

SCHOOL OF ENGINEERING

B.TECH. (COMPUTER SCIENCE & ENGINEERING)

SYLLABUS BOOK

AY 2023-24

INSTITUTE VISION

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

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

Graduates will demonstrate ability to:

PEO No	PROGRAMME EUCATIONAL OBJECTIVES											
PEO 1	Solve real-world engineering problems, design and develop innovative and cost-											
	effective solutions exhibiting engineering skills/fundamentals to cater needs of											
	society.											
PEO 2	Excel in Industry/technical profession, higher studies, and entrepreneurship											
	exhibiting comprehensive competitiveness.											
PEO 3	Exhibit professional ethics & values, effective communication, teamwork,											
	multidisciplinary approach, and ability to relate engineering issues to broader											
	societal framework.											

PO No	PROGRAMME OUTCOMES
PO 1	Engineering knowledge:
	Apply knowledge of engineering fundamentals, science, mathematics & engineering
	specialization for the solution of complex engineering problems.
PO 2	Problem analysis:
	Identify, formulate and analyze complex engineering problems leading to substantial
	conclusions using basic principles of mathematics, science and engineering.
PO 3	Design/development of solutions:

PO No	PROGRAMME OUTCOMES
	Develop solutions for complex engineering problems and design system components
	or processes meeting specified needs having due consideration for the safety and
	societal & environmental considerations.
PO 4	Conduct investigations of complex problems:
	Use research-based knowledge & methods like design of experiments, analysis and
	interpretation of data, and synthesis of the information to provide valid & viable
	conclusions.
PO 5	Modern tool usage:
	Create, select, and apply appropriate techniques, resources, and modern engineering
	and IT tools for prediction and modeling of complex engineering activities with an
	understanding of the limitations.
PO 6	The engineer and society:
	Apply cognitive learning by the contextual knowledge to assess societal, health,
	safety, legal and cultural issues and following responsibilities relevant to the
	professional engineering practice.
PO 7	Environment and sustainability:
	Understand the impact of the professional engineering solutions in societal and
	environmental contexts, and demonstrate the knowledge & skill needed for
	sustainable development.
PO 8	Values & Ethics:
	Apply basic moral values & ethical principles and pledge to professional
	ethics/norms and responsibilities of the engineering practice.
PO 9	Individual and team work:
	Function effectively as an individual/as a team member or as a leader in diverse
	teams, and in multidisciplinary settings.
PO 10	Communication:
	Communicate effectively on complex engineering activities with the engineering
	community and with society at large, such as, being able to comprehend and write
	effective reports and design documentation, make effective presentations, and give
	and receive clear instructions.
PO 11	Project management and finance:

PO No	PROGRAMME OUTCOMES									
	Demonstrate knowledge and understanding of the engineering and management									
	principles and apply these to one's own work, as a member and leader in a team, to									
	manage projects in multidisciplinary environments.									
PO 12	Life-long learning:									
	Recognize the need, do necessary preparation and ability to engage in independent									
	and life-long learning in the broadest context of technological change.									

PSO No	PROGRAMME SPECIFIC OUTCOMES (PSO)
	COMPUTER ENGINEERING
PSO 1	Apply the knowledge of programming languages, data structures and Algorithms,
	data science, networks and software engineering principles for software product
	development.
PSO 2	Acquire & apply, knowledge, technical competency, analytical and designing skills
	for innovative solution of industry problems & applied research in the field of
	Computer Science & Engineering.
PSO 3	Prepare technically competent employee, researcher, entrepreneur, and excel in
	competitive exams, and increase passion for higher studies.

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

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

Syllabus Book

B. Tech. (Computer Science Engineering)



P P Savani University

School of Engineering

Effective From: 2023-24 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 FIRST YEAR B.TECH. COMPUTER SCIENCE ENGINEERING PROGRAMME AY: 2023-24

Sem	Course		Offered		Teaching Scheme						Examination Scheme					
Jem	Code	Course Title	By		Contact		Cradit	Theory		Practical		Tuto	orial	Total		
				Theory	Practical	Tutorial	Total	Cieuit	CE	ESE	CE	ESE	CE	ESE	TUtal	
1 OR 2	SESH1110	Calculus	SH	3	0	2	5	5	40	60	0	0	100	0	200	
	SESH1120	Linear Algebra	SH	3	0	2	5	5	40	60	0	0	100	0	200	
	SEME1110	Hardware Workshop	ME	0	4	0	4	4	0	0	100	0	0	0	100	
	SECE1110	Software Workshop	CE	0	4	0	4	2	0	0	100	0	0	0	100	
	SEIT1110	Cyberspace Awareness	IT	2	0	0	2	2	40	60	0	0	0	0	100	
	SEIT1120	Competitive Quantitative Aptitude	IT	2	0	0	2	2	40	60	0	0	0	0	100	
	SECE1120	Joy of Programming	CE	3	2	0	5	4	40	60	40	60	0	0	200	
	SESH1130	Conceptual Experimental Physics	SH	3	2	0	5	4	40	60	40	60	0	0	200	
	SECH1110	Fundamental Chemistry & Environmental Science	СН	3	2	0	5	4	40	60	40	60	0	0	200	
	SEME1120	Fundamentals of Technical Drawing	ME	0	4	0	4	4	0	0	40	60	0	0	100	
	SECV1110	Core Engineering Concepts	CV	3	2	0	5	4	40	60	40	60	0	0	200	
	CFLS2130	Intermediate Communicative English	CFLS	2	2	0	4	3	100	00	100	0	0	0	200	
	CLSC2070	Essentials of Entrepreneurship	CFLS/SLM	2	0	0	2	2	100	0	0	0	0	0	100	
						Total	52	45							2000	

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

P P Savani University School of Engineering

Department of Science and Humanities

Course Code: SESH1110

Course Name: Calculus

Prerequisite Course/s: Algebra, Geometry, Trigonometry & Pre-Calculus till 12th Standard level

Teaching & Examination Scheme:

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

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the course:

To help learners to

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

Section I							
Module	Contont	Hours	Weightage				
No.	Content	nours	in %				
	Calculus						
1	Limits, Continuity, Types of Discontinuity, Successive	0	20				
1.	Differentiation, Rolle's Theorem, LMVT, CMVT, Maxima and	9					
	Minima.						
	Sequence and Series-I						
2	Convergence and Divergence, Comparison Test, Integral Test,	0	20				
۷.	Ratio Test, Root Test, Alternating Series, Absolute and	9					
	Conditional Convergence.						
	Sequence and Series-II						
3.	Power series, Taylor and Macluarin series, Indeterminate	5	10				
	forms and L'Hospitals Rule.						
	Section II						

Module	Content	Hours	Weightage
No.			in %
4.	Partial Derivatives Function of several variables, Partial differentiation, Applications, Chain rule, Linear approximations, Maxima and Minima, Euler's theorem, Lagrange multiplier.	11	30
5.	Curve tracing Tracing of Cartesian Curves, Polar Coordinates, Polar and Parametric Form of Standard Curves, Areas and Length in Polar co-ordinates	11	20
	TOTAL	45	100

List of Tutorials:

Sr. No.	Name of Tutorial	Hours
1.	Calculus-1	4
2.	Calculus-2	4
3.	Calculus-3	2
4.	Sequence and Series-1	4
5.	Sequence and Series-2	2
6.	Sequence and Series-3	2
7.	Partial Derivatives-1	4
8.	Partial Derivatives-2	2
9.	Curve tracing-1	4
10.	Curve tracing-2	2
	TOTAL	30

Text Book:

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

Reference Book:

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

Course Evaluation:

Theory:

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

Tutorial:

- Continuous Evaluation consists of performance of tutorial which will be evaluated out of 10 marks for each tutorial and average of the same will be converted to 50 marks
- Continuous Evaluation consists of self-performance assignment to 20 marks.
- Internal Viva consists of 30 marks.

Course Outcome(s):

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

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

Mapping of CO with PO-PSO

SESH1110	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	3	1	1								1
CO 2	3	2	1									1
CO 3	2	2	1									
CO 4	2	2	1	1								1
CO 5	2	2	1									1

Mapping of CO with PSO

SESH1110	PSO1	PSO2	PSO3
CO 1	3		
CO 2	1	1	
CO 3	1	2	
CO 4	3	2	
CO 5	1	1	

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

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

Module No	Content	RBT Level
1	Calculus	1, 2, 3, 4, 5
2	Sequence and Series – I	1, 2, 3, 4, 6
3	Sequence and Series – II	1, 2, 3, 4, 6
4	Partial Derivatives	1, 2, 3, 4, 5
5	Curve tracing	1, 2, 3, 4, 5, 6

P P Savani University School of Engineering

Department of Science and Humanities

Course Code: SESH1120

Course Name: Linear Algebra

Prerequisite Course/s: -- Algebra, Geometry, Trigonometry & Pre-Calculus till 12th Standard level

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Ex	aminati	on Sche	me (Ma	rks)	
Theory	Practical	Tutorial	Credit	Theory Practical		Tuto	orial	Total		
				CE	ESE	CE	ESE	CE	ESE	
3	0	2	5	40	60	0	0	100	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

	Section I					
Module	Content	Hours	Weightage			
No.			in %			

	Matrix Algebra		
	Elementary Row and Column operations, Inverse of matrix,		
1.	Rank of matrix, System of Linear Equations, Characteristic	12	30
	Equation, Eigen values and Eigen vector, Diagonalization,		
	Cayley Hamilton Theorem.		
	Vector Space		
2	Concept of vector space, Subspace, Linear Combination, Linear	11	20
Ζ.	Dependence and Independence, Span, Basis and Dimension,	11	20
	Row Space, Column Space and Null Space, Rank and Nullity.		
	Section II		
Module	Content	Hours	Weightage
No.			in %
	Linear Transformation		
2	Introduction of Linear Transformation, Kernal and Range,	0	20
3.	Rank and Nullity, Inverse of Linear Transformation, Rank	9	
	Nullity Theorem, Composition of Linear Maps.		
	Inner Product Space		
4	Inner Product, Angle and Orthogonality, Orthogonal projection,	0	20
4.	Gram- Schmidt process and QR Decomposition, Least square	8	20
	decomposition.		
	Beta and Gamma function		
5.	Improper Integrals, Convergence, Properties of Beta and	5	10
	Gamma Function, Duplication Formula (without proof)		
	TOTAL	45	100

List of Tutorial:

Sr. No.	Name of Tutorial	Hours
5.	Matrix Algebra-1	4
6.	Matrix Algebra-2	2
7.	Vector Space-1	4
8.	Vector Space-2	2
9.	Linear Transformation-1	4
10.	Linear Transformation-2	2
11.	Inner Product Space-1	4
12.	Inner Product Space-2	2
13.	Beta and Gamma function-1	4
14.	Beta and Gamma function-2	2
	TOTAL	30

Text Book(s):

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

Reference Book(s):

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

Course Evaluation:

Theory:

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

Tutorial:

- Continuous evaluation consists of performance of tutorial which will be evaluated out of 10 Marks for each tutorial and average of the same will be converted to 50 marks.
- Continuous Evaluation consists of self-performance assignment to 20 marks.
- Internal Viva consists of 30 marks.

Course Outcome(s):

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

SESH1120	LINEAR ALGEBRA & CALCULUS
CO 1	Evaluate linear system using matrices and the knowledge of eigenvalues and
01	eigenvectors for matrix diagonalization
CO 2	Determine the basis and dimension of vector spaces and subspaces.
CO 2	Discuss the matrix representation of a linear transformation given bases of the
0.05	relevant vector space.
CO 4	Apply vectors, inner products, and linear transformations to real world
C0 4	situations.
COF	Classify gamma, beta functions & their relation which is helpful to evaluate some
0.05	definite integral arising in various branch of engineering.

Mapping of CO with PO-PSO

SESH1120	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	1	1								3
CO 2	3	2	1									2
CO 3	2	2	1									3
CO 4	2	2	1	1								1
CO 5	2	1	1									1

Mapping of CO with PSO

SESH1120 PSO1		PSO2	PSO3					
CO 1	3	2						

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

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

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

Module No	Content	RBT Level
1	Matrix Algebra	1, 2, 3, 4, 5, 6
2	Vector Space	1, 2, 3, 4, 6
3	Linear Transformation	1, 2, 3, 4, 6
4	Inner Product Space	1, 2, 3, 4, 5, 6
5	Beta and Gamma Function	1, 2, 3, 4, 5

P P Savani University

School of Engineering

Department of Mechanical Engineering

Course Code: SEME1110 Course Name: Hardware Workshop Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme					Exai	minatio	on Schei	me (Ma	arks)	
	(IIOUIS/W			The sum Due sties! Tute wish						
Theory	Practical	Tutorial	Credit	1 1 6	eory	Prac	ucal	Tut	oriai	Total
Theory	Tractical	rutoriui	dicuit	CE	ESE	CE	ESE	CE	ESE	Total
00	04	00	04	00	00	100	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

Module No.	Contents	Weightage in %
1.	 Introduction: Introduction to Various Shops / Sections and Workshop Layouts, Safety Norms to be Followed in a Workshop. Fitting Shop: Introduction of Fitting Shop; Safety; Making a Job as per Drawing including Marking and other Performing Operations. Carpentry and Drilling Shop: Introduction of Carpentry Shop; Preparation of Job as per Drawing including Marking and other Performing Operations. Introduction of Carpentry Shop; Preparation of Job as per Drawing including Marking and other Performing Operations. Introduction to Machine Tools: Introduction and Demonstration of various Machine Tools like Lathe, Drilling, Grinding, Hack Saw Cutting etc. Introduction to Welding & Plumbing: Introduction and Demonstration of Welding process. Introduction and Demonstration of Plumbing Shop. 	25
2.	Introduction to Computer Hardware	

	Computer hardware structure, Identify and understand hardware components: CPU, Motherboard, RAM, HDD, SSD, Keyboard, Ports, Mauga Manitan Printon UDS (SMPS, etc.	25
	Hardware Maintenance and Troubleshooting Assembling and disassembling a PC, connectors and cables, BIOS setup, Disk management, Device manager, Task manager, Network management, Backup/recovery disk.	
3.	Electrical and Electronic Skill: Use of Multimeter. Soldering of electrical circuits having discrete components (R, L, C & diode) and ICs on PCB, connections on Breadboard	25
4.	Logic Gates: Digital Electronics, Symbol and truth table of Logic gates (OR, AND, NOT, NAND, NOR and EX-OR gate), De morgan's theorem. Cathode Ray Oscilloscope: Block diagram of basic CRO. Construction of CRT, Electron gun, electrostatic focusing and acceleration (Explanation only– no mathematical treatment), brief discussion on screen phosphor, visual persistence & Use of CRO for the measurement of voltage (dc or ac frequency, time period. Special features of dual trace. Digital storage Oscilloscope: Block diagram and principle of	25

List of Practical:

Sr.	Name of Practical	Hours
No.		
1.	Introduction and Demonstration of Safety Norms. Different Measuring	12
	Instruments. Introduction and Demonstration of Machine Shop. To Perform a	
	Job of Fitting Shop.	
2.	To Perform a Job of Carpentry Shop. Introduction and Demonstration of	15
	Plumbing Shop & Welding Process.	
3.	(I)Identify computer hardware layout and components	08
	(II)Perform assembling and disassembling of PC	
4.	Configure BIOS, disk, network and other hardware management	05
5.	Understanding the electronic components and study of Shouldering and	04
	Desoldering of electronic components on PCB Board.	
6.	Understanding the connection on Breadboard and study of Alternate Flashing	06
	LED Lights using Breadboard.	
7.	Verify the truth table of Logic gates and De morgan's theorem on IC trainer board.	04
8.	Study of Cathode Ray Oscilloscope.	06
	TOTAL	60

Text Book(s):

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

Reference Book(s):

|--|

Basic Electronics: A text lab	P.B. Zbar, A.P. Malvino, M.A.	Mc-Graw Hill.
Digital Electronics	Subrata Ghoshal	Cengage Learning

Course Evaluation:

Practical:

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

Course Outcome(s):

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

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

Mapping of CO with PO-PSO

SEME1110	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	1	2	1		3	3		3	3	1	3
CO 2	2	1	1	2	2	2			2	2	1	2
CO 3	3	2	2	2	2	2	2	3	2	2	3	3
CO 4	2	3	2	3	3		3	3	1	2	1	2

Mapping of CO with PSO

SEME1110	PSO1	PSO2	PSO3
CO 1	3	1	1
CO 2	1	1	2
CO 3	1	3	3
CO 4	2	2	2

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

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

Module	Content	RBT Level
No		
1	Introduction, Fitting Shop, Carpentry Shop and Drilling Shop,	2,3,4,6
	Introduction to Machine Tools, Welding and Plumbing	
2	Introduction to Computer Hardware, Hardware Maintenance	1,2,3,4,5,6
	and Troubleshooting	
3	Understand and designing of Electrical circuit	2,3,5
4	Cathode ray oscilloscope and Digital Electronics	1,2,3,5

P P Savani University School of Engineering

Department of Computer Engineering

Course Code: SECE1110 Course Name: Software Workshop Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Exa	minatio	n Schen	ne (Mar	·ks)	
Theory	Dractical	Tutorial	Cradit	The	eory	Prac	tical	Tuto	orial	Total
Theory	Tactical	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI
00	04	00	02	00	00	100	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

	Data Analysis using Application Software	
5.	Introduction to Spreadsheets, Spreadsheet Functions to Organize	15
	Data, Introduction to Filtering, Pivot Tables, and Charts, VlookUp and	15
	HlookUp in Spreadsheets.	
	Website Creation	
	Creating a website using Google Sites, Creating Web Pages, Working	
6.	with Images, Working with Documents on Web Pages. Introduction	25
	to Wordpress, Installing Web Server and Wordpress, Creating Web	
	pages in Wordpress.	

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Study of Different Software.	2
2.	Installation of any 2 software with required plugins and libraries.	4
3.	Study of Different Operating Systems.	2
4.	Creation of Bootable Pen drive.	2
5.	Installation of Windows OS.	2
6.	Installation of Linux OS using VMWare.	2
7.	Study of Basic commands of Linux/UNIX.	4
8.	Study of Basic commands of DOS.	4
9.	Design logo using Canva.	2
10.	Draw a Flowchart to find maximum of two numbers in either draw.io	2
	or Microsoft Visio or LucidChart.	
11.	Study of different Google Apps.	4
12.	Create a Google Doc and Google sheet and share with 2 classmates.	2
13.	Demonstrate working of HlookUp and VlookUp in Excel.	2
14.	Create different types of charts in Excel.	4
15.	Demonstrate Data Analysis in Excel.	4
16.	Create a Google Website with minimum two pages showing your personal details.	4
17.	Demonstrate embedding of a youtube video and pdf document on a web page in google site.	4
18.	Demonstrate placing Map and hyperlinks on web page in Google Site.	4
19.	Create a wordpress site and create minimum three web pages and	4
	menu to navigate between the pages.	
20.	Demonstrate the use of Accordian in wordpress.	2
	TOTAL	60

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Practical:

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

Course Outcome(s):

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

SECE1110	Software Workshop
CO 1	Understand the types of computer software with their requirements and how
01	to use as per the need.
CO 2	Install different Operating Systems and learn commands used in the OS.
CO 2	Get familiar with the application software and different applications of
05	application software
CO4	Achieve some useful information from data through analysis and represent it
C04	with different views like charts, graphs etc.
CO 5	Learn the designing and development of website to have a global
0.0	communication.

