

SCHOOL OF ENGINEERING

B. TECH. (COMPUTER SCIENCE ENGINEERING – CYBER SECURITY)

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

PSO No	PROGRAMME SPECIFIC OUTCOMES (PSO)
	COMPUTER SCIENCE ENGINEERING – CYBER SECURITY
PSO 1	Develop expertise in utilizing contemporary tools and technologies in cybersecurity to
	identify, analyze and mitigate threats, ensuring data integrity, confidentiality and availability
	of digital assets and systems.
PSO 2	Design and implement secure information systems and policies, applying principles of
	cryptography, network security, and risk management to solve real-world cybersecurity
	challenges and enhance the security posture across various sectors.
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 -Cyber Security)



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 - CYBER SECURITY PROGRAMME AY: 2023-24

Som	Course	Course Title	Offered By	Teaching Scheme						Examination Scheme						
Sem	Code	course mile	Onereu by		Contact Hours					Theory		Practical		Tutorial		
				Theory	Practical	Tutorial	Total	Credit	CE	ESE	CE	ESE	CE	ESE	TULAI	
	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	
1 UK 2	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)					E	xaminat	ion Sche	me (Mar	ks)					
Theory	Practical	Tutorial	Credit	Theory		Theory		Theory		Prac	tical	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

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

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

List of Tutorials:

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

Text Book:

Title	Author(s)	Publication
Thomas' Calculus	George B. Thomas, Maurice D. Weir and Joel	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 Mathematics	N P Bali and Manish Goyal	Laxmi
Higher Engineering Mathematics	B S Grewal	Khanna
Engineering Mathematics	T Veerarajan	Tata Mc Graw Hill
Engineering Mathematics-1 (Calculus)	H. K. Dass and Dr. Rama Verma	S. Chand

Course Evaluation:

Theory:

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

Tutorial:

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

Course Outcome(s):

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

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

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)				E	xaminat	ion Sche	me (Mar	ks)			
	Theory	Practical	Tutorial	Credit	The	eory	Prac	tical	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		
1	Elementary Row and Column operations, Inverse of matrix, Rank of	10	20
1.	matrix, System of Linear Equations, Characteristic Equation, Eigen	12	50
	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, Row	11	20
	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, Rank and	Q	20
э.	Nullity, Inverse of Linear Transformation, Rank Nullity Theorem,	2	20
	Composition of Linear Maps.		
	Inner Product Space		
	Inner Product, Angle and Orthogonality, Orthogonal projection, Gram-		
4.	Schmidt process and QR Decomposition, Least square decomposition.	8	20
5.	Beta and Gamma function	5	10

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

List of Tutorial:

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

Text Book(s):

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

Reference Book(s):

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

Course Evaluation:

Theory:

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

Tutorial:

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

Course Outcome(s):

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

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

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

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

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

P P Savani University

School of Engineering

Department of Mechanical Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Exar	ninatio	n Schem	e (Mar	ks)	
Theory	Practical	Tutorial	Credit	The CE	eory ESE	Prac CE	tical ESE	Tuto CE	orial 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 perDrawing including Marking and other Performing Operations. Carpentry and Drilling Shop: Introduction of Carpentry Shop; Preparation of Job as per Drawing including Marking and other Performing Operations. Introduction of Carpentry Shop; Preparation of Job as per Drawing including Marking and other Performing Operations. Introduction to Machine Tools: Introduction and Demonstration of various Machine Tools like Lathe, Drilling, Grinding, Hack Saw Cutting etc. Introduction to Welding & Plumbing: Introduction and Demonstration of Welding process. Introduction and Demonstration of Plumbing Shop. 	25%
2.	Introduction to Computer Hardware Computer hardware structure, Identify and understand hardware components: CPU, Motherboard, RAM, HDD, SSD, Keyboard, Ports, Mouse, Monitor, Printer, UPS/SMPS, etc. Hardware Maintenance and Troubleshooting Assembling and disassembling a PC, connectors and cables, BIOS setup, Disk management, Device manager, Task manager, Network management, Backup/recovery disk.	25%

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

List of Practical:

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

Text Book(s):

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

Reference Book(s):

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

Course Evaluation:

Practical:

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

Course Outcome(s):

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

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

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

Module No	Content	RBT Level
1	Introduction, Fitting Shop, Carpentry Shop and Drilling Shop,	2,3,4,6
	Introduction to Machine Tools, Welding and Plumbing	
2	Introduction to Computer Hardware, Hardware Maintenance and	1,2,3,4,5,6
	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)				Exar	ninatior	Scheme	e (Marks)		
Theory Drastical		Tutorial	Crodit	The	ory	Prac	tical	Tuto	orial	Total
Theory	Flattital	Tutoriai	Cleuit	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.

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

	Website Creation	
6.	Creating a website using Google Sites, Creating Web Pages, Working with	
	Images, Working with Documents on Web Pages. Introduction to	25
	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 or Microsoft Visio or LucidChart.	2
11.	Study of different Google Apps.	4
12.	Create a Google Doc and Google sheet and share with 2 classmates.	2
13.	Demonstrate working of HlookUp and VlookUp in Excel.	2
14.	Create different types of charts in Excel.	4
15.	Demonstrate Data Analysis in Excel.	4
16.	Create a Google Website with minimum two pages showing your personal details.	4
17.	Demonstrate embedding of a youtube video and pdf document on a web page in google site.	4
18.	Demonstrate placing Map and hyperlinks on web page in Google Site.	4
19.	Create a wordpress site and create minimum three web pages and menu to navigate between the pages.	4
20.	Demonstrate the use of Accordian in wordpress.	2

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

• <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 to use
01	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 application
CO 3	software
604	Achieve some useful information from data through analysis and represent it with
C04	different views like charts, graphs etc.
CO 5	Learn the designing and development of website to have a global communication.

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

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

P P Savani University School of Engineering Department of Information Technology

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Exar	ninatior	n Scheme	e (Marks)		
Theory Drastical		Tutorial	Cradit	Theory		Prac	tical	Tuto	orial	Total
Theory	FIACULAI	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI
2	0	0	2	40	60	00	00	0	0	100
<u>an</u> a										

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

	Cyberspace and the Law		
	Cyber Security Regulations, Cyber Law, need for a Comprehensive	00	1 5
4	Cyber Security Policy, Need for an International convention on Cyber	06	15
4.	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		
5.	Introduction to Cyber Forensics, Handling Preliminary analysis,	04	20
	Investigating Investigations, Controlling an Investigation, Legal		
	Policies, Case studies		

Text Book(s):

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

Reference Book(s):

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

Course Evaluation:

Theory:

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

Course Outcome(s):

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

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

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)				Exar	nination	n Scheme	e (Marks)					
Theory Practical T		Theory	Practical	tical Tutorial Credit	ractical Tutorial	Cradit	The	ory	Prac	tical	Tuto	orial	Total
Theory	Flattital	Tutorial	Creuit	CE	ESE	CE	ESE	CE	ESE	TOLAI			
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 %		
	Quantitative Ability (Basic Mathematics)				
1.	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		
	Quantitative Ability (Applied & Engineering Mathematics)- Part I				
2.	Logarithm, Permutation and Combinations, Probability, Profit and Loss, Simple and Compound Interest,	5	35		
	Quantitative Ability (Applied & Engineering Mathematics)				
3.	- 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,	3	10
	Degree and Radian Measures, Trigonometric Ratios, Complementary		
	Angles, Height and Distance, Standard Identities, Area, Inequalities		

