations, Controlling an Investigation, conducting disk-based Information-hiding, Scrutinizing E-mail, Validating E-mail Header information, Tracing Internet access, Tracing Memory in real-time.	05	16

List of Practical:

Sr. No	Name of Practical	Hours
1.	TCP scanning using NMAP	2
2.	Port scanning using NMAP	2
3.	TCP / UDP connectivity using Netcat	2
4.	Network vulnerability using OpenVAS	4
5.	Web application testing using DVWA	2
6.	Manual SQL injection using DVWA	4
7.	XSS using DVWA	4
8.	Automated SQL injection with SqlMap	4

9.	Write a program to create and simulate an attack. Then explain how to avoid it.	6

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, SunitBelapure	Wiley India, New Delhi
Anti-Hacker Tool Kit,4th Edition	Mike Shema	McGrawHill Publication
The Indian Cyber Law	Suresh T. Vishwanathan;	Bharat Law House New Delhi
Handbook of Applied Cryptography	Menezes, van Oorschot and Vanstone	CRC Press
Computer Security, 3/e	Gollmann	Wiley

Web Material Link(s):

- https://nptel.ac.in/courses/106105031/
- https://www.javatpoint.com/cyber-security-tutorial

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 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/drawing/test consists of 15 marks during End Semester Exam.
- Viva/ Oral performance consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

- Understand cyber-attack, types of cybercrimes, cyber laws and also how to protect them self and ultimately society from such attacks.
- Apply Information Security Standards compliance during software design and development.

P P Savani University
School of Engineering

Department of Computer Engineering

Course Code: SEIT4541
Course Name: Automata Theory & Language Processor
Prerequisite Course(s): Discrete Mathematics (SESH2040)

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	01	03	40	60	00	00	50	00	150

CE: Continuous Evaluation, ESE: End Semester Exam

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

- understand basics of formal languages and automata.
- design grammars and automata for different formal languages.
- develop logic building to solve computational problems.

Course Content:

Section I			
Module No.	Content	Hours	Weightage in %
1.	**Review of Mathematical Preliminaries** Principle of Mathematical Induction, Proof by Contradiction, Introduction to Formal Languages and Automata, Alphabets, Strings and their properties, Languages, Determinism and Non-determinism	03	10
2.	**Finite Automata** Introduction to Transition systems, Description of Finite Automata, String acceptability by Finite Automata, Construction of NFA, NFA with $\in$- moves, The Equivalence between DFA, NFA and $\in$-NFA, Minimization of FA, Finite Automata with output- Moore and Mealy Models.	06	20
3.	**Regular Expression and Regular Language** Regular Expressions, Identities for RE, Construction of RE equivalent to FA using Arden's Theorem. Construction of FA equivalent to RE, Kleen's Theorem, Properties of Regular Languages and FA: Closure and Decision properties, Limitations of FA.	06	20

Section II			
Module No.	Content	Hours	Weightage in %
1.	**Grammar:** Definition, Chomsky hierarchy, Context Free Grammar- Definition, Derivation, sentential form, parse tree, Ambiguous Grammar Removing ambiguity from grammar, Left Recursion, Left Factoring, Language generated by grammar, Construction of Grammar, Simplification of CFGs, Normal Forms for CFG: Chomsky Normal Form, Greibach Normal Form, Decision Properties of CFG Regular Grammar- Definition: Left Linear Grammar, Right Linear Grammar, The Conversion from: RG to FA and FA to RG, The Equivalence between LLG and RLG.	07	25
2.	**Push Down Automata** Definition, Description of PDA, Acceptance by PDA, Operations on PDA, Construction of PDA, Equivalence between CFG and PDA, Deterministic PDA and Non-Deterministic PDA. **Turing Machine** Definition, Description of TM, Representation of TM, Language Acceptability by TMs, Construction of TM, Variants of TM: Multitape Turing Machines and NTM, Universal TM, The Model of LBA and Relationship between LBA and CSL, RS and RES, Closure properties of RS and RES.	08	25

List of Tutorial:

Sr No	Name of Tutorial	Hours
1.	Problems based on proofs	01
2.	Problems based on identify the class language	01
3.	Problems based on DFA	01
4.	Problems based on minimal state automata	01
5.	Problems based on finite automata	01
6.	Problems based on Moore and Mealy machine	01
7.	Problems based on regular expressions and regular sets	01
8.	Problems based on pumping lemma	01
9.	Problems based on closure property	01
10.	Problems based on CNF and GNF	01
11.	Problems based on context-free grammar and language	01
12.	Problems based on PDA	01
13.	Problems based on TM	01
14.	Problems based on decidability	01
15.	Problems based on string/language validity	01

Text Book(s):

Title	Author/s	Publication
Theory of Computer Science: Automata, Languages and Computation	By K.L.P. Mishra and N. Chandrasekaran	3rd Edition, PHI Learning Private Ltd.

Reference Book(s):

Title	Author/s	Publication
Introduction to Automata theory, languages and Computation	By John E. Hopcroft, Rajiv Motwani and Jeffery D. Ullman	3rd Edition, Pearson
Introduction to Languages and the Theory of Computation	By John C. Martin	4th Edition, McGraw Hill

Web Material Link(s):

- https://nptel.ac.in/courses/106104028/
- https://www.eecs.wsu.edu/~ananth/CptS317/Lectures/

Course Evaluation:

Theory:

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

Tutorial:

- Continuous Evaluation Consist of Performance of tutorial which should be evaluated out of 10 for each tutorial and average of the same will be converted to 50 Marks.

Course Outcome(s):

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

- acquire a fundamental understanding of the core concepts in automata theory and formal languages.
- design grammars and automata (recognizers) for different language classes.
- identify formal language classes and prove language membership properties.
- apply this basic knowledge of Theory of Computation in the computer field to solve computational problems.

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