Mapping of CO with PO:

SECE1110	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2			1							2
CO 2	3	3	2		3					2		3
CO 3	3	2	1	1	2							3
CO 4	2		3	3	3				1	2		3
CO 5	3		3	2	3			1				3

Mapping of CO with PSO:

SECE1110	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	3	3	
CO 3	3	2	
CO 4	3	3	2

CO 5	3	3	3

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

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

Module No	Content	RBT Level
1	Software Fundamentals	1,2
2	Operating System	1,2,3,6
3	Disk Operating System	2,3
4	Application Software	2,3,4,5
5	Data Analysis using Application Software	3,4,5,6
6	Website Creation	2,3,6

P P Savani University School of Engineering Department of Information Technology

Course Code: SEIT1110 Course Name: Cyberspace Awareness Prerequisite Course(s): --

Teaching & Examination Scheme:

					_			6	• •	
Teaching Scheme (Hours/Week)				Exa	minatio	n Schen	ne (Mar	·ks)		
Theory	Drastical Tytorial		Cradit	The	eory	Prac	tical	Tute	orial	
Theory	Flactical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
2	0	0	2	40	60	00	00	0	0	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to,

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

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

	and technology for cyber security, Platform to report and combat cyber crime, Case studies		
	Cyberspace and the Law		
	Cyber Security Regulations, Cyber Law, need for a	06	15
	Comprehensive Cyber Security Policy, Need for an International	00	15
4.	convention on Cyber space, Contemporary crime, Roles of		
	International Law, the state and Private Sector in Cyberspace,		
	Cyber Security Standards, The INDIAN Cyberspace, Indian IT		
	Act 2000, Indian IT Act 2008, Case studies		
	Cyber Forensics		
_	Introduction to Cyber Forensics, Handling Preliminary analysis,	04	20
5.	Investigating Investigations, Controlling an Investigation, Legal		
	Policies, Case studies		
	TOTAL	30	100

Text Book(s):

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

Reference Book(s):

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

Course Evaluation:

Theory:

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

Course Outcome(s):

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

SEIT1110	Cyb	Cyberspace Awareness										
CO 1	Und	Understand Concepts of Cyber space.										
CO 2	Ana	Analyze the Concepts of Cyber Threats.										
CO 3	Elał	Elaborate the overview of social media and understanding cybercrimes.										
CO 4	Idei	Identify cyber laws and cyber acts in India.										
CO 5	Exp	Explore different case studies based on cyber-Forensics.										
Mapping of	CO wi	th PO:										
SEIT1110	P01	P02	P03	P04	PO5	P06	P07	P08	P09	P010	P011	P012

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

Mapping of CO with PSO:

SEIT1110	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	2	3	2
CO 3	3	2	3
CO 4	2	3	2
CO 5	3	3	2

Level of Revised Bloom's Taxonomy in Assessment

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

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

P P Savani University School of Engineering

Department of Computer Engineering

Course Code: SEIT1120 Course Name: Competitive Quantitative Aptitude

Prerequisite Course(s): ---

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory Dreatical Tytorial		Constitu	The	eory	Prac	tical	Tuto	orial	Total	
Ineory Practical	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
02	00	00	02	40	60	00	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

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

	Section I		
Module No.	Content	Hours	Weightage in %
1.	Quantitative Ability (Basic Mathematics) Number Systems, LCM and HCF, Decimal Fractions, Simplification, Square Roots and Cube Roots, Average, Problems on Ages, Surds & Indices, Percentages, Problems on Numbers, Quadratic Equations	5	15
2.	Quantitative Ability (Applied & Engineering Mathematics)- Part I Logarithm, Permutation and Combinations, Probability, Profit	5	35
3.	Quantitative Ability (Applied & Engineering Mathematics) -Part II Time, Speed and Distance, Time & Work, Ratio and Proportion, Mixtures and Allegation	5	20
	Section II		
Module No.	Content	Hours	Weightage in %
4.	Data Interpretation Data Interpretation, Tables, Column Graphs, Bar Graphs, Line Charts, Pie Chart, Venn Diagrams	6	20

5.	Logical Reasoning (Deductive Reasoning) Analogy, Blood Relation, Directional Sense, Number and Letter Series, Coding – Decoding, Calendars, Clocks, Seating Arrangement, Syllogism	6	20
6.	Mensuration & Trigonometry Two-dimensional (2D) and Three-dimensional (3D) Mensuration, Degree and Radian Measures, Trigonometric Ratios, Complementary Angles, Height and Distance, Standard Identities, Area, Inequalities	3	10
	TOTAL	30	100

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

- <u>https://prepinsta.com/</u>
- <u>https://www.indiabix.com/</u>
- <u>https://www.javatpoint.com/</u>

Course Evaluation:

Theory:

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

Course Outcome(s):

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

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

Mapping of CO with PO:

SEIT1120 P01 P02 P03 P04 P05 P06 P07 P08 P09 P010 P011 P012

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

Mapping of CO with PSO:

SEIT1120	PSO1	PSO2	PSO3
CO 1	2	2	3
CO 2	2	3	3
CO 3	2	3	3
CO 4	2	3	3
CO 5			3

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

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

Module No	Module No Content			
1	1 Quantitative Ability (Basic Mathematics)			
2,3	2,3 Quantitative Ability (Applied & Engineering Mathematics)			
4 Data Interpretation		2, 3, 6		
5	Logical Reasoning (Deductive Reasoning)	2, 4, 5		
6	Mensuration & Trigonometry	1, 3, 5		

P P Savani University School of Engineering

Department of Computer Engineering

Course Code: SECE1120 Course Name: Joy of Programming Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
03	02	00	04	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- identify appropriate approach to computational problems.
- develop logic building and problem-solving skills.

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

	Strings, String Handling Functions, Dictionary, List, Tuples and Sets.		
	Functions Introduction to Functions, defining a Function, Calling a		
5.	Function, Types of Functions, Function Arguments, Anonymous Functions, Global and Local Variables, Recursion	6	15
	Building Desktop Application		
6.	Exploring the Tkinter Library in Python, creating basic Desktop application using Tkinter	6	15
	TOTAL	45	100

List of Practical:

Sr. No.	Name of Practical	Hours				
1.	Working with basic elements of C languages (different input functions,	C				
	different output functions, different data types, and different operators).	Δ				
2.	Working with control structures (if statement, if-else statement, nested if-	2				
	else statement, switch statement, break statement, goto statement).					
3.	Working with array and strings in C.	4				
4.	Introduction to Python (Introduction to IDLE, different data types, Input	2				
	Output in Python, Operators, Operator precedence).					
5.	Implementation of Dictionaries, Sets, Tuples and Lists and its various					
	methods in Python.	0				
6.	Working with functions in C/Python.	2				
7.	Working with recursive function in C/Python.	2				
8.	Building desktop application of your own calculator in Python.	4				
9.	Case Study:					
	a. Sorting : Arrange the books	C				
	b. Searching : Find in seconds	O				
	c. Recursion : Tower of Hanoi					
	TOTAL	30				

Use of different libraries will be covered in Practical Assignments.

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Practical:

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

Course Outcomes:

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

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

Mapping of CO with PO:

SECE1120	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2			3			2	2			3
CO 2	2	3			3				2			3
CO 3	3	2			3							3
CO 4	3				3							3

Mapping of CO with PSO:

SECE1120	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	3	3	2
CO 3	3	2	2
CO 4	3	3	2

Level of Revised Bloom's Taxonomy in Assessment:

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

Module No	Content	RBT Level
1.	Motivation of Programming	1, 2, 4
2.	Welcome to Programming	1, 2, 3
3.	Conditional Statements and Looping Statements	1, 2, 3

4.	Collection of Data	1, 2, 3
5.	Functions	2, 3, 4, 6
6.	Building Desktop Application	2, 3, 4, 6

P P Savani University School of Engineering

Department of Chemical Engineering

Course Code: SECH1110 Course Name: Fundamental Chemistry & Environmental Science Prerequisite Course(s): -

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Exa	minati	on Sche	me (Ma	rks)	
Theory	Practical	actical Tutorial		The	eory	Prac	ctical	Tut	orial	Total
Theory		TULUTIAI	Cleuit	CE	ESE	CE	ESE	CE	ESE	TOLAI
03	02	00	04	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Understand the basic concepts of chemistry, including atoms, molecules, and chemical processes.
- Apply the scientific method to examine chemical phenomena, including the design and execution of experiments, data analysis, and evidence-based conclusion drawing.
- Evaluate the causes and consequences of environmental problems and propose solutions based on scientific evidence.
- Integrate knowledge from multiple disciplines to analyze environmental problems and propose effective solutions.

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

	bases and their properties, Chemical equilibrium and the equilibrium constant		
4.	Organic Chemistry Introduction to organic chemistry and the basics of carbon chemistry, Functional groups and their properties, Nomenclature and isomerism in organic compounds, Introduction to organic reactions and mechanisms	6	10

	Section II						
Module	Content	Hours	Weightage				
			in %				
	Introduction to Environment						
5	Definition, principles and scope of Environmental Science, Impacts	06	10				
5.	of development on Environment, Environmental Degradation, The	00	10				
	interdisciplinary nature of environmental science, Concept of 4R's						
	Environmental Pollution						
6.	 a) Water Pollution: Introduction – Water Quality Standards, Sources of Water Pollution, Classification of water pollutants, Effects of water pollutants. b) Air Pollution: Composition of air, Structure of atmosphere, Ambient Air Quality Standards, Classification of air pollutants, Sources of common air pollutants like PM, SO₂, NO_x, Auto exhaust, Effects of common air pollutants c) Noise Pollution: Introduction, Sound and Noise, Noise measurements, Causes and Effects. d) Solid Waste: Generation and management e) Bio-medical Waste: Generation and management 	08	20				
	Social Issues and Environment						
7.	Sustainable Development, Equitable use of Resources for						
	sustainable lifestyle and it's benefits, Water conservation, Climate	08	20				
	Change, Global Warming and Green House Effect, Acid Rain,						
	Depletion of Ozone layer, Carbon Footprint						
	TOTAL	45	100				

List of Practical:

Sr. No	Name of Practical	Hours		
	Acid-base titration adding a base of known concentration to an acid of	02		
1.	unknown concentration until the reaction is complete, and the			
	concentration of the acid is determined.			
Determination of the boiling point of a liquid heating a sample of a liquid		02		
۷.	and observing the temperature at which it boils.			
2	Determination of the density of a liquid weighing a known volume of a	04		
5.	liquid and calculating its density.			
4	Determination of the pH of a solution using a pH meter to measure the	04		
4.	acidity or basicity of a solution.	04		
5.	Flame test: burning a sample of a substance and observing the color of the flame to identify the presence of certain elements.	04		
-----	--	----	--	--
6.	Preparation of a salt reacting an acid and a base to form a salt and	02		
	observing the reaction products.			
7.	Testing of soil acidity	02		
8	Studying the effect of temperature on the solubility of a solid in water at	02		
0.	different temperatures to see how temperature affects solubility.	02		
	Studying the properties of acids and bases: Students can test the	04		
9.	properties of different acids and bases (e.g., pH, conductivity) and			
	compare their properties.			
10	Investigating the reaction between an acid and a metal and measure the	04		
10.	amount of gas produced.			
	TOTAL	30		

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Practical:

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

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

Course Outcome(s):

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

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

Mapping of CO with PO:

SECH1110	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	2	1	1			2			2		1
CO 2	1	1	2	3		1	2			1		1
CO 3	1	2	2	3	3	3		2	1	1	3	
CO 4	3	3	2	2	1	1				3		1

Mapping of CO with PSO:

SECH1110	PS01	PSO2	PSO3
CO 1	1	2	3
CO 2	3	1	1
CO 3	2		2
CO 4	1		

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

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

Module No	Content	RBT Level
1	Introduction to Chemistry	2,1
2	Chemical Thermodynamics and Kinetics	4, 5
3	Properties of Matter and Solutions	1,2
4	Organic Chemistry	4,5
5	Introduction to Environment	1,2
6	Environmental Pollution	1,2,3
7	Social Issues and Environment	1,2,3

Department of Mechanical Engineering

Course Code: SEME1120 Course Name: Fundamentals of Technical Drawing Prerequisite Course(s): --

Teaching & Examination Scheme:

	Teaching So (Hours/W	cheme /eek)		Examination Scheme (Marks)						
Theory	Theory Practical Tutorial		Credit	The	eory	Pra	ctical	Tut	orial	Total
Theory	Theelean	Tutoriai	Greate	CE	ESE	CE	ESE	CE	ESE	Total
00	04	00	04	00	00	40	60	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

	Section I					
Module No.	Contents	Lab Hours	Weightage in %			
	Introduction:					
	Importance of the Course; Use of Drawing Instruments and					
1	accessories; BIS – SP – 46; Lettering, Dimensioning, and Lines;	03	05%			
1.	Representative Fraction; Types of Scales (Plain and Diagonal					
	Scales); Construction of Polygons.					
	Engineering Curves:					
2	Classification and Application of Engineering Curves;	12	15%			
2.	Construction of Conics, Cycloidal Curves, Involutes, Spiral,	12	1370			
	and Normal & Tangent to each curve.					
	Projections of points, lines & planes:					
	Types of Projections; Introduction of Principle Planes of					
	Projections; Projection of Points in all four Quadrants;					
2	Projection of Lines inclined to one Referral Plane & two	15	30%			
5.	Referral Planes. True length and inclination with reference					
	plane; Projection of Planes (Circular and Polygonal) with					

	inclination to one Referral Plane and two Referral Planes;		
	Concept of Auxiliary Projection Method.		
	Section II		
Module No.	Content	Hours	Weightage in %
	Orthographic Projection and Isometric Projections		
	Types of Projections: Principle of First and Third Angle		
4.	Projection Applications & Difference; Projection from Pictorial	18	30%
	view of Object, View from Front, Top, and Sides; Full Section		
	View. Isometric Scale, Conversion of Orthographic views into		
	Isometric Projection, Isometric View, or Drawing of simple		
	objects.		
	Residential Building Planning:		
5.	Introduction to buildings, Classification of buildings, Principles		
	of building planning, Principles of architecture composition,	06	100%
	Detail drawing, Line Plan, plan, elevation, section, Preparing	00	1070
	working drawing of residential building.		
6.	Computer-Aided Drawing:		
	Introduction to AutoCAD, Basic commands for 2D drawing	06	1004
	(Line, Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim,	00	10%0
	Extend, Offset, Dim style, etc.)		

List of Practical:

Sr.	Name of Practical	Hours
No.		
	Introduction sheet (dimensioning methods, different types of lines,	
1.	construction of various polygons, dividing the line and angle into parts, use of	03
	stencil, lettering), plane scale and diagonal scale	
2.	Engineering curves	12
3.	Projection of points, lines & planes	15
4.	Orthographic projection	10
5.	Isometric projection	10
6.	Residential building drawing (Line plan, Plan, Elevation, Section, Schedule	04
	opening)	
7.	Computer-Aided Drawing	06
	TOTAL	60

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Practical:

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

Course Outcome(s):

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

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

Mapping of CO with PO:

SECH1120	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	1	1	1				1			1	
CO 2	2		1	1	1			1			1	
CO 3	2		1	1				1			1	1
CO 4	2		1	2	1			1			1	1
CO 5	2	1	1	2	1			1			1	1

Mapping of CO with PSO:

SECH1120	PSO1	PSO2	PSO3
CO 1	1	2	2
CO 2	2	2	3
CO 3	2	3	1
CO 4	3	3	3
CO 5	3	3	3

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

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

Module No	Content	RBT Level
1	Introduction	1, 2, 6
2	Engineering Curves	2,6

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

P P Savani University

School of Engineering

Department of Civil Engineering

Course Code: SECV1110 Course Name: Core Engineering Concepts. Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme Examination Scheme (Marks) (Hours/Week)				arks)						
Theory	Practical	Tutorial	Credit	The	eory	Pra	ctical	Tut	orial	Total
5				CE	ESE	CE	ESE	CE	ESE	
03	02	00	04	40	60	40	60	00	00	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

	Section I					
Module	Content	Hours	Weightage			
No.			in %			
1.	Basics of Construction material and techniques					
	Common materials used in construction, Aggregate, Sand,					
	Cement, Bricks, Timber, Steel, Paints. Bonds in brick		18			
	masonry techniques, Foam works, Curing, Compaction of	80	10			
	concrete, Water proofing, Fire safety norms and					
	requirement.					
2.	Building planning and Bye laws					
	Building by laws as per national building code, building by					
	laws as per local authority, standards for residential, public,					
	commercial, industrial and institutional buildings planning,	08	18			
	planning of earth quake resistance building, overview of					
	RERA and ODPS, Green building and LEED certification,					
	general layout, maps and plan used at construction site.					
3.	Basic Electricity Principles					
	Concept of Charge, Potential Difference and Current,	07	14			
	Resistor, capacitor, Inductor, Ohm's law, effect of	07	± •			
	Temperature on resistance, temperature coefficient, Series					

	and parallel combinations of Resistors and capacitors, Lenz and Faraday's laws for electromagnetic induction, AC Electricity and DC Electricity. Electrical Wiring: Different types of conductors and cables. Basics of wiring-Star and delta connection. Voltage drop and losses across cables and conductors.		
	Section II		
Module No.	Content	Hours	Weightage in %
4.	Basics of I.C Engines: Construction and working of 2 Stroke & 4 Stroke Petrol and Diesel Engines, Difference Between 2-Stroke - 4 Stroke Engine & Petrol-Diesel Engine, Efficiency of I. C. Engines.	08	18
5.	Power Transmission Elements: Construction and Applications of Couplings, Clutches and Brakes, Difference Between Clutch and Coupling, Types of Belt Drive and Gear Drive	08	18
6.	DC Circuits and AC Circuits DC Circuits: Introduction of Electrical circuit elements (prerequisites), voltage and current sources, Kirchoff's current and voltage laws, Thevenin and Norton Theorems. Time-domain analysis of first-order RL and RC circuits. AC Circuits: Representation of sinusoidal waveforms, peak and RMS values, Phasor representation of AC quantities, real power, reactive power, apparent power, power factor, Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), Series and parallel resonance. Three phase balanced circuits, voltage and current relations in star and delta connections, Power measurement in three phase circuits.	06	14
7.	Basics of Steam Generators: Introduction, Classification, Cochran, Lancashire and Babcock and Wilcox Boiler, Functioning of Different Mountings and Accessories	LAB	08
	TOTAL	45	100

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Preparation of drawing sheet showing various bonds.	04
2.	Preparation of Basic plan of Construction site.	04

3.	Preparation sketch of various building component.	04
4.	Verify the series and parallel connections of resistors and capacitors.	04
5.	To understand construction and working of various types of boilers.	04
6.	To understand construction and working of mountings and accessories.	04
7.	To verify the Kirchoff's current and voltage laws and Network theorems.	02
8.	To understand construction and working 2 -stroke & 4 -stroke Petrol	02
	engines.	
9.	To understand construction and working 2 –stroke & 4 –stroke Diesel	02
	engines.	
	TOTAL	30

Text Book(s):

Title	Author(s)	Publication
Elements of Mechanical Engineering	Sadhu Singh	S. Chand Publications
Building construction	Dr. B C Punamia	Laxmi Publication
A text book in Electrical Technology	B L Theraja -	S Chand & Co.
Basic Electrical Engineering	D. C. Kulshreshtha	McGraw Hill, 2009

Reference Book(s):

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

Web Material Link(s):

• <u>http://nptel.ac.in/course.php</u>

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

CO 1 Understand basic properties of various construction materials.	
CO 2 Understand the general rules and regulation of building planning.	
CO3 Apply the principles of basic mechanical engineering.	