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

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

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

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

P P Savani University School of Engineering

Department of Computer Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory Dreatical T		Tutorial	Type and the second sec		eory	Prae	ctical	Tut	orial	Total
Theory Practic	Practical	actical Intornal	Credit	CE	ESE	CE	ESE	CE	ESE	Total
3	02	00	04	40	60	40	60	00	00	200
	'eachi ory 3	Yeaching Scheme (ory Practical 3 02	Yeaching Scheme (Hours/WeeloryPracticalTutorial30200	Yeaching Scheme (Hours/Week)oryPracticalTutorialCredit3020004	Yeaching Scheme (Hours/Week)ExoryPracticalTutorialCreditThe CE302000440	Yeaching Scheme (Hours/Week)ExaminationoryPracticalTutorialCreditTheory30200044060	Teaching Scheme (Hours/Week)Examination SchemoryPracticalTutorialCreditTheoryPractical3020004406040	Yeaching Scheme (Hours/Week)Examination Scheme (Mark TheoryoryPracticalTutorialCredit $Theory$ Practical302000440604060	Yeaching Scheme (Hours/Week)Examination Scheme (Marks)oryPracticalTutorialCreditTheoryPracticalTut30200044060406000	Yeaching Scheme (Hours/Week)Examination Scheme (Marks)oryPracticalTutorialCredit $Theory$ PracticalTutorial3020004406040600000

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								
Module No.	Content	Hours	Weightage in %						
4.	Collection of Data: Introduction, One-dimensional Arrays, Two-dimensional Arrays, Concept of Multidimensional Arrays, Declaring and Initializing String Variables, Arithmetic Operations on Characters, Putting Strings Together, Comparison of Two Strings, String Handling Functions, Dictionary, List, Tuples and Sets.	10	20						
5.	Functions Introduction to Functions, defining a Function, Calling a Function, Types of Functions, Function Arguments, Anonymous Functions, Global and Local Variables, Recursion	6	15						
0.	συπατης δεεκτορ Αρρηζατιοπ								

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

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).	Z				
2.	Working with control structures (if statement, if-else statement, nested if-	C				
	else statement, switch statement, break statement, goto statement).	Z				
3.	Working with array and strings in C.	4				
4.	Introduction to Python (Introduction to IDLE, different data types, Input Output in	2				
	Python, Operators, Operator precedence).					
5.	Implementation of Dictionaries, Sets, Tuples and Lists and its various methods in	C				
	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	b				
	c. Recursion : Tower of Hanoi					

Use of different libraries will be covered in Practical Assignments.

Text Book(s):

Title	}			Author(s)	Publication
Program	ming in ANSI C			E. Balagurusamy	Tata McGraw Hill
Python	Programming:	А	modular	Sheetal Taneja, Naveen Kumar	Pearson
approacl	ı				

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

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

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

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

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

P P Savani University School of Engineering

Department of Chemical Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory Practical Tuto	Tutorial	'utorial Credit	The	eory	Pra	ctical	Tut	orial	Total	
	TULUTIAI		CE	ESE	CE	ESE	CE	ESE	TOLAT	
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	Contant	Hours	Weightage			
No.	Content	nours	in %			
1.	Introduction to Chemistry Overview of the scientific method and chemistry as a science, Basic concepts of matter, including atoms, molecules, and the periodic table, Introduction to chemical bonding and intermolecular forces, Basic principles of chemical reactions, including stoichiometry and reaction types	6	15			
2.	Chemical Thermodynamics and Kinetics Introduction to thermodynamics and the laws of thermodynamics, Energy and enthalpy changes in chemical reactions, Introduction to chemical kinetics and reaction rates, Factors affecting reaction rates, including temperature, concentration, and catalysts	6	15			
3.	Properties of Matter and Solutions Physical properties of matter, including states of matter and phase changes, Solutions and their properties, including solubility and colligative properties, Introduction to acids and bases and their properties, Chemical equilibrium and the equilibrium constant	5	10			
4.	Organic Chemistry Introduction to organic chemistry and the basics of carbon chemistry, Functional groups and their properties, Nomenclature and isomerism in organic compounds, Introduction to organic reactions and mechanisms	6	10			

	Section II					
Module	Content	Hours	Weightage			
			in %			
	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					
	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,					
6.	Sources of common air pollutants like PM, SO ₂ , NO _x , Auto exhaust,	08	20			
	Effects of common air pollutants					
	c) Noise Pollution: Introduction, Sound and Noise, Noise					
	measurements, Causes and Effects.					
	d) Solid Waste: Generation and management					
	e) Bio-medical Waste: Generation and management					
	f) E-waste: Generation and management					
	Social Issues and Environment					
	Sustainable Development, Equitable use of Resources for					
7.	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					

List of Practical:

Sr. No	Name of Practical	Hours	
	Acid-base titration adding a base of known concentration to an acid of unknown	02	
1.	concentration until the reaction is complete, and the concentration of the acid		
	is determined.		
2	Determination of the boiling point of a liquid heating a sample of a liquid and	02	
۷.	observing the temperature at which it boils.		
2	Determination of the density of a liquid weighing a known volume of a liquid	04	
3.	and calculating its density.		
4	Determination of the pH of a solution using a pH meter to measure the acidity	04	
4.	or basicity of a solution.	04	
F	Flame test: burning a sample of a substance and observing the color of the flame	0.4	
5.	to identify the presence of certain elements.	04	
6	Preparation of a salt reacting an acid and a base to form a salt and observing the	02	
0.	reaction products.	02	
7.	Testing of soil acidity	02	
0	Studying the effect of temperature on the solubility of a solid in water at	02	
8.	different temperatures to see how temperature affects solubility.	02	
0	Studying the properties of acids and bases: Students can test the properties of	04	
9.	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	

amount of gas produced.	
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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.

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:

5										
Teaching Scheme Examination Scheme (Marks) (Hours/Week)					ks)					
Theory	Practical	Tutorial	Crodit	The	eory	Prac	tical	Tuto	orial	Total
Theory	Flactical	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAT
00	04	00	04	00	00	40	60	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

Module No.	Content	Hours	Weightage in %
	Orthographic Projection and Isometric Projections		
	Types of Projections: Principle of First and Third Angle Projection		
4.	Applications & Difference; Projection from Pictorial view of Object,	18	30%
	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, Detail	00	100/
	drawing, Line Plan, plan, elevation, section, Preparing working	06	10%
	drawing of residential building.		
6.	Computer-Aided Drawing:		
	Introduction to AutoCAD, Basic commands for 2D drawing (Line,	0.0	100/
	Circle, Polyline, Rectangle, Hatch, Fillet, Chamfer, Trim, Extend,	00	10%
	Offset, Dim style, etc.)		

List of Practical:

Sr.	Name of Practical	Hours
No.		
	Introduction sheet (dimensioning methods, different types of lines, construction of	
1.	various polygons, dividing the line and angle into parts, use of stencil, lettering), plane	03
	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 opening)	04
7.	Computer-Aided Drawing	06

Text Book(s):

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

Web Material Link(s):

• <u>http://nptel.ac.in/courses/105104148/</u>

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.