C04	Comprehend the importance of mechanical engineering equipment's like IC
	engine and power transmission elements.
CO5	Understand working of various instruments and equipment's used for the
	measurement of various electrical engineering parameters like voltage,
	current, power, phase etc in industry as well as in power generation,

Mapping of CO with PO:

SECH1110	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	3	3	1	2	1	2	1	1	2	1	1
CO 2	3	3	3	2	2	2	2	1	2	2	1	1
CO 3	3	2	2	2	2	2	2	1	2	2	2	1
CO 4	3	2	2	2	3	2	2	1	2	2	2	1
CO 5	3	3	3	2	3	2	2	1	2	2	2	1

Mapping of CO with PSO:

SECH1110	PSO1	PSO2	PSO3
CO 1	2	2	2
CO 2	2	3	2
CO 3	3	3	3
CO 4	3	2	3
CO 5	3	3	2

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

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

Module No	Content	RBT Level
1	Basics of Construction material and	1, 2, 3
	techniques	
2	Building planning and Bye laws	1, 2
3	Basic Electricity Principles	1,2,3
4	Power Transmission Elements	1, 2
5	Basics of I.C Engines	2
6	DC Circuits and AC Circuits	2,3,4
7	Basics of Steam Generators	1, 2



SECOND YEAR B. TECH.



P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

TEACHING & EXAMINATION SCHEME FOR SECOND YEAR B.TECH. COMPUTER SCIENCE ENGINEERING PROGRAMME AY: 2023-24

	6					Teaching Scheme Examination Scheme										
Sem	Course Code	Course Title	Course Category	Offered By		Contact H	lours		Cradit	The	eory	Prac	tical	Tuto	orial	Total
	doue			Dy	Theory	Practical	Tutorial	Total	Credit	CE	ESE	CE	ESE	CE	ESE	Total
	SESH2130	Discrete Structures & Graph Theory	Interdisciplinary	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SECE2210	Database Management System	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
3	SECE2221	Data Structures	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT2210	Object Oriented Programming with Java	Major/Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT2220	Software Engineering	Major/Core	IT	3	0	1	4	4	40	60	0	0	100	0	200
	CFLS2140	Upper Intermediate Communicative English	AEC	CFLS	2	0	0	2	2	100	0	0	0	0	0	100
	CLSC2020	IPDC-I	VAC	CLSC	2	0	0	2	2	100	0	0	0	0	0	100
							Total	28	25							1200
	SESH2140	Differential Equations & Statistics	Interdisciplinary	SH	3	0	2	5	5	40	60	0	0	100	0	200
	SECE2231	Computer Organization	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
4	SECE2240	Computer Networks	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200

SEIT2241	Mobile Application	Major/Core	IT	0	4	0	4	2	0	0	40	60	0	0	100
CLSC2030	Development IPDC-II	VAC	CLSC	2	0	0	2	2	100	0	0	0	0	0	100
						Total	26	21							1000

P P Savani University School of Engineering

Department of Science & Humanities

Course Code: SESH2130 Course Name: Discrete Structures & Graph Theory Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Exa	minati	on Sche	me (Ma	rks)		
Theory P	Drastical	Due sties] Testevial				Theory		Prac	ctical	Tut	Total
	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total	
03		02	05	40	60			100		200	

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

	Graphs and Graph Models, Graph Terminology and Types of graphs, Representing graphs and Isomorphism, Connectivity, Euler and Hamilton Paths-Circuits, Applications of weighted graphs.	08	18
6.	Tree Introduction to Trees, Rooted Tree, Properties of tree, Binary tree, Tree Traversal, Spanning Tree, DFS, BFS, Minimum Spanning Tree, Prim's Algorithm, Kruskal's Algorithm.	08	18
	TOTAL	45	100

List of Tutorial(s):

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

Text Book(s):

Title	Author/s	Publication
Discrete Mathematics and its	Kenneth Rosen	McGraw Hill, New
Applications		York.

Reference Book(s):

Title	Author(s)	Publication
A Textbook of Discrete	Dr. Swapan Kumar Sarkar	S. Chand & Company Ltd.,
Mathematics		New Delhi.
Discrete Mathematical	J.P.Trembly, R.Manohar	Tata McGraw-Hill
Structurewith Applications to		PublishingCompany Ltd.
Computer Science		New Delhi.
Graph Theory with Applications	Narsingh Deo	PHI Learning Pvt. Ltd. New
to Engineering and Computer		Delhi.
Science		

Web Material Link(s):

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

Course Evaluation: Theory:

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

Tutorial:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SESH2130	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	2	1	1								1
CO 2	3	3	1	1								3
CO 3	2	2	1	1								1
CO 4	3	3	1	1								3

Mapping of CO with PSO

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

Level of Revised Bloom's Taxonomy in Assessment

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

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

P P Savani University School of Engineering

Department of Computer Engineering

Course Code: SECE2210 Course Name: Database Management System Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minati	on Sche	me (Ma	rks)		
Theory	Drastical	Tutorial	Tutorial Credit		eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
03	02		04	40	60	40	60			200
			-							

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

4.	Relational Model Structure of relational databases, Domains, Relations, Relational algebra: fundamental operators and syntax, inner join, outer join, relational algebra queries	05	12
5.	Normalization Functional Dependency: Definition, trivial and non-trivial FD, closure of attributes, closure of FD set, irreducible set of FD, Decomposition using FD, dependency preservation, Database design anomalies, Normalization: 1NF, 2NF, 3NF, BCNF, Multi- valued dependency, 4NF.	07	15
6.	Transaction Management Transaction concepts, ACID property of transactions, concurrent executions of transactions and related problems, serializability of transactions, testing for serializability, deadlock, solution to concurrency related problems: Locking mechanism, two-phase locking protocol, System recovery, Log-based recovery, Two- phase commit protocol	07	15
7.	Basics of PL/SQL Programming structure of PL/SQL, Datatypes, Exception Handling, Cursor, Stored Procedure, Function, Trigger	03	08
	TOTAL	45	100

List of Practical:

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

Text Book(s):

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

Reference Book(s):

Title	Author(s)	Publication
Fundamental of Database	R. Elmasri and S.B Navathe	The Benjamin/Cumming
system		

Oracle: The Complete Reference	George Koch, Kevin Loney	TMH /Oracle Press
An Introduction to Database	C J Date	Addition-Wesley
system		

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

SECE2210	DATABASE MANAGEMENT SYSTEM
C01	Understand the importance of back-end design and relational database
	management system.
CO2	Apply physical data, conceptual data and its conversion into relational
	databases.
CO3	Practice various database constraints on relational databases.
CO4	Design and develop database for the software projects.

Mapping of CO with PO

SECE2210	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	2		2					1		3
CO 2	3	3	2		2							1
CO 3	3	3	2		2					1		1
CO 4	3	3	3	2	3					2	2	2

Mapping of CO with PSO:

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

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

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

P P Savani University School of Engineering

Department of Computer Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			minati	on Sche	me (Ma	rks)	
Due sties Trute visit		eory	Prac	ctical	Tut	orial	Total
Credit	CE	ESE	CE	ESE	CE	ESE	Total
04	40	60	40	60			200
/	Neek) Credit 04	Neek) Credit The CE 04 40	Neek)ExaCreditTheoryCEESE044060	Neek)ExaminationCreditTheoryPraceCEESECE04406040	Neek)Examination ScherCreditTheoryPracticalCEESECEESE0440604060	Neek)Examination Scheme (MaCreditTheoryPracticalTutCEESECEESECE0440604060	Neek)Examination Scheme (Marks)CreditTheoryPracticalTutorialCEESECEESECEESE0440604060

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.

Section I							
Module No.	Content	Hours	Weightage in %				
1.	Introduction to Data Structures Basic Terminology, Classification of Data Structures: Primitive and Non-Primitive, Linear and Non-linear, Operations on Data Structures.	04	10				
2.	Array 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 QueueStack Definition and concepts, Operations on stack,ProgrammingStack using Array in C, Prefix and Postfix Notations and theirCompilation, Recursion, Tower of Hanoi, Representation ofQueue, Operation on Queue, Programming Queue using Arrayin 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. Section II	03	05				
	Section II						

Module No.	Content	Hours	Weightage in %
	Linked List-II and Applications of Linked List		
6	Linked implementation of Stack, Linked implementation of	03	08
0.	Queue,	03	00
	Applications of Linked List.		
	Trees and Graphs		
	Graph Definition, Concepts, and Representation, Types of		
	Graphs, Tree Definition, concepts, and Representation.		
	Binary Tree, Binary		25
7.	Tree Traversals, conversion from general to Binary Tree.	12	
	Threaded Binary Tree, Heap, Binary Search Tree. Tree		
	for Huffman coding, Breadth First Search, Depth First Search,		
	Spanning Tree, Kruskal's and Prim's Minimum Cost Spanning		
	Tree Algorithms, Dijkstra's Shortest Path Algorithm.		
	Hashing		
8.	The Symbol Table Abstract Data Types, Hash Tables, Hashing	04	10
	Functions, Hash collision Resolution Technique, Linear		
	Probing.		
9.	Advanced Search Structures		
	AVL Trees. 2-3 Trees. 2-3-4 Trees. Red-Black Trees. B-Trees.	04	07
	B+ Tree Splay Trees. Digital Search Trees. Tries.		
	TOTAL	45	100

List of Practical:

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

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

Reference Book(s):

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

Web Material Link(s):

<u>https://nptel.ac.in/courses/106102064/</u>

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SECE2221	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	1	2	2								
CO 2	2	1	2	1							1	
CO 3	2	2	3	2	1	2						
CO 4	2	1	2	2			1				1	

Mapping of CO with PSO:

SECE2221	PSO1	PSO2	PSO3

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

Level of Revised Bloom's Taxonomy in Assessment:

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

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

P P Savani University School of Engineering

Department of Computer Engineering

Course Code: SEIT2210 Course Name: Object Oriented Programming with Java Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minatio	on Schei	me (Ma	rks)	
Dractical	Tutorial Credit		The	eory	Prac	ctical	Tute	orial	Total
Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
02		04	40	60	40	60			200
	ning Scheme Practical 02	ning Scheme (Hours/W Practical Tutorial 02	ning Scheme (Hours/Week)PracticalTutorialCredit0204	hing Scheme (Hours/Week) Practical Tutorial Credit CE 02 04 40	$\begin{array}{c} \text{ning Scheme (Hours/Week)} \\ \mbox{Practical} \\ \mbox{Tutorial} \\ \mbox{O2} \\ \\ \mbox{O4} \\ \mbox{O4} \\ \mbox{O4} \\ \mbox{O4} \\ \mbox{O6} \\ \mbo$	$\begin{array}{c c} \mbox{hing Scheme (Hours/Week)} & \mbox{Examination} \\ \mbox{Practical} & \mbox{Tutorial} & \mbox{Credit} & \mbox{Theory} & \mbox{Practical} \\ \mbox{O2} & & \mbox{O4} & \mbox{40} & \mbox{60} & \mbox{40} \end{array}$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

5.	Exceptions Handling: Exception types, TryCatchFinally, Throw, Throws, creating your own exception subclasses.	06	14
6.	Multithreaded Programming:Life cycle of thread, thread methods, thread priority, threadexceptions,ImplementingRunnableinterface,Synchronization.	08	18
7.	GUI Programming & Lambdas and Streams: Introduction to Annotation, Byte streams and character streams, Wrapper classes, Why Lambda Expression, Lambda Expression Syntax, where to use lambda expression, Adopting Patterns like matching, finding and filtering, Swing overview, Swing component classes: AbstractButton, ButtonGroup, ImageIcon, JApplet, Jbutton, JcheckBox, JcomboBox, Jlabel, JradioButton, JscrollPane, JtabbedPane, Jtable, JtextField, Jtree.	09	18
	TOTAL	45	100

List of Practical:

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

Text Book(s):

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

Reference Book(s):

Title	Author(s)	Publication
Core Java Volume I -	Cay Horstmann and Gray	Pearson
Fundamentals	Cornell	
Thinking in Java	Bruce Eckel	Pearson

Learning Java	Patrick Niemeyer & Jonathan	O'Reilly Media		
	Knudsen			

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SEIT2210	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	1	3	2	1	2				3	1	1	3
CO 2	2	3	2	2	1				3	1	1	3
CO 3	3	2	3	2	3				3	1	1	3
CO 4	3	2	3	2	1				3	1	1	3
CO5												

Mapping of CO with PSO

SEIT2210	PSO1	PSO2	PSO3
CO 1	2	2	2
CO 2	3	3	2
CO 3	2	3	2
CO 4	2	2	2
C05	2	2	1

Level of Revised Bloom's Taxonomy in Assessment

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

Module	Content	RBT Level
NO		
1.	Fundamental of Object-Oriented Programming	1,2
2.	Class Fundamentals	1,2
3.	Array & String Handling	3,4
4.	Inheritance, Interfaces & Packages	2,3,4
5.	Exceptions Handling	2,3
6.	Multithreaded Programming	2,3
7.	GUI Programming & Lambdas and Streams	2,3,4

P P Savani University School of Engineering

Department of Computer Engineering

Course Code: SEIT2220 Course Name: Software Engineering Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minatio	on Schei	me (Ma	rks)				
haarma Duratiaal Tutanial		Tratanial Cradit		actical Tutorial Credit		The	eory	Prac	ctical	Tute	orial	Total
eory	Practical	CE	ESE			CE	ESE	CE	ESE	Total		
3		01	04	40	60			100		200		
	Teach eory 3	Teaching SchemeeoryPractical3	Teaching Scheme (Hours/WeoryPracticalTutorial301	Teaching Scheme (Hours/Week)eoryPracticalTutorialCredit30104	Teaching Scheme (Hours/Week)eoryPracticalTutorialCreditThe CE3010440	Teaching Scheme (Hours/Week)ExaPracticalTutorialCreditTheory301044060	Teaching Scheme (Hours/Week)ExaminationPracticalTutorialCreditTheoryPractical301044060	Teaching Scheme (Hours/Week)Examination SchemePracticalTutorialCreditTheoryPractical301044060	Teaching Scheme (Hours/Week)Examination Scheme (MaPracticalTutorialCreditTheoryPracticalTutorial301044060100	Teaching Scheme (Hours/Week)Examination Scheme (Marks)PracticalTutorialCredit $Theory$ PracticalTutorial301044060100		

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

Module No	Content	Hours	Weightage
5.	Software Coding & Testing Programming principles, Coding Standards and coding Guidelines, Unit testing; Metrics, Software testing fundamentals, Black-box and white box testing, Basis path testing, Control structure testing, Black-box testing - Graph- based testing method, Boundary value analysis; Testing strategies - A strategic approach to software testing, Test strategies for conventional and object-oriented software, test case generation and tool support, Metrics – Coverage analysis-	08	20
6.	Quality Assurance Quality Control, Assurance, Cost, Reviews, Software Quality Assurance, Approaches to SQA, Reliability, Quality Standards- ISO9000 and 9001.	04	08
7.	Software Project Management Scope and Feasibility, Effort Estimation, Schedule and staffing, Quality Planning, Risk management- identification, assessment, control, project monitoring plan, Detailed Scheduling. Six Sigma for SE, Management Spectrum, People – Product – Process- Project, W5HH Principle, Importance of Team Management.	06	10
8.	Software Maintenance and Configuration Management Types of Software Maintenance, Re-Engineering, Reverse Engineering, Forward Engineering, The SCM Process, Identification of Objects in the Software Configuration, Version Control and Change Control.	04	07
	TOTAL	45	100

List of Tutorials:

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

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Tutorial:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SEIT2220	0 P(01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1		3	3	2	2	2	1			2	1	1	2
CO 2		3	3	3	2	3	2			2	2	2	1
CO 3		3	3	3	2	3	2			2	2	2	1
CO 4		3	2	2	3	3	2			2	3	3	2
CO 5		3	2	2	3	3	2			2	2	2	2

Mapping of CO with PSO

|--|

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

Level of Revised Bloom's Taxonomy in Assessment

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

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

P P Savani University School of Engineering

Department of Science & Humanities

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

Teaching & Examination Scheme:

Teach	ning Scheme	e (Hours/W	′eek)		Exa	minatio	on Schei	me (Ma	rks)	
Theory	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
03		02	05	40	60			100		200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

	Section I		
Module	Content	Hours	Weightage
No.	Gontene	mours	in %
1.	Ordinary Differential Equation-I First order ODEs, Formation of differential equations, Solution of differential equation, Solution of equations in separable form, Exact first order ODEs, Linear first order ODEs, Bernoulli Equation Ordinary Differential Equation-II ODEs of Second and Higher order, Homogeneous linear ODEs, Linear Dependence and Independence of Solutions, Homogeneous linear ODEs with constant coefficients, Nonhomogeneous ODEs, Variation of Parameters	10	20
2.	Partial Differential Equation Formation of First and Second order equations, Solution of First order equations, Linear and Non-liner equations of first, Higher order equations with constant coefficients, Complementary function, Particular Integrals.	07	18
3.	Fourier Series Periodic function, Euler Formula, Arbitrary Period, Even and Odd function, Half-Range Expansions	05	12
	Section II		XA7 • 1 ·
Module No.	Content	Hours	weightage in %
4.	Basics of Statistics	07	15

	Elements, Variables, Observations, Quantitative and Qualitative data, Cross-sectional and Time series data, Frequency distribution, Dot plot, Histogram, Cumulative distribution, Measure of location, Mean, Median, Mode, Percentile, Quartile, Measure of variability, Range,		
	Interquartile Range, Variance, Standard Deviation, Coefficient of Variation.		
5.	Correlation & Regression Analysis Regression Analysis, Regression line and regression coefficient, Karl Pearson's method.	07	15
6.	Probability Distribution Introduction, Conditional probability, independent events, independent experiments, Theorem of TOTAL probability and Bayes' theorem, Probability distribution, Binomial distribution, Poisson distribution, Normal distribution, Hypothesis.	09	20
	TOTAL	45	100

List of Tutorial(s):

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

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Tutorial:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SESH2140	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2	1									3
CO 2	3	2	1									3
CO 3	3	2	1									3
CO 4	2	1	1									1
CO 5	2	1	1									1

Mapping of CO with PSO

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

|--|

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

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

Department of Computer Engineering

Course Code: SECE2231 Course Name: Computer Organization Prerequisite Course(s): NIL

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				ing Scheme (Hours/Week) Examination Scheme (Marks)				·ks)		
Theory	Dractical	Tutorial	Cradit	The	eory	Prac	tical	Tute	orial	Total
Theory	neory Fractical Intorial	Creuit	CE	ESE	CE	ESE	CE	ESE	TOLAI	
03	02		04	40	60	40	60			200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

5.	Pipeline Control and Parallel ProcessingFlynn's taxonomy, Parallel Processing, Pipelining, ArithmeticPipeline, Instruction, PipelineHazards,Pipeline, RISC Pipeline.	08	20
	Input-Output Organization		
6.	Types of Peripherals, Input-Output Interface, Asynchronous Data Transfer, Modes ofTransfer, Priority Interrupt, DMA	06	15
	Memory Organization		
7.	08	15	
	Associative Memory, Cache Memory, Virtual Memory.		
	TOTAL	45	100

List of Practical:

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

Text Book(s):

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

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 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):

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

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

Mapping of CO with PO

SECE2231	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	1	1	2	2	2		1		1	1
CO 2	3	2	1			1		2	2	1	2	2
CO 3	3	2	1	1	2		1		2	1	2	
CO 4	3	2	1		3				2	2	3	1

Mapping of CO with PSO

SECE2231	PSO1	PSO2	PSO3
CO 1	3	2	1
CO 2	3	2	2
CO 3	3	3	2
CO 4	3	3	3

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

Module	Content	RBT Level
No		
1	Basic Computer Organization and Design	2,4
2	Programming the Basic Computer	2,3,4
3	Computer Arithmetic	2,4.5
4	Central Processing Unit	1,2,5
5	Micro-programmed Control	1,2
6	Pipeline and Vector Processing	2,5
7	Input-Output Organization	2,3,4
8	Memory Organization	2,5,6
9	Multiprocessors	2

Department of Computer Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory	Drastical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
03	02		04	40	60	40	60			200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

Module No.	Content	Hours	Weightage in %
5.	Network Layer A network Layer design issue, Routing algorithms, and protocols – OSPF, BGP, RIP, Congestion Control Algorithms, Internetworking – IPV4 & IPV6, Addressing, N/W Layer Protocols, and subnets.	09	20
6.	Transport Layer Transport services, Design issues, transport layer protocols – TCP & UDP, Congestion Control, QOS and its improvement.	07	15
7.	Application Layer Client-Server Model, WWW, HTTP, DNS, DHCP, FTP, and Email Protocol – IMAP, POP3, SMTP	06	15
	TOTAL	45	100

List of Practical:

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

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SECE2240	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	1	1	1	2		2			3		1
CO 2	3	1	1	2	1		3	1		3		2
CO 3	2	2	2		1		3		1	2		3
CO 4		2	2	1	1	2	2			2		3

Mapping of CO with PSO

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

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

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

Department of Computer Engineering

Course Code: SEIT2230 Course Name: Operating System Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minati	on Sche	me (Ma	rks)		
The same Drug stievel	Tutorial	L Credit Th		eory	Prae	ctical	Tut	orial	Total	
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
03	02		04	40	60	40	60			200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

• To provide a fundamental understanding of the operating system functions, architecture, services, and interconnections among services within operating systems.

Section I					
Module No.	Content	Hours	Weightage in %		
1.	Introduction to Operating System Basics of Operating System: Definition, Types of Operating System, Operating System Structure, Operating System Services, Concept of Virtualization.	03	07		
2.	Processes and Threads Management Concept of Process: Definition, Process State, Process State Transition, Process Control Block, CPU Scheduling: CPU-I/O Burst Cycle, Types of Schedulers, Context Switching, Preemptive and Non- Preemptive Scheduling, Scheduling Criteria, Process Scheduling Algorithms: FCFS, SJF, Priority, Round- Robin, Multilevel Queue, and Lottery Scheduling; Threads, Types of Threads, Multithreading	09	20		
3.	Inter Process Communication Race Conditions, Critical Regions, Mutual Exclusion with Busy Waiting, Sleep and Wakeup, Semaphores, Mutexes, Monitors, Message Passing, Classical IPC Problems: The Dining Philosopher Problem, The Readers and Writers Problem	07	15		
4.	Deadlocks Resources, Conditions for Deadlocks, Deadlock Modelling, , Deadlock Detection and Recovery, Deadlock Avoidance, Deadlock Prevention.	04	08		
5.	Memory Management Main memory: Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging: Introduction to Paging, Translation look-aside buffer (TLB), Structure of Page Table, Virtual memory: Background, Demand Paging, Page	11	25		

	Replacement Algorithms: FIFO, Optimal Page Replacement, Least Recently Used, Not Recently Used, Second Chance Page Replacement, Thrashing.		
6.	File Management File Concepts: File Types, File Attributes, File Access Methods, File Operations, Directories: Directories Structure, Path Types, Directory Operations; File Allocation Methods: Contiguous, Linked, Indexed Allocation.	05	12
7.	Disk Management Disk structure, Disk Scheduling Algorithms: FCFS, SSTF, SCAN, C-SCAN, LOOK, C-LOOK, Disk Free Space Management, RAID Levels.	06	13
	TOTAL	45	100

List of Practical:

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

Text Book(s):

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

Reference Book(s):

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

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

Course Evaluation: Theory:

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

Practical:

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

Course Outcome(s):

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

SEIT2230	OPERATING SYSTEM				
CO 1	Understand the basic principles of operating system.				
CO 2	Illustrate the concepts of operating systems services and its components.				
CO 3	Evaluate the performance of operating system algorithms and achieve a comprehensive understanding of memory management during process execution.				
CO 4	Comprehend how an operating system manages file systems, mass storage, and I/O operations.				

Mapping of CO with PO

SEIT2230	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2	1				1			1		1
CO 2	2	2	2	1	2					2		2
CO 3	3	3	3	3	3		2	1		2		2
CO 4	3	3	3	2	3	1		1	2	3	2	3

Mapping of CO with PSO

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

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

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

6.	File Management	1, 2, 3
7.	Disk Management	1, 2, 3, 4, 5

Department of Information Technology

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Examination Scheme (Marks)					
Theory	Dractical	Tutorial	Credit	Tratavial Credit Theory		Practical		Tutorial		Total
Theory	Practical	Tutoriai		CE	ESE	CE	ESE	CE	ESE	Total
	04	00	02			40	60			100
	04	00	02			40	00			100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Understand life cycle of an application/activity.
- Learn design of responsive mobile applications.
- Develop mobile application using open-source technologies.

List of Practical:

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

Text Book(s):

Title	Author/s	Publication

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

Reference Book(s):

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

Web Material Link(s):

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

Course Evaluation:

Practical:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SEIT2241	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	1	2	1	1	3	2			1	2	1	1
CO 2	2	1	2	2	3	2	1		1	1	1	2
CO 3		2	3	2	3	2		1	1	2	2	3
CO 4	3	3	3	2	3	3			3	3	3	3

Mapping of CO with PSO

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

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

Practical	Content	RBT Level
No		
1.	Introduction of Android	1,2,3
2.	Android Application Design and Resource	2,3,4
3.	Exploring User Interface Screen Elements	2,3,4
4.	Designing User Interfaces with Layouts	2,3,6
5.	Working with Widgets & Control	2,4,5,6
6.	Drawing & Working with Animation	3,4,6
7.	Designing Application , Working with Android	2,6
	Manifest file	
8.	Canvas & Paint Class, Multimedia APIs.	1,2,6
9.	Networking APIs, Android Web APIs.	1,2,5,6
10.	Working with Media Controller.	2,3
11.	Working with Speech to Text & Text to Speech.	3,6
12.	Storage APIs, Working with Database.	4,3,6
13.	Cross Platform Mobile Application using	2,3
	flutter.	
14.	Demonstrate UI Components in flutter	2,3,6



THIRD YEAR B. TECH.



	P P SAVANI UNIVERSITY															
				SCH	IOOL OF E	NGINEERIN	G									
	TEACH	IING & EXAMINATION SCHEME	FOR THI	RD YEAI	R B.TECH.	COMPUTER	SCIENCE I	ENGINE	ERIN	G PRO	GRAM	MEAY	: 2023	-24		
			Cours	Offor		Teachin	g Scheme				I	Examir	nation	Scher	ne	
Sem	Course Code	Course Title	e Catego	ed		Contact H	lours		Cre	The	eory	Prac	tical	Tut	orial	
		ry	Ву	Theory	Practical	Tutorial	Tota l	dit	CE	ESE	CE	ESE	CE	ESE	Total	
	SECE3210	Automata Theory and Compiler Design	Major /Core	CE	3	0	1	4	4	40	60	0	0	10 0	0	200
	SECE3221	Internet of Things	Major /Core	CE	2	4	0	6	4	40	60	40	60	0	0	200
	SEIT3211	Design & Analysis of Algorithms	Major /Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
5	SEIT3221	Advance Java Technology	Major /Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
		Elective-I	Minor		2	2	0	4	3	40	60	40	60	0	0	200
		Language Training Elective Course	AEC	CFLS	3	0	0	3	3	100	0	0	0	0	0	100
		Life Skill Elective Course-I	VAC	CLSC	2	0	0	2	2	100	0	0	0	0	0	100
	SECE3920	Summer Training	Minor	CE	0	4	0	0	4	0	0	100	0	0	0	100
							Total	29	28							1300
	SECE3231	Cloud Computing & Applications	Major /Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT3230	Information Security	Major /Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT3241	Full Stack Development	Major /Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
6	SECE3560	Project-I	Minor	CE	0	3	0	3	3	0	0	100	0	0	0	100
		Elective-II	Minor		2	2	0	4	3	40	60	40	60	0	0	200
	TNPC3010	Corporate Grooming & Etiquette	SEC	TNP C	3	0	0	3	3	100	0	0	0	0	0	100
	SECE3490	MOOC Course / University Elective	SEC		3	0	0	3	3	100	0	0	0	0	0	100

Life Skill Elective Course-II	VAC	CLSC	2	0	0	2	2	100	0	0	0	0	0	100
					Total	30	26							1200

	P P SAVANI UNIVERSITY															
					SCHOO	L OF ENGI	NEERING									
		TEACHING & EXAMIN	ATION SCH	EME FOR	B. TECH.	BATCH: 2	2023 COMI	PUTER	ENGINEI	ERING	G – ELI	ECTI	VE CO	URSE	S	
		Course				Teach	ning Schem	e				E	xamin	ation	Schem	ie
Sem Course	Course Code	Course Title	Category	Offered Bv		Contact	Hours		Cradit	Th	eory	Pra	ctical	Tut	orial	Total
	Goue		29	Theory	Practical	Tutorial	Total	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAT	
	SECE3610	Programming with .NET	Minor	CE	2	2	0	4	3	40	60	40	60	0	0	200
5	SEIT3610	System Analysis & Design	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200
	SEIT3620	Data Visualization	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200
	SEIT3630	Image Processing	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200
							Total	29	28							1300
	SECE3620	Service Oriented Computing	Minor	CE	2	2	0	4	3	40	60	40	60	0	0	200
	SECE3630	Wireless Network & Mobile Computing	Minor	CE	2	2	0	4	3	40	60	40	60	0	0	200
6	SECE3640	Software Testing & Quality Assurance	Minor	CE	2	2	0	4	3	40	60	40	60	0	0	200
	SEIT3640	Advanced Web Technologies	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200
	SEIT3650	Augmented Reality & Virtual Reality	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200

Department of Computer Engineering

Course Code: SECE3210 Course Name: Automata Theory and Compiler Design Prerequisite Course(s): Problem solving through C and Data Structure

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory	Dreatical	Tutorial	Credit	Th	eory	Pra	ctical	Tuto	orial	Total
Theory	Practical	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	Total
3	0	1	4	40	60	0	0	100	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Understand the Relationship between Models and Formal Languages as part of concept of Automata.
- Employ finite state machines to solve complex problems in computing and classify machines based on their capabilities to recognize and process different languages.
- Develop and Implement Lexical and Syntax Analysis Skills for the implementation of the tools like compiler.

Section I							
Module No.	Content	Hours	Weightage in %				
1.	Introduction to Automata Languages, definitions, Regular Expressions, Regular Grammars, Acceptance of Strings and Languages, Finite Automaton Model, DFA, NFA, conversion of NFA to DFA, Conversion of Regular Expression to NF.	06	10				
2.	Stages of Compilation and Lexical Analysis and Top Down ParsingChomsky hierarchy of Languages, Phases of compilation overview, Pass, Phase, Interpretation, Bootstrapping. Context free grammars, Top Down Parsing: Parse Trees, Ambiguous Grammars, Backtracking, LL (1), Recursive Descent parsing, Predictive parsing, pre- processing steps for predictive processing.	08	18				
3.	Bottom Up Parsing and Semantic Analysis and Symbol Table Organization Bottom-up parsing and handle pruning, LR (k) grammar parsing, LALR (k) Grammars, Error Recovery in parsing, parsing ambiguous grammars, YACC parser generator. Intermediate source program forms - AST, polish notation and 3 address code, Attribute Grammars, Syntax Directed Translation, Conversion of popular programming constructs into intermediate code forms, Inherited Grammars, Type Checking, Equivalence of type expressions.	09	22				
	Section II						

Module No.	Content	Hours	Weightage in %
4.	Data Structure Support Symbol table format, organization, Block structured languages, hashing, Block structure and non-block structure storage allocation:	05	10
5.	Code Optimization Consideration for optimization, Scope of optimization, DAG representation, Basic blocks, partitioning into basic blocks, Compile Time Evaluation, Common Subexpression elimination, dead code elimination, Strength Reduction, Code Movement, Loop Invariant Method, Loop Fusion, Loop Unrolling, Induction Variables and Reduction in Strength.	08	18
6.	Code Generation Absolute Code, Re-locatable Machine Code, Assembler Code, Register and Address Descriptors, Implementing Global Register Allocation, Usage Counts, Using DAG for register allocation, Simple Code generation Algorithm, Generic Code generation Algorithm, Generating code from DAG.	09	22
	TOTAL	45	100

List of Case Study:

Sr. No.	Case Study topic	Hours
1.	Designing a Regular Expression Matcher : Implement a regular expression matcher using finite automata.	01
2.	Converting NFA to DFA : Convert a given NFA to an equivalent DFA and compare their performance.	01
3.	Regular Grammar to Regular Expression : Convert a regular grammar to a regular expression and vice versa.	01
4.	Lexical Analyzer Design : Design a lexical analyzer for a simple programming language.	01
5.	Top-Down Parsing : Implement a top-down parser for a given grammar and analyze its efficiency.	01
6.	Bottom-Up Parsing : Implement a bottom-up parser using LR(k) grammar and handle pruning techniques.	01
7.	Semantic Analysis : Perform semantic analysis on a given source code and generate a symbol table.	01
8.	Code Optimization Techniques : Apply various code optimization techniques like loop fusion and dead code elimination.	01
9.	Register Allocation : Implement a simple code generation algorithm with global register allocation.	01
10.	Attribute Grammars : Use attribute grammars for syntax-directed translation and type checking.	01
11.	YACC Parser Generator : Use YACC to generate a parser for a given grammar and handle error recovery.	01
12.	Intermediate Code Generation : Convert popular programming constructs into intermediate code forms.	01
13.	Type Checking : Implement type checking for a given set of type expressions.	01
14.	Symbol Table Organization : Design and implement a symbol table for a block-structured language.	01
15.	Code Generation from AST : Generate machine code from an abstract syntax tree (AST).	01

TOTAL 15

Text Book(s):

Title	Author/s	Publication
Introduction to Automata Theory,	John E. Hopcroft, Rajeev Motwani,	2 nd Ediiton, Addison
Languages, and Computation" by	and Jeffrey D. Ullman	Wesley

Reference Book(s):

Title	Author(s)	Publication
Introduction to Formal	Peter Linz	6th Edition (2016), Jones and
Languages and Automata		Bartlett Publishers, Inc. January 26,
		2016
Theory of Automata and	Adesh K Pandey	1st Edition (2011), S.K. Kataria &
Computation		Sons, January 1, 2011
Compilers: Principles,	Alfred V. Aho, Monica S. Lam,	2 nd Edition, (2024), Pearson, April 9,
Techniques, and Tools	Ravi Sethi, and Jeffrey D.	2024
	Ullman	
Modern Compiler	Andrew W. Appel	3 rd Edition, (2002), Cambridge
Implementation in Java		University Press, March 6, 2002

Web Material Link(s):

- <u>https://onlinecourses.nptel.ac.in/noc21_cs19/preview</u>
- <u>https://www.tutorialspoint.com/automata_theory/automata_theory_introduction.htm</u>
- <u>You are about to be navigated to https://web.mit.edu/6.005/www/fa15/classes/17-regex-grammars/</u>
- <u>https://www.javatpoint.com/the-phases-of-a-compiler-lexical-analysis</u>
- <u>https://www.educative.io/courses/theory-of-computation/the-chomsky-hierarchy</u>
- <u>https://cse.iitkgp.ac.in/~sudeshna/courses/NLP19/CFG-16-Aug-19.pdf</u>
- <u>https://www.savemyexams.com/a-level/computer-science/ocr/17/revision-notes/2-software-and-software-development/2-2-applications-generation/stages-of-compilation/</u>

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

SECE3210	Automata Theory and Compiler Design
CO 1	Understand and apply the concepts of automata, regular expressions, and grammars.
CO 2	Design and implement finite automata, including DFA and NFA.
CO 3	Convert regular expressions to finite automata and vice versa.
CO 4	Design and implement lexical analyzers and parsers using top-down and bottom-up parsing techniques.
CO 5	Perform code optimization and generate intermediate code from abstract syntax trees.

Mapping of CO with PO

SECE1050	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2	1	2	2				1			3
CO 2	3	3	3	2	3				1			3
CO 3	3	3	2	2	2				1			3
CO 4	3	3	3	3	3				1			3
CO 5	3	3	3	3	3				1			3

Mapping of CO with PSO

SECE3210	PSO1	PSO2	PSO3
CO 1	2	1	
CO 2	3	2	
CO 3	3	1	
CO 4	3	2	
CO 5	3	3	3

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

Module No	Content	RBT Level
1.	Introduction to Automata	1,2,3
2.	Stages of Compilation and Lexical Analysis and Top-Down Parsing	1,2,3,4
3.	Bottom-Up Parsing, Semantic Analysis, and Symbol Table Organization	1,2,3,5,6
4.	Data Structure Support	1,2,3
5.	Code Optimization	1,2,3,4
6.	Code Generation	1,2,3,5,6

Department of Computer Engineering

Course Code: SECE3221 Course Name: Internet of Things Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minati	on Sche	me (Ma	rks)			
	Theory	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
	Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
	2	4	0	4	40	60	40	60	0	0	200
ļ	Z	4	U	4	40	60	40	60	U	U	Z

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- understand the fundamental concepts and technologies underlying the Internet of Things (IoT).
- develop the practical skills to design, develop, and implement simple IoT systems using hardware and software tools.
- gain knowledge of IoT communication protocols, networking concepts, and cloud computing platforms relevant to IoT.
- analyze and evaluate the security, ethical, and societal implications of IoT technologies.