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

Module No	Content	RBT Level
1	Introduction	1, 2, 6
2	Engineering Curves	2,6
3	Projection of Points, Line & Plane	1, 2, 3, 4
4	Orthographic Projection	2, 5, 4
5	Isometric Projections and Isometric Drawing	2, 5, 4
6	Computer-Aided Drawing	2,3,6

P P Savani University

School of Engineering

Department of Civil Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Exar	ninatio	n Schem	ie (Mar	ks)	
Theory	Practical	Tutorial	Credit	The CE	eory ESE	Prac CE	tical ESE	Tuto CE	orial 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

- 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		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 masonry techniques,	08	18			
	Foam works, Curing, Compaction of 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, planning of earth	08	18			
	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, Resistor,					
	capacitor, Inductor, Ohm's law, effect of Temperature on					
	resistance, temperature coefficient, Series and parallel					
	laws for electromagnetic induction AC Electricity and DC	07	14			
	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						
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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			

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

Text Book(s):

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

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

Reference Book(s):

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

Web Material Link(s):

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

Course Outcome(s):

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

SECV1110	Core Engineering Concepts
CO 1	Understand basic properties of various construction materials.
CO 2	Understand the general rules and regulation of building planning.
CO3	Apply the principles of basic mechanical engineering.
C04	Comprehend the importance of mechanical engineering equipments like IC engine
	and power transmission elements.
CO5	Understand working of various instruments and equipments used for the
	measurement of various electrical engineering parameters like voltage, current,
	power, phase etc in industry as well as in power generation, transmission and
C06	Apply fundamental electrical laws and circuit theorems to electrical circuits.

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

Module No	Content	RBT Level
1	Basics of Construction material and techniques	1, 2, 3
2	Building planning and Bye laws	1, 2
3	Basic Electricity Principles	1,2,3
4	Power Transmission Elements	1, 2

5	Basics of I.C Engines	2
6	DC Circuits and AC Circuits	2,3,4
7	Basics of Steam Generators	1, 2

Course Code: CLSC2180

Course Name: Essentials of Entrepreneurship

Prerequisite Course(s):

Teaching & Examination Scheme:

-				r						
Teaching Scheme (Hours/Week)				E	xamina	tion Sche	eme (Ma	rks)		
Theory	Practical	Tutorial	Credit	Th	eory	Pra	ctical	Tut	orial	Total
Theory	Flattical	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI
02	00	00	2	100	00	00	00	00	00	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

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

Text Book(s):

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

Reference Book(s):

Title	Author/s	Publication
Entrepreneurship	Trehan A	Dremtech

Web Material Link(s):

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

Theory:

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

Course Outcome(s):

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

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

Module No	Content	RBT Level
1	Introduction to Entrepreneurship	1, 2, 3, 4, 5
2	Dimensions of Entrepreneurship	1, 2, 3, 4, 5
3	Women Entrepreneurship	1, 2, 3, 4, 6
4	Emerging Trends and Social Entrepreneurship	1, 2, 3, 4, 6



SECOND YEAR B. TECH.



P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

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

	_	Teaching Schem				Teachi		g Scheme			Examination Scheme					
Sem	Course Code	Course Title	Course Category	Offered By		Contact Hours			Theory Practical		Tuto	orial	Tatal			
	coue			Бу	Theory	Practical	Tutorial	Total	creait	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
	SECE2221	Data Structures	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
3	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
	SECE2240	Computer Networks	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
4	SEIT2230	Operating System	Major/Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT2241	Mobile Application Development	Major/Core	IT	0	4	0	4	2	0	0	40	60	0	0	100
	CLSC2030	IPDC-II	VAC	CLSC	2	0	0	2	2	100	0	0	0	0	0	100
							Total	26	21							1000

Department of Science & Humanities

Course Code: SESH2130

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminati	on Scher	ne (Mar	ks)		
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

- 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 No.	Content	Hours	Weightage in %			
1.	Set, Relation & Function Sets, Set operations, Introduction of Relations, Relations of Sets, Types of Relations, Properties of Relations, Equivalence Relation, Partial Ordering, Hasse Diagram, GLB & LUB, Functions, Classification of functions, Types of functions	08	17			
2.	Lattices Definition & properties of Lattice, Lattices as Algebraic System, Sublattices, Types of lattices, Distributive lattices, Modular lattices, Complemented lattices, Bounded lattices, Complete lattices, Finite Boolean algebra	07	16			
3.	Group Theory Binary operations, Properties of Group, Groupoid, semigroup & monoid, Abelian group, Subgroup, Cosets, Normal subgroup, Lagrange's theorem, Cyclic group, Permutation group, Homomorphism & Isomorphism of groups.	08	17			
	Section II					
Module No.	Content	Hours	Weightage in %			
4.	Mathematical Logic and Proof Propositions, logical operators, Algebra of proposition,Predicates & quantifiers, Nested Quantifiers, Rules of Inference, Proof Methods, Program Correctness techniques.	06	14			
5.	Graph Theory Graphs and Graph Models, Graph Terminology and Types of graphs, Representing graphs and Isomorphism, Connectivity, Euler and Hamilton Paths-Circuits, Applications of weighted graphs.	08	18			
υ.	1100					

Introduction to Trees, Rooted Tree, Properties of tree, Binary tree,	08	18
Tree Traversal, Spanning Tree, DFS, BFS, Minimum Spanning Tree,		
Prim's Algorithm, Kruskal's Algorithm.		
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 Structure	J.P.Trembly, R.Manohar	Tata McGraw-Hill Publishing
with Applications to Computer		Company Ltd. New Delhi.
Science		
Graph Theory with Applications to	Narsingh Deo	PHI Learning Pvt. Ltd. New
Engineering and Computer Science		Delhi.

Web Material Link(s):

- http://nptel.ac.in/courses/111107058/
- <u>http://nptel.ac.in/courses/111107058/</u>
- 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):

SESH2130	DISCRETE STRUCTURES & GRAPH THEORY
CO 1	Summarize the concepts of set theory for understanding & fetching data from a
	database using query.
CO 2	Classify the basic concepts of spanning tree algorithms namely DFA, BFS, prim's and
C0 2	Kruskal's in the design of networks.
CO 3	Construct the algorithm of group theory for data encryption.
CO 4	Combine the design, foundational concepts of notations and results of graph theory
LU 4	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

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

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

Department of Computer Engineering

Course Code: SECE2210

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Flattical	Tutoriai	Credit	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

- 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	07	15				

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

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

Text Book(s):

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

Reference Book(s):

Title	Author(s)	Publication
Fundamental of Database system	R. Elmasri and S.B Navathe	The Benjamin/Cumming
Oracle: The Complete Reference	George Koch, Kevin Loney	TMH /Oracle Press
An Introduction to Database	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.
C04	Design and develop database for the software projects.

Mapping of CO with PO

SECE2210	P01	PO2	P03	P04	PO5	P06	P07	P08	P09	P010	P011	P012
CO 1	2	1	1	1								
CO 2	2	1	1	1								
CO 3	2	1		1								
CO 4	2	1	1	1								

Mapping of CO with PSO

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

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

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)				Ex	aminati	on Scher	ne (Mar	ks)		
Theory	Drastical Tutorial		Tutorial Credit		eory	Prae	ctical	Tut	orial	Total
Theory	Flattical	Tutoriai	Creuit	CE	ESE	CE	ESE	CE	ESE	TOLAT
03	02		04	40	60	40	60			200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

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

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

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 –Addition,	02
	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, and	04
	Traversal.	
11.	Write a program for traversal of graph (B.F.S., D.F.S.).	04
	TOTAL	30

Text Book(s):

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

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

Mapping of CO with PSO:

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

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

Department of Computer Engineering

Course Code: SEIT2210

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory Dreation	Practical	Tutorial	Cradit	Theory		Practical		Tutorial		Total
Theory	Theory Practical Tutoria		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 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, thread	08	18

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

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

Text Book(s):

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

Reference Book(s):