	Section I				
Modul	Contont	Hour	Weightag		
e No.	Content	S	e in %		
1.	Introduction to IoT: Overview of IoT: Definition, scope, and applications, End-to-End IoT Architecture, Challenges and opportunities in IoT adoption. IoT Trends: Edge computing, AI integration, digital twins, fog computing, 5G for IoT, IoMT, IIoT, smart cities	03	10		
2.	Embedded IoT Devices: Overview of embedded systems and selection criteria for IoT hardware. Comparison: Microcontroller (MCU) vs. Microprocessor (MPU) devices. Introduction to development boards: Arduino UNO, ESP8266, and ESP32. GPIO basics and interfacing with sensors and actuators.	05	17		
3.	Sensors and Actuators: Overview of sensors: Types and working principles. Actuators: Types, functionality and applications. Programming and interfacing of analog, digital, and protocol-based sensors. Case study	04	13		
4.	IoT Networking and Gateway Devices: Networking Fundamentals: addresses, subnets, routing, Common network protocols: TCP/IP, UDP, HTTP, Introduction to IoT Gateways: Definition, functions, Types, Introduction to	04	13		

	Raspberry Pi and its capabilities in IoT, Setting up the Raspberry		
	Pi development environment		
	Section II		
Module	Contant	Hour	Weightag
No.	Content	S	e in %
	IoT Communication Protocols:		
5	IoT Network Layer Protocols: RPL, 6LoWPAN, LoRaWAN,	06	20
5.	Wireless Connectivity Options: Wi-Fi, Bluetooth/BLE, Zigbee,	00	20
	Cellular, NFC, Communication Protocols: MQTT, HTTP, CoAP		
	IoT Cloud and IoT Applications:		
6	Cloud computing models, Cloud services for IoT, IoT Cloud	05	17
0.	Platforms, IoT data management, Importance of data analytics	05	17
	in IoT, IoT Applications: RFID, iBeacon, Industry 4.0		
	IoT Security:		
	Security Concerns in IoT: Data privacy, device vulnerabilities,		
7.	best practice to Secure IoT: Authentication, authorization,	03	10
	encryption, access control, secure boot, firmware updates, Case		
	study		
	TOTAL	30	100

List of Practical:

Sr No	Name of Practical	Hour
51. NO.	Name of Fractical	S
1.	Understand the fundamentals of IoT hardware and software, including	04
	electronics basics, Arduino IDE setup, and Tinkercad circuit simulation and	
	IoT career pathways.	
2.	Explore GPIO interfacing with Arduino to control digital and analog devices	04
	using sensors, LEDs, buttons, and PWM techniques for motor and brightness	
	control.	
3.	Interface temperature, obstacle/motion, distance measure sensors with	06
	Arduino to acquire real-world data and develop mini-projects like	
	temperature monitoring and motion-activated systems.	
4.	Set up and program NodeMCU/ESP8266 for IoT applications with Wi-Fi	04
	connectivity and build basic HTTP offline/online web servers for data	
	communication.	
5.	Develop IoT applications with NodeMCU, integrating sensors like DHT22 to	06
	log data using offline http server and MPU6050 to control devices such as	
	LEDs through gesture recognition.	
6.	Implement MQTT protocol for IoT communication by setting up a broker	06
	and exchanging data between devices for tasks like sensor logging and	
	actuator control.	
7.	Set up Raspberry Pi environment, utilize it for GPIO control, sensor and	04
	actuator interfacing, and developing basic home automation systems.	
8.	Visualize IoT data and control actuators using Node-RED by creating data	06
	acquisition flows, charts, and integrating with NodeMCU for interactive	
	control.	
9.	Integrate IoT devices with cloud platforms to publish, visualize, and control	04
	data using dashboards and commands on platforms like ThingSpeak and	
	Adafruit IO.	

10.	Design an Android app using MIT App Inventor or Android Studio to control IoT devices via MQTT or HTTP, enabling real-time monitoring and operation.	06
11.	Capstone Project	10
	TOTAL	60

Text Book(s):

Title	Author/s	Publication
Introduction to IoT	Sudip Misra, Anandarup	Cambridge
	Mukherjee, Arijit Roy	University Press
Internet of Things	Shriram K. Vasudevan, Abhishek	Wiley India
	S. Nagarajan, R. M. D. Sundaram	
The Internet of Things	Pethuru Raj, Anupama C. Raman	CRC Press, Taylor &
Enabling Technologies,		Francis
Platforms, and Use Cases		

Reference Book(s):

Title	Author(s)	Publication
Internet of Things	Raj Kamal	Tata McGraw Hill
Fundamentals of IoT	Rajan Gupta, Supriya Madan	BPB Publications

Web Material Link(s):

- <u>https://nptel.ac.in/courses/106105166</u>
- <u>https://randomnerdtutorials.com/</u>

Course Evaluation:

Theory:

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

Practical:

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

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

SECE3221	INTERNET OF THINGS
CO 1	Explain the core concepts, architecture, and applications of the Internet of
	Things.
<u> </u>	Select and interface appropriate sensors, actuators, and microcontrollers for
02	IoT projects.
CO 2	Develop and implement simple IoT applications using Arduino, NodeMCU, and
0.03	Raspberry Pi.

CO 4	Understand and apply IoT communication protocols and network concepts.
CO 5	Evaluate the security, ethical, and societal implications of IoT technologies.

Mapping of CO with PO

SECE3221	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2	1							2		3
CO 2	3	3	3	1	3					1		2
CO 3	3	1	3	2	3				3			3
CO 4	3			1	3							3
CO 5	1		1			3	3	3	1			3

Mapping of CO with PSO

SECE3221	PSO1	PSO2	PSO3
CO 1	2	1	1
CO 2	3	2	1
CO 3	3	3	2
CO 4	2	2	1
CO 5	1	3	3

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

Module	Content	RBT Level
No		
1.	Introduction to IoT	1,2,3
2.	Embedded IoT Devices	2,3,4
3.	Sensors and Actuators	2,3,4,6
4.	IoT Networking and Gateway Devices	2,3,4
5.	IoT Communication Protocols	2,3,4
6.	IoT Cloud and IoT Applications	2,3,4,5
7.	IoT Security	2,4,5,6

Department of Information Technology

Course Code: SEIT3211 Course Name: Design & Analysis of Algorithms Prerequisite Course(s): Data Structures (SECE2221)

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minatio	on Sche	me (Ma	rks)			
	Theory	Dreatical	Tutorial	Creadit	The	eory	Prac	ctical	Tut	orial	Tatal
	Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
	03	02	-	04	40	60	40	60	0	0	200

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.
- demonstrate and teach various methods for performance analysis of different types of algorithms.
- compare major algorithmic design techniques and demonstrate their application using suitable examples.

	Section I					
Modul e No.	Content	Hour s	Weightag e in %			
	Introduction to Algorithms Definition of the Algorithm, Characteristics of algorithms,					
1.	Types of algorithm designs technique, Recursive Algorithms,	02	02			
	Analysis of Algorithms					
2.	The efficient algorithm, Asymptotic Notations, Analyzing control statement and Loop invariant, Analysis of different algorithms for best, worst and average case: sequential search, bubble sort, insertion sort, selection sort, heap sort, Concept of Internal & External sorting.	04	13			
3.	Divide and Conquer Algorithmic Design Method Divide and conquer: basic algorithm and characteristics, Recurrence and different methods to solve recurrence, 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			
4.	Greedy Method The Greedy Method: basic algorithm and characteristics, Problem solving using Greedy technique- Fractional Knapsack Problem, Optimal merge patterns, Job sequencing with	06	10			

	deadlines, Huffman Coding, Minimum cost spanning trees: Prim's and Kruskal's Algorithm, Single source shortest path.		
5.	Dynamic Programming Method Dynamic Programming Method: basic algorithm and characteristics, Problem solving using Dynamic Programming technique- 0/1 Knapsack Problem, Making Change Problem, Multistage graphs, Optimal binary search trees, Travelling salesperson problem.	05	10
	Section II		
Modul e No.	Content	Hour s	Weightag e in %
6.	Backtracking and Branch and Bound technique Backtracking Method: basic algorithm and characteristics, Problem solving using Backtracking technique- N-Queens problem, Sum of subsets problem, Graph coloring, Hamiltonian cycle (TSP).	06	15
7.	Branch and Bound technique Branch and bound: basic algorithm and characteristics, FIFO Branch and Bound & Least Cost Branch & Bound, Problem solving using Brach and Bound technique- N-Queens using branch & bound, Least Cost Search, 15-puzzle, Solving Travelling salesperson problem.	08	15
8.	String Matching Introduction, The naive string-matching algorithm, The Rabin- Karp algorithm, String Matching with finite automata, The Knuth-Morris-Pratt algorithm.	04	12
9.	Introduction to NP-Completeness Definition of P and NP classes, Relation between complexity classes, Examples of problems in various classes.	04	08
	TOTAL	45	100

List of Practical:

Sr. No.	Sr. No. Name of Practical					
		S				
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 greedy algorithm.	04				
8.	Implementation of a dynamic programming.	04				
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				
	TOTAL	30				

Title	Author/s	Publication
Introduction to Algorithms	Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein	PHI Learning

Reference Book(s):

Title	Author(s)	Publication
Fundamentals of Computer	Ellis Horowitz, Sarataj Sahni,	Universities Press
Algorithms	S.Rajasekaran	
Algorithm Design	Michael Goodrich, Roberto	Wiley Student Edition
	Tamassia.	

Web Material Link(s):

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

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 the course, the students will be able to

SEIT3211 DESIGN & ANALYSIS OF ALGORITHMS

CO 1	Illustrate various concept of algorithms.
CO 2	Analyze and design algorithms to appreciate the impact of algorithm design in
02	practice.
CO 2	Compute how asymptotic notation is used to provide a rough classification of
0.03	algorithms.
CO 4	Design time and space efficient algorithms using different techniques.

Mapping of CO with PO

SEIT3211	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2	1								1	
CO 2	3	3	2	1	2						1	2
CO 3	2	3	2	1	1							2
CO 4	3	3	3	2	2						2	3

Mapping of CO with PSO

SEIT3211	PSO1	PSO2	PSO3
CO 1	3	2	
CO 2	3	3	
CO 3	3	2	
CO 4	3	3	

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

Module	Content	RBT Level
No		
1.	Introduction to Algorithms	1, 2, 3
2.	Analysis of Algorithms	1, 2, 4
3.	Divide and Conquer Algorithmic Design Method	2, 3, 4, 5, 6
4.	Greedy Method	2, 3, 4, 5, 6
5.	Dynamic Programming Method	2, 3, 4, 5, 6
6.	Backtracking Method	2, 3, 4, 5, 6
7.	Branch and Bound technique	2, 3, 4, 5, 6
8.	String Matching	2, 3, 4
9.	Introduction to NP-Completeness	3, 4, 5

Department of Information Technology

Course Code: SEIT3221

Course Name: Advance Java Technology

Prerequisite Course: Object Oriented Programming with Java (SEIT2210)

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)					rks)		
Theory	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
03	02	-	04	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) 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, Enterprise java beans, etc.

	Section I					
Module	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.	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		1			
Module	Content	Hours	Weightage in %			
4.	JDBC 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.	09	15			
5.	Web Services Introduction, Web Service Technology, J2EE for web service, developing web services.	05	15			
6.	Hibernate	04	10			

	Introduction, Hibernate Architecture, component of Hibernate, hibernate query Language, Hibernate O/R mapping.		
7.	Java Web Frameworks: Spring MVC Overview of Spring, Spring Architecture, bean life cycle, XML Configuration on Spring, Aspect – oriented Spring, Managing Database, Managing Transaction	04	10
	TOTAL	45	100

List of Practical:

Sr. No	Name of Practical	Hours
1.	Introduction to client-server architecture	02
2.	Study and implementation of servlet programming	06
3.	Study and implementation of java server page	06
4.	Study and implementation of java database connectivity	06
5.	Study and implementation of web service	04
6.	Study and implementation of hibernate	04
7.	Study and implementation of Spring Framework	02
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Complete Reference J2EE	James Keogh	Mc Graw Hill

Reference Book(s):

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

Web Material Link(s):

- <u>https://www.javatpoint.com/servlet-tutorial/</u>
- <u>https://www.javatpoint.com/jsp-tutorial/</u>

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 students will be able to

SEIT3221	ADVANCE JAVA TECHNOLOGY							
CO 1	Implement Networking and Data base connectivity in Java for given							
	application.							
CO 2	Design and implement webpage with dynamic content and server-side web							
02	application using Servlet and JSP.							
CO 3	Apply the different web services on dynamic web-based applications.							
CO 4	Analyze and Implement database independent application using ORM (Object							
CU 4	Relation Mapping) Hibernate.							
COF	Use web application framework and apply Model-View-Controller architecture							
05	to build complex client-server applications.							

Mapping of CO with PO

SEIT322 1	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	2	2	3					2		3
CO 2	3	3	3	2	3					2		3
CO 3	3	3	3	3	3							3
CO 4	3	3	3	3	3							3
CO 5	3	3	3	2	3							3

Mapping of CO with PSO

SEIT3221	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	3	2	2
CO 3	3	2	2
CO 4	3	2	2
CO 5	3	2	2

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

Module No	Content	RBT Level			
1	Client Server Technology	1,2,4,6			
2	Servlet Programming	2,4,5,6			
3	Java Server Pages	2,4,5,6			
4	JDBC	1, 2, 3, 5, 6			
5	Web Service	2,4,5,6			
6	Hibernate	2,5,6			
7	Spring Framework	2,3,6			

Department of Information Technology

Course Code: SEIT3920 Course Name: Summer Training Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Examination Scheme (Marks)						
Theory	Dractical	Tutovial		The	eory	Prac	ctical	Tut	orial	Total	
Theory	Practical	Tutorial	Creat	Credit	CE	ESE	CE	ESE	CE	ESE	Total
_	04	-	04	-	_	100	-	_	_	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 Summer Training:

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 students will be able to

SEIT3920	Summer Training
CO 1	Study, analysis and describe about the surrounding industrial environment.
CO 2	Describe use of advanced tools and techniques industry.
<u> </u>	Interact with industrial personnel and follow engineering practices and
0.0 5	discipline prescribed in industry.
60.4	Develop awareness about general workplace behavior and build interpersonal
CO 4	and team skills.
CO 5	Prepare professional work reports and presentations.

Mapping of CO with PO

•														
	SEIT392	PO	P01	P01	P01									
	0	1	2	3	4	5	6	7	8	9	0	1	2	

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

Mapping of CO with PSO

SEIT3920	PSO1	PSO2	PSO3
CO 1		2	
CO 2	2	3	
CO 3		2	2
CO 4		1	2

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

Department of Computer Engineering

Course Code: SECE3231 Course Name: Cloud Computing & Applications Prerequisite Course(s): Computer Networks, and Operating System

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Exa	minati	on Sche	me (Ma	rks)					
The same Due sties l		Tutorial	Testavial Cashit				Tutorial Cradit		eory	Prac	ctical	Tut	orial	Total
I neory I	Practical	Tutorial	credit	CE	ESE	CE	ESE	CE	ESE	Total				
03	02	-	04	40	60	40	60	-	-	200				

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- understand the 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

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 Provisioning and Manageability Virtual Machine Migration Services, Virtual Machine Provisioning and Migration in Action, Provisioning in the Cloud Hypervisors	07	15				
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	06	15				

	Platform Deployment, Global Exchange of Cloud Resources. Administrating the Clouds, Cloud Management Products, Emerging Cloud Management Standards		
	Section II		
Module	Content	Hours	Weightage in %
5.	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
6.	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
7.	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
	TOTAL	45	100

Sr. No.	Name of Practical					
1	Cloud Concepts Overview	02				
2	Cloud Economics and Billing	02				
3	Cloud Global Infrastructure Overview	02				
4	Explore Cloud Security Fundamentals	04				
5	Networking and Content Delivery	04				
6	Explore Compute Services (IAAS)	04				
7	Explore Storage Services	04				
8	Explore Database Services	04				
9	Cloud Architecting	02				
10	Auto Scaling and Monitoring	02				
	TOTAL	30				

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):

- <u>http://www.cloudbus.org/</u>
- <u>https://aws.amazon.com/</u>
- <u>http://aws.amazon.com/documentation/</u>
- 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 students will be able to

SECE3231	CLOUD COMPUTING & APPLICATIONS
CO 1	Describe various cloud computing features, challenges through various models
01	and services.
CO 2	Apply different approaches of cloud computing system for efficient data storage
02	with minimal cost.
CO 3	Identify various management related services of aws.
CO 4	Distinguish various security and compliance related issues with aws.
	Deploy applications over commercial cloud computing infrastructures such as
0.5	amazon.

Mapping of CO with PO

mapping of co with 1 o												
SECE323	P01	PO2	P03	P04	PO5	P06	P07	P08	P09	P010	P011	P012

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

Mapping of CO with PSO

SECE3231	PSO1	PSO2	PSO3
CO 1	3		2
CO 2	1	3	
CO 3	2		3
CO 4		2	3

Level of Revised Bloom's Taxonomy in Assessment:

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

Module No	Content	RBT Level
1	Introduction to Cloud Computing	1, 2
2	Cloud Architecture, Services and Applications	1, 2
3	Virtualization, Abstraction and Cloud Platform	1, 2, 3
4	Cloud Infrastructure and Cloud Resource Management	1, 2, 3
5	Cloud Security	1, 2, 3
6	AWS Programming, Management Console and Storage	1, 2, 3, 4
7	AWS Technology, Billing and Pricing	3, 4, 5, 6

Department of Information Technology

Course Code: SEIT3230 Course Name: Information Security Prerequisite Course(s): Differential Equations & Statistics (SESH2140) and Computer Networks (SECE2240)

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)						Exa	minati	on Sche	ieme (Marks)				
	Theory	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total		
	Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total		
	03	02		04	40	60	40	60			200		

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- understand cryptography theories, algorithms and systems.
- understand the various key distribution and management schemes.
- understand how to deploy hashing techniques to secure data in transits across different networks.

Section – I								
Modul e No.	Content	Hour s	Weightag e in %					
1.	Introduction Symmetric Cipher Model, Confidentiality, Integrity, and Availability, Cryptography and Cryptanalysis, Types of Security, Security Services, Security Attacks and Security Mechanisms	04	10					
2.	Crypto Basics Introduction, Substitution and Transposition techniques, Cryptanalysis of a Simple Substitution, Definition of Secure, Double Transposition Cipher	06	15					
3.	Symmetric Key Crypto Block Cipher structure, Data Encryption standard (DES) with example, strength of DES, Triple DES, Design principles of block cipher, AES with Structure, its Transformation Functions, Key Expansion, Example and Implementation, Block Cipher Modes	08	15					
4.	Public Key Crypto Introduction, RSA algorithm with example, Diffie-Hellman algorithm, Man-in-Middle attack, Uses for Public Key Crypto, Public Key Infrastructure	05	10					

Section – II							
Modul	Content	Hour	Weightag				
е		S	е				
No.			In %				
5.	Hash Functions Introduction, Cryptographic Hash Function, The Birthday Problem, A Birthday Attack, Non-Cryptographic Hashes, Uses for Hash Functions	03	10				
6.	Message Authentication Codes Requirements of MAC and security, MACs based on Hash Functions, Macs based on Block Ciphers	05	12				
7.	Simple Authentication Protocols Introduction, Authentication Using Symmetric Keys, Authentication Using Public Keys, Session Keys, Perfect Forward Secrecy, Mutual Authentication	07	14				
8.	Real-World Security Protocols Introduction, SSH, SSL and the Man-in-the-Middle, SSL Connections, Digital Signature, Symmetric Key, Public Key Encryption	04	08				
9.	Advanced Topics – Intruders, Virus, Trojans, Malware, Ransomware, Requirements of Security in Various area of Computer Science	03	06				
	TOTAL	45	100				

Sr. No	Name of Practical	Hours
1.	Implement the Caesar Cipher technique.	2
2.	Implement Monoalphabetic Cipher techniques.	2
3.	Implement Rail Fence techniques.	2
4.	Implement Columnar Transposition techniques.	2
5.	Perform frequency analysis to break a Simple Substitution Cipher.	2
6.	Simulate the Diffie-Hellman Key Exchange process.	4
7.	Write a program to implement DES Cipher	4
8.	Write a program to implement AES Cipher	4
9.	Write a program to implement RSA Cryptosystem	4
10.	Demonstration of Wireshark for Packet Capturing	4
	TOTAL	30

Text Book(s):

Title				Author/s	Publication
Information	Security	Principles	and	Mark Stamp	Willy India
Practice					

Reference Book(s):

Title	Author/s	Publication
Cryptography and Network Security	Behrouz A. Forouzan	McGraw-Hill
NetworkSecurity:PrivateCommunications in a Public World, secondedition_	Kaufman, Perlman and Speciner	Prentice Hall

Cryptography and Network Security:	William Stallings	Prentice Hall
Principles and Practice, 5/e		
Handbook of Applied Cryptography	Menezes, van Oorschot and Vanstone	CRC Press
Computer Security, 3/e	Gollmann	Wiley

Web Material Link(s):

- <u>https://nptel.ac.in/courses/106/106/106106129/</u>
- <u>http://www.omnisecu.com/security/index.php</u>

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 students will be able to

SEIT3230	INFORMATION SECURITY
CO 1	Identify information security goals, classical encryption techniques and
	acquire fundamental knowledge on the concepts of symmetric cipher models.
CO 2	Understand, compare and apply different encryption and decryption
	techniques to solve problems related to confidentiality and authentication.
CO 3	Apply the knowledge of cryptographic techniques and different digital
	signature algorithms to achieve authentication and create secure applications.
CO 4	Apply the knowledge of cryptographic utilities and authentication
	mechanisms to design secure applications.