Title	Author(s)	Publication
Core Java Volume I - Fundamentals	Cay Horstmann and Gray	Pearson
	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>
- <u>https://docs.oracle.com/en/java/javase/14/docs/api/index.html</u>
- <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
CO 1	Implement Object Oriented programming concept using basic syntaxes of control
CO 1	Structures, strings, and function for developing skills of logic building activity.
	Use of a variety of basic control structures including selection and repetition; classes
CO 2	and objects in a tiered architecture (user interface, controller, and application logic
	layers)
CO 2	Demonstrates how to achieve reusability using inheritance, interfaces, and packages
0.05	and describes faster application development that can be achieved.
CO 4	Demonstrate understanding and use of different exception handling mechanisms and
CU 4	concepts of multithreading for robust faster and efficient application development.
	Identify and describe common abstract user interface components to design GUI in
COF	Java using Swing along with a response to events. Identify, Design & develop complex
0.05	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	2	3	3									
CO 2	3	2	3	2	1							
CO 3		2	2	3	2						1	1
CO 4	1	1	1	1	3						2	2
CO 5	1	1	1	2	3			1			2	1

Mapping of CO with PSO

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

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

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

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

Department of Computer Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Ex	aminati	on Scher	ne (Mar	ks)			
Theory	Theory Prostical Tytorial		Dractical Tutorial Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Flattical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI
03		01	04	40	60			100		200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

Course	Content:

	Section I		
Module No.	Content	Hours	Weightage in %
1.	Introduction to Software and Software Engineering The Evolving Role of Software, A Crisis on the Horizon and Software Myths, Layered Technologies, Processes, Methods and	06	15
	Tools, Generic View of Software Engineering, Study of Different Models-Waterfall model, Incremental model, Evolutionary process models- Prototype, Spiral, and RAD model.		
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	n	1
Module No.	Content	Hours	Weightage in %
5.	Software Coding & Testing Programming principles, Coding Standards and coding Guidelines, Unit testing; Metrics, Software testing fundamentals, Black-box and white box testing, Basis path testing, Control structure testing, Black-box testing - Graph-	08	20

	based testing method, Boundary value analysis; Testing strategies - A strategic approach to software testing, Test strategies for conventional and object-oriented software, test case generation and tool support, Metrics – Coverage analysis-		
	Quality Accurance		
6.	Quality Control, Assurance, Cost, Reviews, Software Quality Assurance, Approaches to SQA, Reliability, Quality Standards- ISO9000 and 9001.	04	08
	Software Project Management		
7.	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
	Software Maintenance and Configuration Management		
8.	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

Text Book(s):

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

Mapping of CO with PO

SEIT2220	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	1	2				1					
CO 2	2	2	2		1		2				3	3
CO 3	2	2	2		1		2				3	3
CO 4	2	1	1		1		2				2	3
CO 5	2	1	1		1		2				3	3

Mapping of CO with PSO

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

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

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

8.	Software	Maintenance	and	Configuration	2,3,4
	Managemer	nt			

Department of Science & Humanities

Course Code: SESH2140

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Ex	aminati	on Scher	ne (Mar	ks)	
Theory	Due sties Testerial		Credit	The	eory	Prac	ctical	Tut	orial	Total
Theory Practical	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 No.	Content	Hours	Weightage in %
1.	Ordinary Differential Equation-I First order ODEs, Formation of differential equations, Solution of differential equation, Solution of equations in separable form, Exact first order ODEs, Linear first order ODEs, Bernoulli Equation Ordinary Differential Equation-II ODEs of Second and Higher order, Homogeneous linear ODEs, Linear Dependence and Independence of Solutions, Homogeneous linear ODEs with constant coefficients, Nonhomogeneous ODEs, Variation of Parameters.	10	20
2.	Partial Differential Equation Formation of First and Second order equations, Solution of First order equations, Linear and Non-liner equations of first, Higher order equations with constant coefficients, Complementary function, Particular Integrals.	07	18
3.	Fourier Series Periodic function, Euler Formula, Arbitrary Period, Even and Odd function, Half-Range Expansions	05	12
	Section II	r	1
Module No.	Content	Hours	Weightage in %
4.	Basics of Statistics Elements, Variables, Observations, Quantitative and Qualitative data, Cross-sectional and Time series data, Frequency distribution, Dot plot, Histogram, Cumulative distribution, Measure of location, Mean, Median, Mode, Percentile, Quartile, Measure of variability, Range, Interquartile Range, Variance, Standard Deviation, Coefficient of Variation.	07	15

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

List of Tutorial(s):

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

Text Book(s):

Title	Author/s	Publication	
Advanced Engineering	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 Mathematics	B. S. Grewal	Khanna Publishers, New
		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 Mathematics	H.K. Dass	S. Chand & Company Ltd.,
	Er. Rajnish Verma	New Delhi.

Web Material Link(s):

- <u>http://nptel.ac.in/courses/111105035/</u>
- 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

- 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

I	,
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
02	equations.
CO 2	Demonstrate Fourier series to study the behavior of periodic functions and their
CO 3	applications in system communications, digital signal processing and field theory.
CO 4	Elaborate analysis of categorial data and quantitative data.
CO 5	Adapt the knowledge of various probability distribution and their applications in
	mathematical models, sport strategies and insurance.

Mapping of CO with PO

SESH2140	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
CO 5	1		

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

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

Department of Computer Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Examination Scheme (Marks)					
Theory	Practical	Tutorial	Credit	The	ory	Practical		Tutorial		Total
Theory	Flattital	Tutoriai	Cieuit	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

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

Section I									
Module	Content	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 bgcoperations, subroutines, I-O Programming.	05	08						
3.	Computer Arithmetic Introduction, Addition and subtraction, Multiplication andDivision Algorithms, Floating Point Arithmetic.	06	12						
4.	Central Processing Unit Introduction, General Register Organization, Stack Organization, Instruction format, Addressing Modes, data transfer and manipulation, Program Control, Reduced Instruction Set Computer (RISC).	06	15						
	Section II	•							
Module No.	Content	Hours	Weightage in %						

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

Sr	Name of Practical						
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):

• <u>https://nptel.ac.in/courses/106106092/</u>

Course Evaluation:

Theory:

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

Practical:

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

Course Outcome(s):

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 management
LU 3	techniques.
<u> </u>	Examine the working mechanism of input and output devices and information
LU 4	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								1
CO 2	3	2	1									1
CO 3	3	2	1	1								
CO 4	3	2	1									1

Mapping of CO with PSO

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

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

P P Savani University School of Engineering Department of Computer Engineering

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminati	on Scher	ne (Mar	ks)		
Theory	Dractical	Tutorial Credit Theory		Practical		Tutorial		Total		
Theory	Flattical	Tutoriai	Crean	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 LayerA 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

Sr. No.	Name of Practical	Hours
1.	To study and prepare LAN cables (cross and straight) using crimping tool, to	02
	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 its	02
	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 Stevens	Addition Wesley
Internetworking with TCP/IP	Douglas E. Comer	РНІ
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>
- http://www.tutorialspoint.com/computer_fundamentals/computer_networking.html
- https://nptel.ac.in/courses/106105080/

Course Evaluation:

Theory:

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

Practical:

• Continuous Evaluation consists of practical performance which should be evaluated out of 10 for each

practical and average of the same will be converted to 20 marks.

- Internal viva consists of 20 marks.
- Practical performance/quiz/test consists of 30 marks during End Semester Exam.
- Viva-voce consists of 30 marks during End Semester Exam.

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

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

Mapping of CO with PO

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

Mapping of CO with PSO

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

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:

Tea	ching Scheme	e (Hours/We	ek)	Examination Scheme (Marks)			ks)			
Theory	Practical	Tutorial	Cradit	The	eory	Prac	ctical	Tute	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			
	Section II					
5.	Memory Management Main memory: Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging: Introduction to Paging, Translation look-aside buffer (TLB), Structure of Page Table, Virtual memory: Background, Demand Paging, Page Replacement Algorithms: FIFO, Optimal Page Replacement, Least Recently Used, Not Recently Used, Second Chance Page Replacement, Thrashing.	11	25			
6.	File Management File Concepts: File Types, File Attributes, File Access Methods, File Operations, Directories: Directories Structure, Path Types, Directory Operations; File Allocation Methods: Contiguous, Linked, Indexed	05	12			

	Allocation.		
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

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

Text Book(s):

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

Reference Book(s):

Title	Author(s)	Publication
Operating Systems: Internals and	William Stallings	Pearson
Design Principles		
UNIX and Shell Programming	Behrouz A. Forouzan, Richard F.	Cengage Learning
	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 toSEIT2230OPERATING 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	PO2	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	2	0	0	1	3	2	0	0	0	0	0	2
CO 2	2	2	0	3	2	0	1	0	0	0	0	2
CO 3	2	2	0	2	1	0	1	0	0	0	0	1
CO 4	1	2	0	1	1	2	0	0	0	0	0	2

Mapping of CO with PSO

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

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	The	eory	Prac	ctical	l Tuto		Total		
Theory	Flactical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total		
	04	00	02			40	60			100		

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Create Hello World Application.	02
2.	Create an application to perform addition, subtraction, multiplication, division	02
	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 Toast	04
	Message on successful login or error message if not login.	
5.	Create an application UI component: Image Button, Toggle button, Progress Bar,	08
	Spinner, Date Picker, Time Picker, Seek Bar , Switch, Rating Bar.	
6.	Create an application that will change color of the screen, based on selected	04
	options from the menu.	
7.	Create an UI such that, one screen have list of all friends. On selecting of any	04
	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 using paint	04
	& 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 flutter	06
	TOTAL	60

Text Book(s):

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

Reference Book(s):

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

Web Material Link(s):

• <u>https://nptel.ac.in/courses/106106156/</u>

Course Evaluation:

Practical:

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

Course Outcome(s):

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

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

Mapping of CO with PO

SEIT2241	P01	P02	P03	P04	P05	P06	P07	P08	P09	PO9 P010		P012
CO 1	1	2	1	1	3	2			1	2	1	1
CO 2	2	1	2	2	3	2			1	1	1	2
CO 3	0	2	3	2	3	2			1	2	2	3
CO 4	3	3	3	2	3	3			3	3	3	3

Mapping of CO with PSO

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

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



THREE YEAR B. TECH.



P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

TEACHING & EXAMINATION SCHEME FOR THIRD YEAR B. TECH. BATCH : 2023 COMPUTER SCIENCE ENGINEERING (CYBER SECURITY)

						Teachi	ng Schen	ne				Exami	nation	Scheme	9	
Sem	Course Code	Course Title	Course Category	Offered By		Contact H	lours		Credit	Th	eory	Prac	ctical	Tuto	orial	Total
	couc		Category	By	Theory	Practical	Tutorial	Total	creat	CE	ESE	CE	ESE	CE	ESE	Total
	SECE3250	Cybersecurity Foundation	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SECE3260	Cryptography Fundamentals	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SECE3271	Network Security	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT3270	Web Technologies	Major/Core	IT	3	2	0	5	4	40	60	40	60	0	0	200
5		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
	SECE3221	Internet of Things	Major/Core	CE	2	4	0	6	4	40	60	40	60	0	0	200
	SECE3231	Cloud Computing & Applications	Major/Core	CE	3	2	0	5	4	40	60	40	60	0	0	200
	SEIT3281	Cyber Forensic and Investigation	Major/Core	IT	2	2	0	4	3	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	TNPC	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	25							1200

P P SAVANI UNIVERSITY

SCHOOL OF ENGINEERING

	TEACHI	ING & EXAMINATION SCH	EME FOR TH	IRD YEAR	В. ТЕСН. В	BATCH : 202	3 COMPUT	ER SCIE	NCE ENGI	NEEF	RING –	ELEC	FIVE C	OURS	ES		
	6		Course	0	Teaching Scheme						Examination Scheme						
Sem	Code	Course Title	Category	Offered		Contact	Contact Hours			Theory		Practical		Tutorial		Total	
	Goue			Dy	Theory	Practical	Tutorial	Total	crean	CE	ESE	CE	ESE	CE	ESE	Total	
_	SECE3630	Wireless Network & Mobile Computing	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200	
5	SEIT3660	Web Security	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200	
	SEIT3670	Application Security	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200	
	SECE3660	Image Processing & Steganography	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	
6	SEIT3650	Augmented Reality & Virtual Reality	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200	
	SEIT3680	Disaster Recovery and Business Continuity Management	Minor	IT	2	2	0	4	3	40	60	40	60	0	0	200	

Department of Computer Engineering

Course Code: SECE3250 Course Name: Cybersecurity Foundation Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory	Practical	l Tutorial	Credit	The	Theory Prac		ctical	Tut	orial	Total
				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

- To understand key terms and concepts in Cyber security, Policies, Governance and Compliance.
- To exhibit knowledge to secure corrupted systems, protect personal data, and secure computer networks in an Organization.
- To understand principles of cyber security and to guarantee a secure network by analyzing the nature of attacks through cyber forensics software or tools.

Section I							
Module No.	Content	Hours	Weightage in %				
1.	Introduction to Cyber Security: Cyber Security- Layers of security, Vulnerability, Assets and Threat, Challenges and Constraints - Computer Criminals - CIA Triad - Motive of attackers - Spectrum of attacks - Taxonomy of various attacks – Cryptography - Security Governance – Challenges and Constraints, Security Models and Risk Management.	06	15				
2.	Vulnerabilities and Safeguards: Software Vulnerabilities - Open Access to Organizational Data, Weak Authentication, poor cyber security awareness - Cyber Security Safeguards – Overview, Access control, Audit, Authentication, Biometrics, Deception, Denial of Service Filters, Ethical Hacking, Firewalls, Scanning, Security policy, Threat Management, Defending malicious software, Applying software update and patches.	08	20				
3.	Cyber Security Tools: Zenmap – Hydra –Kismet – NMAP –NETCAT -John the Ripper – Aircrack-ng – EvilOSX- IP Table.	08	15				
	Section II	-					
Module No.	Content	Hours	Weightage in %				
4.	Cyber Security Strategies: Need for building cyber strategy – Cyber-attack strategies (Red team) – Cyber defense strategies (blue team) – Introduction to Cyber security kill chain – Reconnaissance – Weaponization – Privilege Escalation - Exfiltration - Threat Life cycle management phases.	05	15				
5.	Cybercrime Challenges: Challenges of fighting cybercrime- Opportunities, general challenges, and legal challenges - Capacity building- Cyber security and cybercrime: Capacity building methodology, Strategy as a starting	08	15				

	point, the relevance of policy, the role of regulators in fighting cybercrime, high standards in developing countries.		
6.	Network Defense: Firewall Basics, Packet Filter Vs Firewall, Firewall Protects a Network, Packet Characteristic to Filter, Stateless Vs Stateful Firewalls, Network Address Translation(NAT) and Port Forwarding, Basic of Virtual Private Networks, Linux Firewall, Windows Firewall, Snort: Intrusion Detection System.	10	20
	TOTAL	45	100

Sr. No.	Name of Practical	Hours
1.	Implementation to gather information from any PC's connected to the LAN using	04
	who is, port scanners, network scanning, Angry IP scanners etc.	
2.	Experiments with open source firewall/proxy packages like IP tables.	04
3.	Implementation of Steganography.	02
4.	Implementation of Windows security using firewalls and other tools.	04
5.	Use a tool like Hashcat to crack a weak password hash and demonstrate how	04
	attackers can use brute force to break weak passwords.	
6.	Use N map to scan a local network and identify open ports, services, and potential	04
	vulnerabilities.	
7.	Generating SSL/TLS certificates and setting up a simple web server with HTTPS.	04
8.	Simulate phishing emails and set up landing pages to capture credentials.	04
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Cyber security - Attack and	Yuri Diogenes, Erdal Ozkaya	Packt Publishers, 2018.
Defense Strategies		
Cybersecurity Essentials	Charles J. Brooks, Christopher	Wiley Publisher, 2018.
	Grow, Philip A. Craig, Donald	
	Short	