Mapping of CO with PO-PSO

SEIT3230	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3			2							2
CO 2	2	3			3				1			3
CO 3			3		3				2	2		3
CO 4			3		3				3			3

Mapping of CO with PSO:

SEIT3230	PSO1	PSO2	PSO3
CO 1	3		2
CO 2		3	2
CO 3	2	3	
CO 4	3	2	3

Level of Revised Bloom's Taxonomy in Assessment:

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

Module No	Content	RBT Level
1	Introduction	1, 2
2	Crypto Basics	1, 4, 6
3	Symmetric Key Crypto	1, 3, 5
4	Public Key Crypto	1, 3, 4
5	Hash Functions	1, 4
6	Authentication	1, 3, 4, 5
7	Simple Authentication Protocols	1, 3
8	Real-World Security Protocols	1, 4
9	Advanced Topics	2, 3, 4

Department of Information Technology

Course Code: SEIT3241 Course Name: Full Stack Development Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minati	on Sche	me (Ma	rks)		
Theorem	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
3	2	0	4	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Develop Interactive web applications with both front-end and back-end technologies.
- Understanding of various aspects of web technologies with various data operation with MongoDB.

Section I					
Modul	Contont	Hour	Weightag		
e No.	Content	S	e in %		
	Introduction and Web Design				
1.	Introduction to Internet, WWW and Web 2.0, Web protocols and	04	10		
	Web servers, Web Design Principles and Web site structure				
2.	HTML5 Introduction to HTML, Browsers and HTML, Editor's Offline and Online, Tags, Attribute and Elements Doctype Element.	05	15		
	Comments, Headings, Paragraphs and Formatting Text, Lists and Links, Images and Tables.				
3.	CSS3 Introduction CSS, Applying CSS to HTML, Selectors, Properties and Values, CSS Colors and Backgrounds, CSS Box Model, CSS Margins, Padding, and Borders, CSS Text and Font Properties, CSS General Topics	06	10		
4.	JavaScript and jquery Introduction to JavaScript, Applying JavaScript (internal and external), Understanding JS Syntax, Introduction to Document and Window Object, Variables and Operators, Data Types and Num Type Conversion, Math and String Manipulation, Objects and Arrays, Date and Time, Conditional Statements, Switch Case, Looping in JS, Functions, JavaScript Objects, JavaScript Forms, JavaScript HTML DOM, JavaScript BOM, JavaScript Type Conversion, JavaScript RegExp, JavaScript Errors, JavaScript Debugging, JavaScript Hoisting, JavaScript Strict Mod, Basics of jQuery, jQuery syntaxes, jQuery selectors, events, effects, Access/Manipulate web browser elements using jQuery, jQuery HTML, jQuery Traversing, jQuery AJAX & Misc.	08	15		

	Section II		
Module	Contont		Weightag
No.	Content	S	e in %
	Bootstrap		
5.	Introduction to Bootstrap, Bootstrap Basics, Bootstrap Grids,	04	05
	Bootstrap Themes, Bootstrap CSS, Bootstrap JS		
	Frontend with ReactJS		
	Introduction, Templating using JSX, Components, State and		
6.	Props, Lifecycle of Components, Rendering List and Portals,		20
	Error Handling, Routers, Redux and Redux Saga, Immutable.js,		
	Service Side Rendering, Unit Testing, Webpack		
	Backend with NodeJS		
7	Introduction to Node.js, Node Package Manager, REPL	06	15
/.	Terminal, Node.js Webserver – Server and Clients, Creating a	00	15
	simple server, Rendering HTML, Rendering JSON Data, Routing		
	MongoDB		
Q	SQL and NoSql Concepts, Create and Manage MongoDB,	05	10
0.	Migration of Data into MongoDB, MongoDB with PHP,	05	10
	MongoDB with NodeJS, Services Offered by MongoDB		
	TOTAL	45	100

Sr No	Name of Practical			
51. NO.				
1.	Design Wireframes for your project based on Web Design Principles.	02		
2.	Formatting web pages with CSS (Inline CSS, Document level CSS and External CSS.	04		
3.	Browser interaction and form validations (Web browser environments, forms and validations, image sliders) [Image slider plugins of jQuery, Client-side validation of Registration & Login	04		
4.	Design web application using Bootstrap principles.	04		
5.	Make interactive web pages with reactJS concepts.	04		
6.	Design web application with back end of NodeJS.	04		
7.	Implement basic data operations in web application with MongoDB.	04		
8.	Develop Complete Web application as a mini project.	04		
	TOTAL	30		

Text Book(s):

Title	Author/s	Publication
Black Book, Web Technologies,	Kogent Learning Solutions Inc	Dreamtech Press
Full Stack Web Development For	Riaz Ahmed	Atlantic publisher
Beginners		

Reference Book(s):

Title	Author(s)	Publication
Title	Author/s	Publication
Black Book, HTML 5	DT Editorial Services	Dreamtech Press
Developing Web Applications	Ralph Moseley and M. T. Savaliya	Wiley-India
jQuery Cookbook	Cody Lindley	O'Reilly Media

Web Material Link(s):

- https://www.w3schools.com/whatis/whatis_fullstack.asp
- <u>https://www.youtube.com/watch?v=nu_pCVPKzTk (Free</u> code camp)
- <u>https://www.javatpoint.com/how-to-be-a-full-stack-developer</u>
- <u>https://www.tutorialspoint.com/the-full-stack-web-development/index.asp</u>

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.
- Mini Project Contains 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

SEIT3241	FULL STACK DEVELOPMENT
C01	Understand and compare the fundamentals of Web hosting and domain name
001	services.
CO2	Understand various non-browser specific web design principles.
CO2	Understand the need and be able to develop HTML/XHTML and CSS pages with
005	valid structure as well as content.
CO4	Understand and be able to develop JavaScript/jQuery code to access the DOM
604	structure of web document and object properties.
COF	Develop dynamic web pages with usage of server-side scripting NodeJS and
005	MongoDB.

Mapping of CO with PO

SEIT3241	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	2	2	2	3	2	2				1	1
CO 2	1	2	2	2	2	2	1				1	1
CO 3	1	2	2	2	1	2	2					2
CO 4	2	2	2	1	2	2	1				1	1
CO 5	1	1	2	2	2	2	2				1	1

Mapping of CO with PSO

SEIT3241	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	2		
CO 3	1	2	2

CO 4	2	2	1
CO 5	2	1	1

Level of Revised Bloom's Taxonomy in Assessment

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

Module	Content	RBT Level
No		
1.	Introduction to Web Designing	2,4
2.	HTML5	2,3,6
3.	CSS3	2,3,6
4.	JavaScript and jQuery	1,3,6
5.	Bootstrap	1,4,6
6.	ReactJS	1,3,6
7.	NodeJS	1,2,3,5
8.	Database Connectivity with MongoDB	2,4,5

Department of Information Technology

Course Code: SEIT3560 Course Name: Project-I Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)									
Theory Dreatical Type		Tutorial					eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	Total		
0	3	-	3	-	-	100	-	-	-	100		

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners 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 Project-I

S. No.	Task	Weightage in %
1.	Group Formation	-
2.	Title Approval and Mentor Allocation	-
3.	First Progress Report	5
4.	First Review	10
5.	Second Progress Report	5
6.	Third Progress Report	5
7.	Second Review	10
8.	Fourth Progress Report	5
9.	Fifth Progress report	10
10.	Final Report Evaluation	25
11.	Final Presentation	25
	TOTAL	100

Detailed Guideline(s):

Sr. No.	Content	Weightag e in %
1.	Group Formation : Group formation requires a minimum of one member and allows for a maximum of three members per group.	-
2.	Title Approval and Mentor Allocation: In the initial week of the semester, students are tasked with submitting a preliminary review of their project with a suitable title. This submission includes a comprehensive synopsis and outline, accompanied by a discussion on the anticipated project outcomes. This early review acts as the foundation for the project, laying the groundwork and establishing the direction for subsequent work.	-

	Additionally, during this stage, mentors are allocated to provide			
	guidance and support throughout the project development process.			
	First Progress Report: Within the initial weeks of commencing the project students are			
3.	required to submit a detailed report outlining their progress.	5		
	achievements, and any challenges encountered.			
	First Review:			
	This report serves as an early checkpoint, allowing for an assessment			
4.	of whether the project is on track with the proposed timeline and	10		
	objectives. Students should highlight key accomplishments, provide	10		
	insights into the methodologies employed, and address any deviations			
	Second Progress Penort:			
	This report explores into the details of the progress made since the			
	First Progress Report and First Review, offering a comprehensive			
5.	overview of achievements, setbacks, and adaptations to the project	5		
	plan. Students should reflect on the effectiveness of their			
	methodologies, address any unforeseen obstacles, and demonstrate a			
	proactive approach to overcoming challenges.			
	Third Progress Report:			
6.	At this stage, students provide a comprehensive update on the			
	and adaptability required for successful project development. In the	5		
	Third Progress Report, students delve into the nuances of their	5		
	progress since the Second Progress Report, showcasing not only			
	achievements but also a reflective analysis of the journey thus far.			
	Second Review:			
	During this stage, internal evaluators and expert panels engage in a			
7.	comprehensive assessment of the project's overall development and	10		
	achievements. The second Review provides students with an			
	a panel of experts.			
	Fourth Progress Report:			
	In this report, students provide an updated justification of their			
	progress, building on the insights gained from the Second Review. The			
8.	Fourth Progress Report encapsulates the continuous refinement and	5		
	optimization of project strategies. Students delve into the			
	recommendations made by external evaluators			
	Fifth Progress report:			
9.	At this stage, students present a comprehensive overview of the			
	project's evolution, encapsulating the lessons learned, achievements			
	attained, and challenges overcome. The Fifth Progress Report serves as	10		
	a reflection on the entire project lifecycle, providing insights into the	10		
	iterative process of development. The students should submit the			
	avaluation			
	Final Report Evaluation & Final Presentation:			
	During this phase, students present their comprehensive Final Report.	-		
10.	encapsulating the entire project lifecycle, methodologies employed,	50		
	outcomes achieved, and lessons learned.			

Final Report Evaluation: The Final Report undergoes a thorough evaluation by faculty members and external experts. This evaluation scrutinizes the depth of content, adherence to project objectives, and the overall quality of documentation.Final Presentation: Students present their projects to a panel of faculty members, peers, and potentially external stakeholders. This presentation offers an opportunity to showcase the project's significance, innovation, and impact.	
TOTAL	100

Course Evaluation:

S. No.	Evaluation criteria	Marks
1.	First Progress Report	50
2.	First Review	100
3.	Second Progress Report	50
4.	Third Progress Report	50
5.	Second Review	100
6.	Fourth Progress Report	50
7.	Fifth Progress report	100
8.	Final Report Evaluation	250
9.	Final Presentation	250
	TOTAL	1000

The entire evaluation will be converted equivalent to 100 Marks.

Course Outcome(s):

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

SEIT3560	PROJECT-I
CO 1	Analyze user requirements and implement innovative ideas for social and
01	environmental benefits.
<u> </u>	Apply new technologies and design techniques concerned for devising a
CU 2	solution for a problem statement.
<u> </u>	Apply project management skills like task scheduling, teamwork, working in
0.05	confine deadlines etc., for successfully development of the project.
CO 4	Prepare reports and presentations to communicate technical information.

Mapping of CO with PO

SEIT3560	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	3	3	3	1	3	2	3			2	2
CO 2	3	1	1	2	3		2	3		1	2	3
CO 3			1					1	3	1	1	1
CO 4			1	1		2	1	1	1	3		3

Mapping of CO with PSO

SEIT3560	PSO1	PSO2	PSO3
CO 1	2	3	2
CO 2	3	2	3
CO 3			1

CO 4 1			
	CO 4		1

Department of Computer Engineering

Course Code: SECE3610 Course Name: Programming with .NET Prerequisite Course(s): --

Teaching & Examination Scheme:

Total
Total
200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Understanding .NET Framework and Programming Concepts
- Develop Object-Oriented and Event-Driven Applications
- Implement Database Connectivity and State Management

Section I						
Modul	Contant	Hour	Weightag			
e No.	Content	S	e in %			
1.	Introduction To .Net Technology: Introduction to .NET Framework Architecture, Program Execution in .NET, CLR structure, CTS, CLS, CLR, Cross language Integration, Garbage Collection, DLL Hell, Assemblies, Name spaces, Versioning and deployment, Side by Side Execution, Debugging	05	20			
2.	Basics of C# language using Console Application: Namespace, Variables, Data Types, Operators, Type Conversion, Decision making statements, Conditional Loops, Arrays, String Builder	03	08			
3.	Object Oriented Programming in C#.NET: Language Features and Creating .NET Projects, Creating Class,declaring variables and methods, Access Modifiers,Constructors, Access Modifier, Inheritance, Interface, methodoverloading, method overriding, Anonymous method,Debugging and Error Handling, Exception Handling	07	22			
	Section II					
Modul	Content	Hour	Weightag			
e No.	Content	S	e in %			
4.	Windows Forms and Controls: Basics of Windows Forms, Properties and Events of Windows Forms, Properties and Events of Controls, Button, Label, TextBox, NumericUpDown, Checkbox, Radio Button, DateTimePicker, Group Box, ListBox, ListView, ComboBox, TabControl, PictureBox, ProgressBar, ToolTips, RichTextbox,	06	22			

	Timer, DatagridView, etc., Execution flow, Event Driven programming					
5.	 5. Web Application using ASP .NET & ADO.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, Overview of ADO.Net framework, working with SQL server database, Managed Provider, Dataset, working with data source, Connected and disconnected architecture, Binding data with DataGrid 					
6.	Routing & State Management: 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.	03	08			
	TOTAL	30	100			

Sr No	Name of Practical	Hour				
51. NU.	Name of Fractical	S				
1.	Create a console application to demonstrate the use of CLR and CTS.	02				
2.	Write a console application to demonstrate data types, variables, and operators.	02				
3.	Create a program to sort an array of integers and find the largest/smallest element.	02				
4.	Demonstrate inheritance, interface implementation, and method overloading/overriding using C#.	02				
5.	Create a C# program that implements try-catch-finally blocks for exception handling.	02				
6.	Create a Windows Forms application with controls like TextBox, Button, and Label.					
7.	Build a form with controls like ListBox, ComboBox, and DateTimePicker.					
8.	Create a form to display data using a DataGridView control.	04				
9.	Design a web page with HTML and ASP.NET server controls with validation.	04				
10. Create a database in SQL Server and perform CRUD operations using ADO.NET.						
11.	Bind data to a DataGrid in an ASP.NET application.	02				
12.	Configure session state using SQL Server and demonstrate its usage in an ASP.NET application.	02				
	TOTAL	30				

Text Book(s):

Title	Author/s	Publication
Programming in C# and .NET	Andrew Troelsen	Apress
Platform		
C# 10 and .NET 6 – Modern	Mark J. Price	Packt Publishing
Cross-Platform Development		

Reference Book(s):

Title	Author(s)	Publication

C# in Depth	Jon Skeet	Manning Publications
ASP.NET Core in Action	Andrew Lock	Manning Publications
Professional ASP.NET MVC and	Jon Galloway, Brad Wilson,	Wrox
Core	K. Scott Allen, and David	
	Matson	

Web Material Link(s):

- <u>https://www.udemy.com/course/masteraspdotnetbasics/?couponCode=NEWYEARCAREE</u>
 <u>R</u>
- <u>https://www.youtube.com/watch?v=hE05SqxPs9E</u>
- <u>http://www.tutorialspoint.com/vb.net/vb.net_basic_controls.htm</u>
- <u>http://www.freelearn110.com/visualbasic/level1/tutorials.html</u>
- <u>https://teamtreehouse.com/tracks/beginning-aspnet</u>

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

SECE3610	Programming with .NET							
CO 1	Understand the .NET Framework Architecture and Key Components							
CO 2	Develop Console Applications Using C# Programming Language							
CO 3	Apply Object-Oriented Programming Concepts in C# to Build Robust Applications							
CO 4	Design and Develop Windows and Web Applications Using .NET Technologies							

Mapping of CO with PO

SECE3610	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	2		3						1	2
CO 2	2	3	3	1	3							2
CO 3	3	3	3	2	3				1			3
CO 4	2	3	2	2	3				1		2	3

Mapping of CO with PSO

SECE3610	PSO1	PSO2	PSO3
CO 1	3	2	2

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

Level of Revised Bloom's Taxonomy in Assessment

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

Module	Content	RBT Level
NO		
1.	Introduction To .Net Technology	1,2
2.	Basics of C# language using Console	1,2,4
	Application	
3.	Object Oriented Programming in C#.NET	1,2,6
4.	Windows Forms and Controls	3,4,6
5.	Web Application using ASP .NET & ADO.NET	1,2,6
6.	Routing & State Management	2,5,6

Department of Information Technology

Course Code: SEIT3610 Course Name: System Analysis and Design Prerequisite Course(s): --

Teaching & Examination Scheme:

irks)	Examination Scheme (Marks)			/eek)	Teaching Scheme (Hours/W					
orial _T	lutori	Г	ctical	Prac	Theory		Cradit	Tutorial	Dractical	Theory
ESE	E I	CE	ESE	CE	ESE	CE	credit	Tutorial	Practical	Theory
00)	00	60	40	60	40	3	0	2	2
	Fut E	1 7 CF 00	ctical ESE 60	Prac CE 40	eory ESE 60	The CE 40	Credit 3	Tutorial	Practical	Theory 2

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- familiarize with the stages of the SDLC and its importance in system development.
- develop analytical thinking for identifying system requirements and proposing effective solutions.
- provide the ability to design logical and physical systems, focusing on usability, efficiency, and scalability.
- improve interpersonal and communication skills required for effective collaboration with stakeholders.