Reference Book(s):

Title	Author(s)	Publication
Understanding cybercrimes,	Nina Godbole, Sunit Belapure	Wiley, 2011.
Computer Forensics and Legal		
Perspectives		
Effective Cybersecurity: A Guide to	William Stallings	1st edition, 2019.
Using Best Practices and Standards,		

Web Material Link(s):

https://www.coursera.org/learn/introduction-to-cybersecurity-fundamentals https://bundles.yourlearning.ibm.com/skills/cybersecurity-fundamentals/

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

SECE3250	CYBERSECURITY FOUNDATION						
CO 1	Analyze and evaluate the cyber security needs of an organization.						
CO 2	Analyze the security issues in networks and computer systems to secure an						
002	infrastructure.						
CO 3	Design operational cyber security strategies and policies.						
CO 4	Apply critical thinking and problem-solving skills to detect current and future attacks						
CU 4	on an organization's computer systems and networks.						

Mapping of CO with PO

SECE3250	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3		1								1
CO 2	3	2		3	2							
CO 3	3		1		3	2	2	3			2	
CO 4		2		2	2				1	3		

Mapping of CO with PSO

SECE3250	PSO1	PSO2	PSO3
CO 1	3	3	2
CO 2	3	3	3
CO 3	2	2	3
CO 4	3	3	2

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

Module No	Content	RBT Level
1.	Introduction to Cyber Security.	2,3,4,5
2.	Vulnerabilities and Safeguards.	3,4,5
3.	Cyber Security Tools.	3,4
4.	Cyber Security Strategies.	1,4,5
5.	Cybercrime Challenges.	4,5,6
6.	Network Defense.	3,4,5

Department of Computer Engineering

Course Code: SECE3260

Course Name: Cryptography Fundamentals Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory	Dractical	atical Tutovial	utorial Credit <u>Theory</u> Prac	The	Theory Prac		ctical	Tut	orial	Total
Theory	Flactical	Tutoriai		ESE	CE	ESE	TULAI			
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

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

Course Content:

Section I							
Module No.	Content	Hours	Weightage in %				
1.	Introduction to Cryptography: Basic Concepts: Plaintext, Ciphertext, Encryption, Decryption, Symmetric and Asymmetric Key Cryptography, Cryptographic Algorithms: Basic Terminology and Techniques.	05	05				
2.	Classical Cryptography Techniques: Substitution Ciphers: Caesar cipher, Vigenère cipher, Transposition Ciphers: Rail Fence cipher, One-Time Pad (OTP), Polyalphabetic Ciphers, PlayFair and Hill Ciphers.	08	15				
3.	Modern Cryptographic Algorithms: Symmetric Key Algorithms: DES, AES, and their strengths and weaknesses, Asymmetric Key Algorithms: RSA, Diffie-Hellman, Hash Functions: MD5, SHA family, HMAC, Digital Signatures and Public Key Infrastructure (PKI), Key exchange protocols, Cryptographic Services: Integrity, confidentiality, and authentication.	10	30				
	Section II						
4.	Block and Stream Ciphers: Differences between block ciphers and stream ciphers, Modes of Operation: Electronic Code Book, Cipher Block Chaining Mode, Cipher Feedback mode, Output Feedback mode, Counter mode, Triple DES.	10	25				
5.	Cryptanalysis: Basic Cryptanalysis Techniques, Brute Force Attack, Frequency Analysis.	08	15				
6.	Cryptography and Network Security: Overview of Web Security: SSL/TLS, HTTPS, Email Security: PGP and S/MIME, Virtual Private Networks (VPNs) and IPsec.	04	10				
	TOTAL	45	100				

List of Practical:

Sr. No.	Name of Practical	Hours
1.	Implement a Caesar Cipher for basic encryption and decryption.	02
2.	Write a program to encrypt and decrypt a simple Monoalphabetic Cipher.	02

3.	Implement Vigenère Cipher with key-based encryption/decryption.	02
4.	Visualize the effects of encryption using the Caesar Cipher by testing it on plain text	02
	inputs.	
5.	Implement and test Playfair encryption and decryption using a 5x5 matrix.	02
6.	Implement encryption and decryption using the rail fence technique.	02
7.	Write a program to encrypt and decrypt using columnar transposition.	02
8.	Write a program to encrypt using Hill cipher.	02
9.	Write a program to implement DES encryption and decryption on a given plaintext.	04
10.	Implement AES encryption in ECB mode and CBC mode and perform encryption on	04
	sample text.	
11.	Implement the RSA algorithm for public-key encryption and decryption.	04
12.	Demonstration of Virus, threads and firewall.	02
	ΤΟΤΑΙ	30

Text Book(s):

Title	Author/s	Publication
Cryptography and Network	William Stallings	Pearson Education
Security: Principles and Practice, 7th		

Reference Book(s):

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

Web Material Link(s):

- <u>http://ggu.ac.in/download/Class-Note14/public%20key13.02.14.pdf</u>
- <u>https://onlinecourses.nptel.ac.in/noc19 cs28/preview</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 10 marks.
- Internal viva consists of 10 marks.
- Practical performance/quiz/test consists of 15 marks during End Semester Exam.
- Viva-voce consists of 15 marks during End Semester Exam.

Course Outcome(s):

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

SECE3260 CRYPTOGRAPHY FUNDAMENTALS

CO 1 Understand and Apply Basic Cryptographic Techniques

CO 2	Analyze and Implement Modern Cryptographic Algorithms
CO 3	Evaluate Cryptographic Protocols and Security Services
CO 4	Understand and Apply Cryptanalysis Techniques

Mapping of CO with PO

SECE3260	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	1								1			
CO 2		1			1						1	
CO 3			1			1				1		
CO 4				1				1				

Mapping of CO with PSO

SECE3260	PSO1	PSO2	PSO3
CO 1	1	1	2
CO 2		1	1
CO 3	1	3	
CO 4	1		1

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

Module No	Content	RBT Level
1.	Introduction to Cryptography	1,2
2.	Classical Cryptography Techniques	1,2,3
3.	Modern Cryptographic Algorithms	3,4
4.	Block and Stream Ciphers	2,3,4
5.	Cryptanalysis	2,3, 5
6.	Cryptography and Network Security	2,3, 6

Department of Computer Engineering

Course Code: SECE3271 Course Name: Network Security Prerequisite Course(s): Computer Networks (SECE2240)

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminati	on Schei	ne (Mar	·ks)			
Theory		Dractical	Tutorial Credit		The	eory	Prac	ctical	Tut	orial	Total
The	eory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
3	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

- Understand the principles, approaches, and standards of network security.
- Explore transport-level security mechanisms and email security techniques.
- Implement network defence mechanisms and advanced security protocols.
- Analyze and apply network security tools for monitoring, prevention, and defence.

	Section I								
Module No.	Content	Hours	Weightage in %						
1.	Introduction to Network Security and Standards Introduction: Need for security, Security approaches, Principles of security. Types of Security Attacks and Services: OSI Security Architecture, Model for Network Security, VLAN hopping, Tag stack attack, Broadcast floods, ARP spoofing, DHCP DoS, DHCP and DNS hijacking. Network Security Standards: Security Services, Security Attacks, Security Policies. LAN Security Mechanisms: Control Plane Policing, Link Layer Security, Port/BPDU guard, 802.1AE/encryption, NetFlow, RMON.	06	12						
2.	Transport-Level Security and Email Security Transport-Level Security: Web Security Considerations, Secure Sockets Layer (SSL), Transport Layer Security (TLS), HTTPS standard, Secure Shell (SSH). Email Security: Pretty Good Privacy (PGP), S/MIME, DomainKeys Identified Mail.	06	13						
3.	IP Security and VPNs IP Security: Overview, IP Security Policy, Encapsulating Security Payload, Combining Security Associations, Internet Key Exchange (IKE), VPNs.	04	10						
4.	Network Defence Mechanisms and Advanced Topics Intrusion Detection Systems (IDS): Tools, Password Management, Firewalls (Characteristics, Types, Configurations, ACLs). Network Security Standards and Tools: Traffic Monitoring, Datacentres Security. Advanced Topics: Cloud Infrastructure Security: Topologies, Routing and Addressing, FlowIPS, Cloud Security Solutions.	07	15						
	Section II								
Module No.	Content	Hours	Weightage in %						
5.	Mobile, Wireless, and Secure Mobile Services	06	15						

	Mobile Network Security: Security for 3G, 4G, 5G networks, Kasumi, Platform security, App security, Hardware security. Wireless Network Security: IEEE 802.11i, Wireless Intrusion Detection and Prevention, Wireless Network Positioning, Cellular Jamming Attacks and Mitigation. Secure Mobile Services: Mobile VoIP Security, Mobile App Security.		
6.	Network Security Tools and Techniques Firewall Management: Types of Firewalls, Configuration, and Placement. Access Control Lists (ACLs): Overview, Application in securing Networks. Network Monitoring and Intrusion Prevention: Tools and Techniques for Active Network Defence.	06	15
7.	Security Protocols and Applications Secure Communication Protocols: SSL/TLS for Web Security, SSH for Remote Login, IPSec for VPNs. Web Security Threats: Web Application Security, HTTPS, Secure Email (PGP, S/MIME). VPN and Secure Remote Access: Principles, Configurations, Security Challenges.	06	15
8.	Contemporary Issues in Network Security Emerging Topics: Zero Trust Architecture, Post-Quantum Cryptography, Security Challenges in IoT. Trends: Ethical Hacking and Penetration Testing.	04	05
	TOTAL	45	100

Sr. No.	Name of Practical	Hours
1.	Configure basic firewall rules to control traffic flow and enhance network security	03
2.	Capture and analyze network packets to understand data flow, protocols, and identify potential security issues	03
3.	Implement SSL/TLS certificates on a website to ensure secure communication between the server and the client	03
4.	Set up a Virtual Private Network (VPN) to encrypt communication between a remote client and a server	03
5.	Simulate a DNS spoofing attack to learn how attackers manipulate DNS responses to redirect users to malicious websites	02
6.	Set up and configure an IDS to monitor and analyze network traffic for malicious activities	03
7.	Configure SSH key-based authentication for secure remote access to a server, eliminating the need for password-based authentication	02
8.	Set up lab for IP Spoofing Attack Simulation	02
9.	Perform practical of Nmap to find open ports, OS detection, Service Version detection	03
10.	Simulate VLAN Hopping and ARP Spoofing attacks, then configure defenses to mitigate these attacks	03
11.	Set up a wireless network with WPA3 security and simulate a deauthentication attack	03
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Network Security Essentials	William Stallings	Pearson Publishers
Cryptography and Network	William Stallings	Pearson Publishers
Security- Principles and Practice		

Reference Book(s):

Title	Author(s)	Publication
Foundations of Information	Jason Andress	No Starch Press
Security: A Straightforward		
Introduction		
Security in Computing	Charles P. Pfleeger, Shari Lawrence Pfleeger	Pearson Publishers
	and Jonathan Margulies	

Web Material Link(s):

- <u>https://onlinecourses.nptel.ac.in/noc25_ee54/preview?utm_source=chatgpt.com</u>
- <u>https://www.coursera.org/courses?query=network%20security&utm_source=chatgpt.com</u>
- <u>https://www.youtube.com/watch?v=inWWhr5tnEA&list=PLEiEAq2VkUUJfPOj5nRounXvf3n17PCf</u>
 <u>t</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

SECE3271	NETWORK SECURITY
CO 1	Analyze security threats, attacks, and vulnerabilities in network environments.
CO 2	Implement and configure secure protocols (SSL/TLS, IPsec, SSH) and VPNs for safe communication.
CO 3	Design and deploy network defense systems such as firewalls, intrusion detection/prevention systems, and ACLs.
CO 4	Understand mobile and wireless security concerns and apply appropriate security solutions.
C05	Investigate contemporary security challenges including zero-trust architecture, IoT security, and penetration testing techniques.

Mapping of CO with PO

SECE3271	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	1	1					1			
CO 2	3	2	1		3				1			
CO 3	3	2	3	1	3							
CO 4	3	2	2	1		2						1
CO 5	3	3	2	1	3	2				1		3

Mapping of CO with PSO

SECE3271	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	3	3	2

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

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

Module	Content	RBT Level
No		
1.	Introduction to Network Security and Standards	1, 2
2.	Transport-Level Security and Email Security	2, 3, 4
3.	IP Security and VPNs	2, 3, 4
4.	Network Defence Mechanisms and Advanced Topics	2, 3, 4, 5
5.	Mobile, Wireless, and Secure Mobile Services	2, 3, 4, 5
6.	Network Security Tools and Techniques	3, 4, 5
7.	Security Protocols and Applications	3, 4, 5
8.	Contemporary Issues in Network Security	3, 4, 5, 6

Department of Information Technology

Course Code: SEIT3270 Course Name: Web Technologies Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory	Dractical	Dreatical Tytorial Cre		torial Cradit Theory Pr		Prac	actical Tutorial		orial	Total
Theory	Practical Iutorial	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI	
3	4	0	5	40	60	40	60	0	0	200

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

Section I							
Module No.	Content	Hours	Weightage in %				
1.	Introduction to Web Design: Concept of WWW, Internet and WWW, HTTP Protocol : Request and Response, Web browser and Web servers, Concepts of effective web design, Web design issues including Browser, Display resolution, Page Layout and linking, User centric design, Sitemap, Planning and publishing website, Designing effective navigation	07	20				
2.	HTML: Basics of HTML, formatting and fonts, commenting code, color, hyperlink, lists, tables, images, forms, XHTML, Meta tags, Character entities, frames and frame sets, Browser architecture and Web site structure. Overview and features of HTML5	08	20				
3.	Style sheets: Need for CSS, introduction to CSS, basic syntax and structure, using CSS, background images, colors and properties, manipulating texts, using fonts, borders and boxes, margins, padding lists, positioning using CSS, CSS2, Overview and features of CSS3	07	10				
	Section II						
Module No.	Content	Hours	Weightage in %				
4.	JavaScript: Client side scripting with JavaScript, variables, functions, conditions, loops and repetition, Pop up boxes, Advance JavaScript: Javascript and objects, JavaScript own objects, the DOM and web browser environments, Manipulation using DOM, forms and validations, DHTML : Combining HTML, CSS and Javascript, Events and buttons.	08	20				
5.	PHP: Introduction and basic syntax of PHP, decision and looping with examples, PHP and HTML, Arrays, Functions, Browser control and detection, string, Form processing, Files, Advance Features: Cookies and Sessions, Object Oriented Programming with PHP	08	20				