Section I							
Modul	Contont	Hour	Weightag				
e No.	Content	S	e in %				
1.	Introduction to Information System: What is System? Types of System, Types of information – operational, tactical, strategic, and statutory; why do we need information systems? System that solves business problems, Management structure; Requirements of information at different levels of management.	05	16				
2.	System Analyst & SDLC: Activities of Each SDLC Phase, system evaluation, system modification. Define System Analyst, Role of systems analyst, attributes of a systems analyst, tools used in system analysis.	05	16				
3.	Investigating System Requirements: Strategies, methods, case study, documenting study, system requirements specification – from narratives of requirements to classification of requirements as strategic, tactical, operational, and statutory, Requirements Elicitation Techniques, Validating the requirements.	05	18				
	Section II						
Module No.	Content	Hour s	Weightag e in %				
4.	Feasibility Analysis: Deciding project goals, examining alternative solutions, cost-benefit analysis, quantification of costs and benefits, payback period, system proposal	04	14				

	preparation for managements, parts and documentation of a proposal, tools for prototype creation.		
5.	Processes with Use Case & Process Models: What is Use Case? Use case Elements, Creating Use Cases, Data flow diagrams, Elements of DFD, case study for use of DFD, good conventions, leveling of DFDs, leveling rules, logical and physical DFDs.	04	12
6.	Data-Oriented Systems Design: Entity relationship model, E-R diagrams, relationships, cardinality and participation, normalizing relations, various normal forms and their need, examples of relational database design.	04	14
7.	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, Transition to the new system.	03	10
	TOTAL	30	100

Sr. No.	Name of Practical	Hour
1.	To conduct interviews, surveys with stakeholders (such as doctors, nurses, hospital administrators, and patients) to gather system requirements for a Hospital Management System (HMS), ensuring the identification of key user needs and functional specifications. [Comparative Study can also be accomplished]	03
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 for Library Management System showing the relationshipsone-to-one,one-to-manyand many-to-many listing assumptions to justify your answer.	03
4.	To design and develop a Restaurant Management System (RMS) by utilizing UML (Unified Modeling Language) diagrams to represent the various components and their interactions within the system.	06
5.	Prepare a questionnaire of your own choice i.e. open, closed, bipolar, etc. to gather feedback from customers. [Real-Time Order Tracking Feature, Real- Time Fitness Tracking App, Real-Time Inventory Management System for Retail Stores, Real-Time Public Transportation Tracking System etc]	03
6.	Create a Decision Table for a Restaurant Management System that handles order approval based on certain conditions like payment status, availability of items, and customer membership status.	03
7.	Case Study on feasibility analysis.	06
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Systems Analysis and Design	Alan Dennis, Barbara Wixom,	John Wiley & Sons
	Roberta M. Roth	Inc
Modern System Analysis and	Jeffery A. Hoffer, Joey F. George,	Pearson
Design	Joseph H. Valacich, Prabin K.	
	Panigrahi	

Analysis and Design of	V. Rajaraman	PHI publication
Information systems		

Reference Book(s):

Title	Author(s)	Publication
Object-Oriented Systems	Simon Bennett, Steve	McGraw Hill Education
Analysis and Design Using UML	McRobb, and Ray Farmer	
Systems Analysis and Design in	John W. Satzinger, Robert B.	Course Technology Inc;
a Changing World	Jackson, and Stephen D. Burd	7th edition
Essentials of Systems Analysis	Joseph S. Valacich, Joey F.	Prentice Hall India
and Design	George, and Jeffrey A. Hoffer	Learning Private Limited

Web Material Link(s):

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

Course Evaluation:

Theory:

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

Practical:

- Continuous Evaluation consists of practical performance which should be evaluated out of 10 for each practical and average of the same will be converted to 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 students will be able to

SEIT3610	System Analysis and Design
CO 1	Understand the different types of information at various levels of Organization.
CO 2	Understand the role of a systems analyst, and apply the SDLC to develop an
02	efficient and effective system.
CO 2	Apply modern tools and methodologies such as UML to create dynamic and
0.5	scalable system solutions.
CO 4	Utilize appropriate methodologies & tools to implement, and modify systems
CU 4	effectively.

Mapping of CO with PO

SEIT3610	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	1	2	1	1	1	1	1	1	1	1
CO 2	3	3	3	3	3	1	1	2	2	3	3	3
CO 3	1	2	3	1	3	3	2	1	2	3	1	1
CO 4	1	2	3	3	2	1	3	3	3	2	2	3

Mapping of CO with PSO

SEIT3610	PSO1	PSO2	PSO3
CO 1	3	2	1
CO 2	3	3	3
CO 3	2	3	3
CO 4	3	2	3

Level of Revised Bloom's Taxonomy in Assessment

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

Module	Content	RBT Level
No		
1.	Introduction to Information System	1,2
2.	System Analyst & SDLC	2,3,4
3.	Investigating System Requirements	3
4.	Feasibility Analysis	4,5
5.	Processes with Use Case & Process Models	2,6
6.	Data-Oriented Systems Design	3,4,6
7.	Structured Systems Analysis and Design	3,4,5

Department of Information Technology

Course Code: SEIT3620 Course Name: Data Visualization Prerequisite Course(s): -

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minatio	on Schei	me (Ma	rks)		
Theory Practical Tutor	Testavial Cardi	tical Tutorial Credit	Cradit	The	eory	Prac	ctical	Tut	orial	Total
	Practical		Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE
02	00	03	40	60	40	60	00	00	200	
	g Scheme ractical 02	g Scheme (Hours/W ractical Tutorial 02 00	g Scheme (Hours/Week)racticalTutorialCredit020003	g Scheme (Hours/Week)racticalTutorialCreditThe CE02000340	g Scheme (Hours/Week)ExaracticalTutorialCreditTheory0200034060	g Scheme (Hours/Week)ExaminationracticalTutorialCreditTheoryPrace020003406040	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Understand Core Concepts Learn the fundamentals of data visualization and its importance in data analysis and decision-making.
- Develop Technical Skills Gain hands-on experience with tools and libraries for creating effective visualizations.
- Prepare and Transform Data Learn techniques for cleaning, processing, and integrating data for visualization purposes.
- Explore Advanced Visualization Techniques Create interactive, geospatial, and highdimensional visualizations
- Enhance Storytelling and Presentation Build data-driven narratives and dashboards to communicate insights effectively.

	Section I						
Modul	Contont	Hour	Weightag				
e No.	Content	S	e in %				
1.	Introduction to Data Visualization Overview of Data Visualization: Importance and role in data analysis Types of data: Quantitative, Qualitative Introduction to visual perception and human cognition in data representation Tools & Technologies Introduction to visualization tools (Tableau, Power BI, D3.js, etc.) Basic charts: Bar charts, Line graphs, Pie charts	07	25%				
2.	Advanced Data Visualization Techniques Interactive Visualizations: Creating interactive dashboards and visual reports Introduction to libraries like Plotly, Bokeh, and Shiny Data Storytelling Visualizing complex datasets with a narrative approach. Effective use of annotations and interactive elements to enhance storytelling Geospatial Data Visualization Introduction to mapping and geospatial visualizations. Tools for visualizing geographical data (Leaflet, GeoPandas)	08	25%				
	Section II						
Modul	Content	Hour	Weightag				
e No.	Content		e in %				

	Data Preparation for Visualization		
	Data Cleaning & Transformation: Handling missing data,		
3.	outliers, and noise, Data wrangling techniques for visualization		
	(using Python or R)	07	250%
	Data Integration and Aggregation: Combining data from	07	2370
	different sources, Grouping, filtering, and summarizing data for		
	visualization Data Types and Formats: Handling different types		
	of data (numeric, categorical, temporal) for visualization.		
	Advanced Visualizations & Machine Learning Integration		
	Multivariate and High-Dimensional Visualizations: Heatmaps,		
	scatter plots, and pair plots for multivariate analysis		
	Visualizing high-dimensional data using PCA and t-SNE, Time-		
4.	Series Data Visualization: Techniques for visualizing trends and	08	25%
	seasonality, handling temporal data using line charts, candlestick		
	charts, and more, Integrating Machine Learning Models with		
	Visualizations: Visualizing results from machine learning		
	algorithms (e.g., decision trees, clusters)		
	TOTAL	30	100%

Sr. No	Name of Practical	Hour
		S
1	Introduction to Python Libraries for Data Visualization (Matplotlib,	02
	Seaborn, Plotly).	
2	Create basic charts—Bar Chart, Line Graph, and Pie Chart using Matplotlib and Seaborn.	02
3	Design interactive dashboards using Tableau or Power BI.	04
4	Develop visualizations for categorical and numerical data using	02
	histograms and boxplots.	
5	Implement scatter plots and pair plots for multivariate data visualization.	02
6	Perform data cleaning and preprocessing for visualization using Pandas.	02
7	Build time-series visualizations to analyze trends using Matplotlib and	02
	Plotly.	
8	Create geospatial visualizations using GeoPandas and Folium.	02
9	Develop a data storytelling dashboard with annotations and tooltips in	04
	Tableau/Power BI.	
10	Visualize machine learning results—classification boundaries and	02
	clusters using Seaborn.	
11	Design a mini-project to analyze and visualize a real-world dataset (e.g.,	06
	sales data).	
	TOTAL	30

Text Book (s):

Title	Author/s	Publicatio	n
Data Visualization: A Practical Introduction	Kieran Healy	Princeton	University
		Press.	

Reference Book (s): Mention Any Numbers of Reference Books

Title	Author/s	6	Publication
Storytelling with Data: A Data Visualization	Cole	Nussbaumer	Wiley
Guide for Business Professionals	Knaflic		

Data Visualization: Principles and Practice	Kari L. Jordan and	CRC Press
	Alexandru C. Telea	
Core Python Programming	Wesley J. Chun	Pearson Education

Web Material Link(s):

- <u>https://public.tableau.com</u>
- <u>https://learn.microsoft.com/en-us/power-bi/</u>
- <u>https://www.datacamp.com</u>
- <u>https://plotly.com/python/</u>

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

SEIT3620	DATA VISUALIZATION
CO 1	Demonstrate an understanding of fundamental concepts, principles, and
	importance of data visualization in data analysis and decision-making.
CO 2	Develop proficiency in using modern visualization tools and programming
	libraries like Tableau, Power BI, Matplotlib, and Seaborn to create effective
	visualizations.
CO 3	Apply data preprocessing techniques, including cleaning, transformation, and
	handling different data formats, to prepare datasets for visualization.
CO 4	Design and implement advanced visualizations such as interactive dashboards,
	geospatial maps, and time-series analyses to gain insights from complex
	datasets.
CO 5	Create compelling data stories and dashboards to effectively communicate
	insights and support data-driven decision-making.

Mapping of CO with PO

SEIT362	P01	P02	P03	P04	P05	P06	P07	P08	P09	P01	P01	P01
0										0	1	2
CO 1	1	2	1	2					3		3	1
CO 2	1	3	3	3					3		3	3
CO 3	1	3	3	3	3				3		3	3
CO 4	1	3	3	3	3				3		3	3
CO 5	1	3	3	3					3		3	

Mapping of CO with PSO

SEIT3620	PSO1	PSO2	PSO3
CO 1	3	3	3
CO 2	3	3	1
CO 3	3	3	3
CO 4	3	3	3
CO 5	3	3	3

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

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

Module No	Content	RBT Level
1	Introduction to Data Visualization	1, 2, 3
2	Advanced Data Visualization Techniques	3, 4, 6
3	Data Preparation for Visualization	2, 3, 4, 5
4	Advanced Visualizations & Machine Learning	3, 4, 6
	Integration	

Department of Computer Engineering

Course Code: SEIT3630 Course Name: Image Processing Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)									
Theory	Drastical Tytorial C		oomu Droatiaal Tutorial Cradit		actical Typerial Cradit		eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total		
02	02	00	03	40	60	40	60	0	0	200		

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to,

- understand the fundamentals of image processing.
- Apply various processes on the image for image understanding.
- Design and implement algorithms that perform basic image processing

Section I					
Modul	Contont	Hour	Weightag		
e No.	Content	S	e in %		
1.	Introduction to Digital Image Fundamentals Fundamentals steps in digital Image Fundamentals, Human visual system, Image as a 2D data, Image representation – Grayscale and Color images, image sampling and quantization, Some basic relationships between pixels.	04	10		
2.	Image Enhancements In spatial domain: Basic gray level transformations, Histogram processing, Using arithmetic/Logic operations, smoothing spatial filters, Sharpening spatial filters. In Frequency domain: Introduction to the Fourier transform and frequency domain concepts, smoothing frequency-domain filters, Sharpening frequency domain filters.	07	15		
3.	Image Restoration and Reconstruction Image Degradation Models: Noise and Blur. Noise Removal Techniques: Mean, Median, and Adaptive Filters. Inverse Filtering and Wiener Filtering.	04	10		
	Section II				
Module	Content	Hour	Weightag		
No.		S	e in %		
4.	Color Image Processing Basics of color Models (RGB, CMY, HIS), Pseudocolor image processing.	02	12		
5.	Image CompressionIntroduction, coding Redundancy, Inter-pixel redundancy,image compression methods, Lossy and Lossless compression,	03	10		

	Huffman coding, Arithmetic coding, LZW coding, IPEG compression standard.		
6.	Image Segmentation point, line and edge detection, Thresholding, Regions Based segmentation, Edge linking and boundary detection, Hough transform.	03	10
7.	Morphological Image Processing Erosion, dilation, opening, closing, Basic Morphological Algorithms: hole filling, connected components, thinning, skeleton.	03	08
8.	Case Studies Object representation, description, and recognition, Application of Image processing in various field.	04	10
	TOTAL	30	100

Sr No	Name of Practical				
51.10.	Name of Fractical	S			
1.	Introduction to Image Processing Toolbox.	04			
2.	Read the image and perform	04			
	1. RGB to Gray image				
	2. RGB to Indexed image and				
	3. Gray to Indexed image				
3.	Read an 8bit image and then apply different image enhancement	04			
	techniques:				
	(a) Brightness improvement				
	(b) Brightness reduction				
	(c) Thresholding				
	(d) Negative of an image				
	(e) Log transformation				
-	(f) Power Law transformation.				
4.	Implement different interpolation techniques using MATLAB.				
5.	Read an image, plot its histogram then do histogram equalization and	04			
	comment about the result.				
6.	(a) Implement Gray level slicing (intensity level slicing) in to read	06			
	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."				
7.	Implement various Smoothing spatial filter	04			
8.	Read an image and apply (1) Gaussian 3x3 mask for burring (2) High pass	06			
	filter mask with different masks (3) Laplacian operator with center value				
	positive and negative (4) High boost filtering.				
9.	Write a program to implement various low and high pass filters in the	04			
	frequency domain.				
10.	Write a program for erosion and dilation, opening & closing using inbuilt				
	and without inbuilt functions.				
11.	Implement and study the effect of Different Mask (Sobel, Prewitt, and	04			
	Roberts)				
12.	Implement various noise models and their Histogram	04			

13.	Implement inverse filter and Wiener filter over image and comment on	04
	them	
14.	Implement Image compression using DCT Transform	04
	TOTAL	60

Text Book(s):

Title	Author/s	Publication						
Digital Image Processing	Rafael C. Gonzalez, Richard E.	Pearson Education						
	Woods							
Fundamentals Digital Image	ITL Education Solutions Limited	Prentice Hall India						
Processing		Learning						

Reference Book(s):

Title	Author(s)	Publication
Image Processing, Analysis and	Milan Sonka, Vaclav Hlavac,	CL Engineering
Machine Vision	Roger Boyle	
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 and average of the same will be converted to 30 marks.
- Faculty evaluation consists of 10 marks as per the guidelines provided by the Course Coordinator.
- End Semester Examination consists of 60 marks.

Practical:

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

Course Outcome(s):

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

SEIT3630	IMAGE PROCESSING		
CO 1	Immediate understanding of the concept of digital image.		
Understand the basic image enhancement techniques in spatial & fre			
02	domains		
CO 3	Apply image filtering to score image restoration, reconstruction, and		
05	compression.		
CO 4	Create image segmentation and devise object recognition with the help of		
CU 4	different case studies.		

Mapping of CO with PO

 11 0												
SEIT3630	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2	1		2							

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

Mapping of CO with PSO

SEIT3630	PSO1	PSO2	PSO3
CO 1		2	
CO 2		3	
CO 3		3	2
CO 4	3	3	3

Level of Revised Bloom's Taxonomy in Assessment

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

Module	Content	RBT Level
No		
1.	Introduction to Digital Image Fundamentals	1,2
2.	Image Enhancements	1,2,4
3.	Image Restoration and Reconstruction	2,3,5
4.	Color Image Processing	2,5
5.	Image Compression	2,5
6.	Image Segmentation	4,5
7.	Morphological Image Processing	2,4,5
8.	Case Studies	3,6

Department of Computer Engineering

Course Code: SECE3620 Course Name: Service Oriented Computing Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Exa	minati	on Sche	me (Ma	rks)	
al Tutorial	Credit	The	eory	Prac	ctical	Tut	orial	Total
	Credit	CE	ESE	CE	ESE	CE	ESE	Total
-	03	40	60	40	60	-	-	200
] i	neme (Hours/V ical Tutorial	neme (Hours/Week) ical Tutorial Credit - 03	neme (Hours/Week) ical Tutorial Credit The - 03 40	$\begin{array}{c c} \text{neme (Hours/Week)} & Exa \\ \hline \\ \text{ical Tutorial Credit} & \hline \\ \hline$	neme (Hours/Week)ExaminationicalTutorialCreditTheoryPrace-03406040	neme (Hours/Week)Examination ScherIcalTutorialCreditTheoryPractical $-$ 0340604060	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

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.

	Section I					
Module No.	Content	Hours	Weightage in %			
1.	Introduction Introduction to distributed Computing and Web services architectures and standards, Fundamental SOA, Key Principles of SOA. Monolithic vs SOA vs Microservices	04	15			
2.	Enterprise architectures Integration versus interoperation, J2EE, .NET, Model Driven Architecture, Concepts of Distributed Computing, XML.	04	15			
3.	Basic Concepts Web services framework, Services (Web services: Definition, Architecture, and standards), Service descriptions with WSDL, Messaging with SOAP, UDDI.	07	20			
	Section II					
Module No.	Content	Hours	Weightage in %			
4.	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 Exchange, WS-Security (including XML-Encryption, XML-Signature, and SAML).	07	20			
5.	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	08	30			

Selection, Service Con	position, Service	Execution, and		
Monitoring, Service Terr	nination.			
		TOTAL	30	100

Sr. No.	Name of Practical	Hours				
	Develop DTD and XSD for University Information System having Exam					
1.	Enrolment from the beginning of Semester, along with Exam Registration	02				
	and Marks submission by Teachers to University from Various Colleges	ges				
	and Results in Sheets Generation by University on Online Report.					
2	Develop Mark sheet XML Document and display Mark sheet based on CSS	04				
۷.	and XSL presentation Format.	04				
2	Develop Java Based Program using JAXP or XML API in reading XML file	02				
5.	for Students Information and Display HTML Table.					
	Develop Java Based Web Service using REST and SOAP-Based web					
4.	service in NetBeans for University Course List and Search Course based					
	Course Title and Course ID.					
F	Create DTD file for student information and create a valid well-formed	02				
5.	XML document to store student information against this DTD file.	02				
6	Create XMS schema file for student information and create a valid well-	04				
0.	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	02				
7.	consume this web service.	02				
8.	Develop same web service using JX-WS.	04				
0	Create web calculator service in .NET and Create java client to consume	02				
9.	web service developed using Apache AXIS.	02				
10	Using WS –GEN and WS-Import develop the java web service & call it by	04				
10.	Java Client.					
	TOTAL	30				

Text Book(s):

Title			Author/s		Publication
Service	Oriented	Architecture:	Thomas Er	ะไ	Pearson education
Concepts,	Technology,	and Design	THOMAS EI	11	

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):

• <u>https://www.service-architecture.com/articles/web-services/service-oriented</u> <u>architecture soa definition.html</u>

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 students will be able to

SECE3620	SERVICE ORIENTED COMPUTING
CO 1	Explain the difference between monolithic architecture versus service-
	oriented architecture (soa).
CO 2	Practice real life examples and identify the underlying principles of soa.
CO 2	Implement and integrate service-oriented architecture in the development
0.05	cycle of web service-based applications.
CO 4	Understand advanced concepts such as service composition, orchestration and
CU 4	choreography.

Mapping of CO with PO

SECE362 0	P01	PO2	P03	P04	PO5	P06	P07	P08	P09	P010	P011	P012
CO 1		1								1		
CO 2		2	1	1	1							
CO 3		1	2	3	2							2
CO 4		1			1							2

Mapping of CO with PSO

SECE3620	PSO1	PSO2	PSO3
CO 1		1	
CO 2	3	3	3
CO 3	2	1	1
CO 4	1	1	2

Level of Revised Bloom's Taxonomy in Assessment:

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

Module No	Content	RBT Level
1	Introduction	1,2
2	Enterprise architectures	1,2,3
3	Basic Concepts	1,2,3
4	Principles of Service-Oriented Architecture	1,2,4
5	Principles of Service-Oriented Computing	1,2,3,4
P P Savani University School of Engineering

Department of Computer Engineering

Course Code: SECE3630 Course Name: Wireless Network & Mobile Computing Prerequisite Course(s): Computer Networks

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minati	on Sche	me (Ma	rks)		
Theory	Drastical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
02	02	00	03	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Explain the terminology, principles, architectures, protocols, and methodologies used in Wireless Communication and Mobile Computing Networks.
- Understand the basics of wireless communication technologies, including 3G, 4G, 5G, IoT, and WiMAX.
- Build knowledge of Mobile Computing Algorithms, network layers, and transport protocols for wireless communication.
- Develop skills in designing and implementing wireless applications using modern tools, mobile OS, and Wireless Application Protocols.

Course Content:

Section I					
Modul	Content		Weightag		
e No.	Content	S	e in %		
1.	Mobile Computing Architecture Types of Networks, Architecture for Mobile Computing: 3-tier Architecture and Design Considerations, Applications. Wireless Transmission: Signals, Antennas, Signal propagation, Multiplexing, Modulation, Cellular Systems. Medium Access Control: Motivation for a specialized MAC, SDMA, FDMA, TDMA, CDMA.	04	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 Advanced Data Network Technologies GPRS: GPRS and Packet Data Network, GPRS Network Architecture, GPRS Network Operations, Data Services in GPRS, Applications for GPRS, Introduction to WiMAX.	04	15		
4.	Wireless Networks –3	04	15		

	3G,4G, and 5G Networks: Third Generation Networks, Fourth Generation Networks, Vision of 5G. 3G vs. 4G vs. 5G: Features and Challenges and Applications. Introduction to Emerging Wireless Technologies: Wi-Fi 6, Li-Fi, NB-IoT.		
	Section II		
Module No.	Content	Hour s	Weightag e in %
5.	Mobile network layer Mobile IP, Dynamic Host Configuration protocol, Mobile ad-hoc networks (MANETs). Mobile Transport layer: Traditional TCP, classical TCP improvements, TCP over 3G/4G wireless networks	04	10
6.	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: Android, iOS, Introduction to Wearable Device OS. Development Process: Key Considerations for Mobile Applications.	03	15
7.	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
8.	Emerging and Future Technologies : The architecture of future Networks, Wireless Sensor Network (WSN), IoT, Edge Computing, Fog Computing , and their role in mobile networks.	03	10
	TOTAL	30	100

List of Practical:

Sr No	Name of Practical	Hour
51.10.	Name of Fractical	S
1.	Setup & Configuration of Wireless Access Point (AP)	04
2.	Implementation of Wireless Network with a number of nodes and different	04
	parameters using Simulator.	04
3.	Study of WLAN: Ad Hoc & Infrastructure Mode	04
4.	GSM modem study and Modern Messaging Systems: Implement a basic	04
	client-server messaging application using MQTT or push notifications.	04
5.	Development of a Progressive Web App (PWA): Build a simple PWA to	04
	demonstrate mobile-friendly design and offline capabilities.	04
6.	Design and Program Income Tax and Loan EMI Calculator for Mobile Phones	04
7.	Implementation of Mobile Network using Network Simulator (NS3/GNS3)	06
	TOTAL	30

Text Book(s):

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

Reference Book(s):

Title	Author(s)	Publication
Principles of Mobile	UIWE Hansman, Other Merk, Martin-	Springer
Computing	S-Nickious, Thomas Stohe	international Edition
Mobile Computing	Ashok K. Teludkar	ТМН
Mobile AdHoc Networks	Chai K.Toh	Prentice Hall
Programming with C	Byron Gottfried	Tata McGraw Hill

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 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

SECE3630	WIRELESS NETWORK & MOBILE COMPUTING
	Understand and relate the fundamentals of wireless communication and mobile
CO 1	computing architectures to real-world applications, including cellular and IoT
	systems.
	Analyze the unique characteristics of wireless networks, including security,
CO 2	mobility, energy efficiency, and scalability, with practical insights into current
	technologies like 3G, 4G, and 5G.
CO 2	Design and evaluate wireless network protocols, including MAC, TCP/IP
CU 3	extensions, and mobile communication systems, using simulation tools
CO 4	Develop the knowledge of TCP/IP extensions for mobile and wireless
	networking.

Mapping of CO with PO

SECE363 0	P01	PO2	P03	PO4	P05	P06	P07	P08	P09	P010	P011	P012
C0 1	1	1	1	1								1
C0 2	1	2	1	1	1		1					1
C0 3	1	2	1	2	2		2				1	1
C0 4	1	2	1	2	1		2					1

Mapping of CO with PSO

SECE3630	PSO1	PSO2	PSO3
CO 1		3	3

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

Level of Revised Bloom's Taxonomy in Assessment:

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

Module No	Content	RBT Level
1	Mobile Computing Architecture	1,2
2	Wireless Networks – 1	1,2
3	Wireless Networks – 2	2,3,4
4	Wireless Networks –3	2,3,4
5	Mobile network layer, Mobile Transport layer	2,4
6	Mobile OS and Computing Environment	3,6
7	Building Mobile Internet Applications	3,6
0	The architecture of future Networks, Wireless Sensor	3, 5, 6
o	Network, IoT	

P P Savani University School of Engineering Department of Computer Engineering

Course Code: SECE3640 Course Name: Software Testing & Quality Assurance Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminat	ion Sch	eme (M	arks)		
Theor	Dractic	Tutori Cradi		Th	neory	Pra	actical	Tu	torial	Tot
y	al	al	t	CE	ESE	CE	ESE	CE	ESE	al
02	02	00	03	40	60	40	60	00	00	20
										0

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						
Moule 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, Elements of Software quality assurance.	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					
Modul e No.	Content	Hours	Weightage in %			
4.	Testing Tools Features of test tool, Guidelines for selecting a tool, Tools and skills of tester, Static testing tools, Dynamic testing tools.	4	15			
5.	Test Planning & DocumentationDevelopment plan and quality plan objectives, TestingStrategy:-type of project, type of software, Test Management, StrategicManagement, Operational Test Management, Managing theTest Team, Test Plans, Test Case, Test Data, Risk Analysis.	6	15			
6.	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			
	TOTAL	30	100			

List of Tutorial:

Sr. No	Name of Tutorial (Case Study)	Hours		
1.	Software Quality Attributes (Usability, Reliability, Maintainability, etc.)	2		
2.	Software Quality Models (ISO/IEC 25010, McCall's Quality Model, etc.)			
3.	Software Quality Management			
4.	Types of Testing (Unit Testing, Integration Testing, System Testing, Acceptance Testing)			
5.	Test Planning and Management	2		
6.	Test Case Design and Execution	2		
7.	Test Automation	2		
8.	Software Metrics (Product Metrics, Process Metrics, Project Metrics)	2		
9.	Software Process Improvement	2		
10.	Software Quality Tools	2		
11.	Software Quality Standards	2		
12.	Real-world Examples of Software Quality Management	2		
13.	Ethics and Professionalism in Software Quality	2		
14.	AI and Machine Learning in Quality Assurance	2		
15.	Continuous Testing and Continuous Quality Improvement	2		
	TOTAL	30		

Text Book(s):

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

Reference Book(s):

Title	Author/s	Publication

Rex Black,	Wrox Publications
Boris Bezier	Dreamtech
	Publications
William E. Perry	Wiley Publications
	Rex Black, Boris Bezier William E. Perry

Web Material Link(s):

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

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 students will be able to

SECE364 0	SOFTWARE TESTING & QUALITY ASSURANCE						
CO 1	Comprehend the Software Development Life Cycle (SDLC) and the						
	fundamental concepts of Software Quality Assurance (SQA).						
CO 2	Identify and apply various software testing techniques and quality assurance						
	practices across different types of software.						
CO 3	Analyze and implement quality control processes, including bug tracking, SQA						
	plans, and various quality control techniques.						
CO 4	Utilize different quality management diagrams to track and improve software						
	quality.						
CO 5	Understand and apply software quality management standards and models for						
	continuous quality improvement and cost-effective decision-making.						

Mapping of CO with PO

SECE364	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P01	P01	P01
0										0	1	2
CO 1	3											
CO 2	2	3										
CO 3	2	2	3									
CO 4	1	2	2	3								
CO 5	1	1	2	2	3							

Mapping of CO with PSO

SECE3640	PSO1	PSO2	PSO3
CO 1	3		
CO 2	2	3	
CO 3	2	2	3
CO 4	1	2	2
CO 5	1	1	2

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

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

Module No	Content	RBT Level
1	Introduction	1,2,3
2	Software Quality Control	2,3,6
3	Tracking the Software Quality using	1,2,3,6
	Diagrams	
4	Software Quality Management	2,3,6
5	Quality Cost	2,3,6
6	Quality Assurance Standards	6

P P Savani University School of Engineering

Department of Information Technology

Course Code: SEIT3640 Course Name: Advanced Web Technologies Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minatio	on Sche	me (Ma	rks)				
Theorem	Drastical Tytorial Credit		Drastical Tutorial	nactical Tutorial Crow		The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total		
02	02	00	03	40	60	40	60	-	-	200		

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Write backend code in Python/Java, PHP languages and writing optimized front end code HTML and JavaScript.
- Understanding MVC architecture in Web based applications, with Advanced PHP concepts and Laravel Framework along with Node.js and Angular js.
- Give basic understanding of URL methods, MVC Framework, Unit Testing, Web Services, API Node Servers, and routing.

<u>Course C</u>	ontent:		
	Section I		
Modul e No.	Content	Hours	Weightag e in %
1.	PHP Introduction to PHP and its syntax, combining PHP and HTML, understanding PHP code blocks like Arrays, Strings, Functions, looping and branching, file handling, processing forms on the server side, cookies, and sessions.	08	10
2.	Object-Oriented PHP Object-Oriented Programming with PHP – Classes, Properties, Methods, Constructor, Destructor, Getters and Setters, Encapsulation, Inheritance, Data Abstraction, Polymorphism.	08	20
3.	PHP & MySQL Introduction to PHPMyAdmin, connection to MySQL server from PHP, execution of MySQL queries from PHP, receiving data from the database server, and processing it on the webserver using PHP. Web Scraping using cURL, Regular Expressions, Mail functions, Web Services, and APIs.	06	20
	Section II		
Modul e No.	Content	Hours	Weightag e in %
4.	PHP MVC Framework – Laravel Introduction to Laravel and MVC, Environment Setup, Routes, Namespaces, Controllers, Views, Blade Templates,	09	15

	Migrations, Request-Response cycle, Redirections, Forms, Sessions, Cookies, Database Connectivity, and CRUD operations.		
5.	Node.js and Angular Basic web development, environmental setup, callbacks, node package manager (NPM) utilization, streams and buffers, Express framework basics, MongoDB basics, and REST API creation. Setup Node.is with Angular.	08	15
6.	Web Sockets Introduction to Web Sockets, Web Socket URIs, Web Socket APIs, Opening Handshake, Data Framing, Sending and Receiving Data, Closing Connections, Error Handling, and Web Socket Security.	06	20
	TOTAL	45	100

List of Practical:

Sr. No	Name of Practical	Hours
1.	Install and Configure PHP and MySQL	04
2.	Develop a Simple Web Page in PHP Using Class, Object, Inheritance, and Function	02
3.	Develop a Web Application in PHP Using Constructor and Destructor	02
4.	Write a PHP Program to Calculate Date and Time Functions	02
5.	Create a Web Page to Advertise a Product of the Company Using Images and Audio	02
6.	Create a PHP Page for Login System Using Session	02
7.	Create a Web Page for a Travel Agency with Database Connectivity	02
8.	Develop a Small Project Using the Laravel Framework	04
9.	Develop a Web Application as a Mini Project Using Node.js	10
	TOTAL	30

Text Book (s):

Title	Author/s	Publication
Black Book, Web Technologies	Kogent Learning	Dreamtech Press
	Solutions Inc	
Full Stack Web Development for Beginners	Riaz Ahmed	Atlantic publisher

Reference Book (s):

Title	Author/s	Publication
Web Technologies-A Computer	Jeffrey C. Jackson	Pearson
Science Perspective		Education
AngularJS: Up and Running	Brad Green, Shyam	O'Reilly Media
Enhanced Productivity with	Seshadri	
Structured Web Apps		
Learning React Functional Web	Alex Banks, Eve	O'Reilly Media
Development with React and	Porcello	
Redux		

- Web Material Link(s):
 <u>https://www.w3schools.com/whatis/whatis fullstack.asp</u>
- <u>https://www.geeksforgeeks.org/web-technology/</u>

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

Course Outcome(s):

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

SEIT3640	ADVANCED WEB TECHNOLOGIES
C01	Identify the basic concepts of web & markup languages.
CO2	Develop web applications using scripting languages & frameworks.
C03	Creating controller working with and displaying in angular js and nested forms
605	with ng-form.
CO4	Working with the files in react js and constructing elements with data.
C05	Develop dynamic web pages with usage of server-side scripting NodeJS and
605	MongoDB.

Mapping of CO with PO

SEIT364	P01	P02	P03	P04	P05	P06	P07	P08	P09	P01	P01	P01
0										0	1	2
CO 1		3	3	2	3	2		3	1			1
CO 2		3	3	2	3	2		3	3		2	2
CO 3		3	3	2	3	2		3	3		3	3
CO 4		3	3	2	3	2		3	3		2	3
CO 5		3	3	2	3	2		3	3		3	3

Mapping of CO with PSO

SEIT3640	PSO1	PSO2	PSO3
CO 1	2	2	1
CO 2	1	3	3
CO 3	3	3	3
CO 4	3	3	3
CO 5	3	3	3

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

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

Module No	Content	RBT Level
1	PHP	1,2,3
2	Object Oriented PHP	2,3
3	Advance PHP	2,3,6
4	PHP MVC Framework – Laravel	2,3

5	PHP & MySQL	2,3,4,6
6	Web Sockets	2,3,4,6

P P Savani University School of Engineering

Department of Information Technology

Course Code: SEIT3650 Course Name: Augmented Reality and Virtual Reality Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exa	minati	on Sche	me (Ma	rks)		
Theory	Drastical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
2	2	0	4	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Understand the principles, architecture, and components of AR and VR systems and their applications in real-world scenarios.
- Design and develop basic AR/VR applications using appropriate tools and technologies for immersive user experiences.
- Analyze the challenges and limitations of AR/VR systems, including hardware, software, and user interaction considerations.

course content:	Course	Content:
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Section I					
Modul	Contont	Hour	Weightag		
e No.	Content	S	e in %		
1.	Introduction to Augmented Reality (AR) History of AR - Augmented reality characteristics, Difference between Augmented Reality and Virtual Reality, AR technological components, Technologies used in AR, Feature Extraction, Hardware component, AR devices, Importance of AR, Real world uses of AR – AR types, Software tools available for AR.	03	12		
2.	AR Hardware and Software Sensory hardware; Limitations and interactions; AR and VR together; Introduction to AR headset and smart glasses; Various AR software available; Introduction to Spark AR; Create a face detection app	04	15		
3.	Technology Integration and Implementation of AR Technology use and integration in industrial settings, Assistive training to faculty members, Planning and administration for implementation, AR implications.	05	15		
4.	Augmented Reality and Virtual Reality for Micro Learning Micro learning techniques, Utilizing VR for learning, VR for Practical online assessment, VR info graphics, Virtual case considerations, Utilizing AR for learning, Accessible learning, sensible data elevated learner engagement, VR technology, Components of VR, VR Hardware, VR applications, Civil	05	15		

	Engineering, Real Estate, Biology and Medicine, Virtual Mall, VR in Education, Virtual Laboratory, Factory Planning, Automobile		
	Industry.		
	Section II		
Module	Contont	Hour	Weightag
No.	Content	S	e in %
	VR Development Tools and Frameworks		
	Introduction to VR development platforms (Unity, Unreal		
5.	Engine), Creating 3D environments for VR, Basics of VR	04	16
	interactions and animations, Integration of audio and spatial		
	effects in VR		
	Interaction Techniques in AR/VR		
6.	Interaction design principles for AR/VR, Gesture recognition	05	15
	and tracking, Voice and eye-tracking in AR/VR systems		
	AR/VR Project Implementation		
7.	Project planning and development lifecycle, Designing an end-	04	12
	to-end AR/VR solution, Presentation and evaluation of projects		
	TOTAL	30	100

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Introduction to Spark and the Fundamentals Function	04
2.	Create a Face Detection App using spark.	08
3.	Introduction to Unity and its installation.	04
4.	Introduction to AR foundation; Installing AR foundation SDK; SDK setup	10
5.	Introduction to C-sharp and its Basics	04
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Innovating with Augmented	Taylor & Francis Group	CRC Press,
Reality: Applications in		
Education and Industry		
Understanding Virtual Reality:	William R Sherman and	Understanding
Interface, Application and Design		Virtual Reality:
		Interface,
		Application and
		Design

Reference Book(s):

Title	Author(s)	Publication
Designing Virtual Systems: The	Gerard Jounghyun Kim	WILEY
Structured Approach"		
"3D User Interfaces, Theory and	Doug A Bowman, Ernest	Addison Wesley
Practice	Kuijff, Joseph J LaViola	

Web Material Link(s):

- <u>https://nptel.ac.in/courses/106/106/106106138/</u>
- <u>https://www.coursera.org/learn/introduction-virtual-reality</u>

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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

SEIT3650	Augmented Reality and Virtual Reality
CO 1	Develop a strong understanding of AR/VR concepts, technologies, and
	applications across various industries, enhancing career prospects.
CO 2	Gain proficiency in AR/VR development tools and frameworks, enabling the
	creation of interactive and immersive experiences.
CO 3	Acquire skills in designing user interactions, integrating 3D models, and
	optimizing AR/VR applications for diverse platforms and devices.
CO 4	Address challenges in AR/VR deployment, including ethical considerations and
	privacy concerns, while exploring future trends like XR and MR.

Mapping of CO with PO

SEIT3650	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3		1	3					2	3	1
CO 2	2	3	3		3	2		1				1
CO 3	2	3	2	1	2	3		1	2	2	3	1
CO 4	3	2	2			2			3	2		1
CO 5	3	3	1		2					1	3	1

Mapping of CO with PSO

SEIT3650	PSO1	PSO2	PSO3
CO 1	3	3	1
CO 2	2	1	3
CO 3	1	2	
CO 4	3	1	1
CO 5	2	2	3

Level of Revised Bloom's Taxonomy in Assessment

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

Module	Content	RBT Level
No		
1.	Introduction to Augmented Reality (AR)	2,4
2.	AR Hardware and Software	2,3,4
3.	Technology Integration and Implementation of	2,4.5
	AR	
4.	Augmented Reality and Virtual Reality for Micro	1,2,5
	Learning	
5.	VR Development Tools and Frameworks	2,3,4,6
6.	Interaction Techniques in AR/VR	2,3,5
7.	AR/VR Project Implementation	2,3