6.	MySQL: Basic commands with PHP examples, Connection to server, PHP my admin and database bugs	07	10
	TOTAL	45	100

Sr. No.	Name of Practical	Hours
1.	Design web a page for the department timetable containing a suitable header,	04
	footer, description of the course codes and titles, faculty name and initialises, etc.,	
	use href, list tags and add University logo as a background. Using table tag and	
	additional features like spanning rows, columns and table borders. [Refer your	
	class timetable]	
2.	a) Create a form to collect Student feedback. (Use textbox, text area, checkbox,	06
	radio button, select box etc.).	
	b) Create a web page using frame. Divide the page into two parts with Navigation	
	links on left hand side of page (width=20%) and content page on right hand side of	
	page (width = 80%). On clicking the navigation Links corresponding content must	
2	Create a web page using frame. Divide the page into two parts with Nevigation	04
э.	Links on left hand side of page (width=200%) and content page on right hand side of	04
	1000000000000000000000000000000000000	
	he shown on the right-hand side	
4	Write HTML code to develop a webpage having two frames that divide the webpage	04
	into two equal rows and then divide the row into equal columns fill each frame with	01
	a different background colour.	
5.	Create your resume using HTML tags also experiment with colors, text (bold, italic	02
	and different headings), image, link, size and also other related tags.	
6.	Design a web page using CSS with suitable design for the following:	06
	i.Demonstrate different font styles	
	ii.Control the repetition of image with background-repeat property	
	iii.Define style for links as a: link, a: active, a: hover, a: visited	
	iv. Demonstrate Element visibility property	
7.	Design a web page of your institute with an attractive background color, text color,	04
	an Image, font etc. (use internal CSS). Use External CSS to format the class	
	timetable.	
8.	Develop simple calculator for Addition, Subtraction, Multiplication and Division	06
	operation using JavaScript.	
	a) Create HTML Page that contains form with fields Name, Email, Mobile No,	
	Gender, Favorite Color and a button. Write a JavaScript code to validate all the	
	textbox	
g	Write an XHTML document which displays a form containing text elements to input	08
у.	register number sub-code marks in three tests and a button element. Also write	00
	lava script compute the average of two best tests on click of button and print	
	average marks using alert. Validate all the fields using JavaScript.	
10.	a) Write a PHP script to display today's date in dd-mm-vvvv format.	06
	b) Write a PHP script to check whether the number is prime or not when user input	
	a valid number from client side.	
11.	Create HTML page that contain textbox, submit / reset button. Write PHP script to	04
	display this information and also store into a text file.	
12.	Write a PHP script for login authentication. Design an HTML form which takes	06
	Username and Password from user and validate against stored Username and	
	Password in a file.	
	TOTAL	60

Title	Author/s	Publication
Web Design with HTML, CSS, JavaScript and jQuery	by Jon Duckett	Wiley-India

Reference Book(s):

Title	Author(s)	Publication
Web Technologies: HTML,	Kogent Learning Solutions Inc.	Dreamtech Press
JAVASCRIPT, PHP, JAVA, JSP, XML		
and AJAX, Black Book		
Developing Web Applications	Ralph Moseley and M. T.	Wiley-India
	Savaliya	

Web Material Link(s):

Web Technology PDF Download | WT Books, Lecture Notes, Studymaterial

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

SEIT3270	WEB TECHNOLOGIES
CO 1	Understand the fundamental concepts of web technologies
CO 2	Understand and implement client-side and server-side programming
CO 3	Learn HTML, CSS, and JavaScript for web page development
CO 4	Work with databases for dynamic web applications

Mapping of CO with PO

SEIT3270	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	1											
CO 2	1		1									
CO 3					1							
CO 4				1								
CO 5							1					

Mapping of CO with PSO

SEIT3270	PSO1	PSO2	PSO3
CO 1	1		
CO 2		1	
CO 3	1		
CO 4	1		

CO 5	1	
------	---	--

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

Module	Content	RBT Level
No		
1.	Introduction to Web Design	1,2
2.	HTML	1,2,3
3.	Style sheets	3,4
4.	JavaScript	2,3,4
5.	РНР	2,3
6.	MySQL	2,3

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)				Ex	aminati	on Scher	ne (Mar	ks)					
Theory	been Drestical Tytorial		Tutorial Cradit		eory	Prac	ctical	Tut	orial	Total			
Theory	Flattical	Tutoriai	Tutoriai	Tutoriai		Credit	CE	ESE	CE	ESE	CE	ESE	TOLAT
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.

Section I							
Module No.	Content	Hours	Weightage 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 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.	04	15				
	Section II						
Module No.	Content	Hours	Weightage 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 EnvironmentSmart Client Architecture:The Client:User Interface, Data Storage, Performance, DataSynchronization,Messaging.The Server:Data Synchronization,Enterprise Data Source,Messaging.Mobile Operating Systems:Android,iOS,IntroductiontoWearableDeviceOS.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

Sr. No.	Name of Practical	Hours
1.	Setup & Configuration of Wireless Access Point (AP)	04
2.	Implementation of Wireless Network with a number of nodes and different parameters using Simulator.	04
3.	Study of WLAN: Ad Hoc & Infrastructure Mode	04
4.	GSM modem study and 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 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 & Networks	William Stallings	Pearson

Reference Book(s):

Title	Author(s)	Publication
Principles of Mobile Computing	UIWE Hansman, Other Merk, Martin-S-	Springer international
	Nickious, Thomas Stohe	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):

• <u>http://alphace.ac.in/downloads/notes/cse/10cs831.pdf</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 completion of the course, the students will be able to

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

SECE3630	P01	PO2	P03	P04	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

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
0	Network, IoT	

Department of Computer Engineering

Course Code: SEIT3660 Course Name: Web Security Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminati	on Scher	ne (Mar	ks)				
Theory	Drastical Tytorial		Tutorial Cradit		utorial Cradit		eory	Practical		Tutorial		Total
Theory	bry Practical Iutorial	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI		
2	2	0	3	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 web security and potential threats.
- explore modern tools and techniques for securing web applications.
- learn about secure coding practices and protocols.
- apply knowledge in practical scenarios through projects and labs.

Section I							
Module	Contant	Hour	Weightage				
No.	Content	S	in %				
1.	Overview of Web Applications: Introduction history of web applications, interface ad structure, benefits and drawbacks of web applications, Web application Vs Cloud application, Security Fundamentals: Input Validation - Attack Surface Reduction Rules of Thumb- Classifying and Prioritizing Threads, OWASP Top Ten	4	10				
2.	Security Fundamentals: Input Validation, Attack Surface Reduction, Classifying and Prioritizing Threats, Authentication, Authorization, Session Management Fundamentals, Attack Surface: Analysis, Defining, Identifying, Measuring, Assessing, and Managing, Introduction to MITRE Framework, Matrix, Techniques, Benefits	6	20				
3.	Information Gathering: WhoIs, nsLookup, netcraft, Web server fingerprinting, Subdomain enumeration, Fingerprinting frameworks, Hidden resource enumeration, Security misconfigurations, Google hacking database, Shodan HQ	6	20				
	Section II	-					
Module No.	Content	Hour s	Weightage in %				
4.	Web Application Vulnerabilities: Understanding vulnerabilities in traditional client server application and web applications, client state manipulation, cookie-based attacks, SQL injection, cross domain attack (XSS/XSRF/XSSI) http header injection. SSL vulnerabilities and testing - Proper encryption use in web application - Session vulnerabilities and testing - Cross-site request forgery	6	20				
5.	Web Application Mitigations:Http request, http response, rendering and events, html image tags,	6	20				

	image tag security, issue, java script on error, JavaScript timing, port scanning, remote scripting, running remote code, frame and iframe, browser sandbox, policy goals, same origin policy, library import, domain relaxation		
6.	Web Application Tools: Scanning for web vulnerabilities tools: Nikto, W3af, HTTP utilities - Curl, OpenSSL and Stunnel, Application Inspection tools – Zed Attack proxy, Sqlmap. DVWA, Webgoat, Password Cracking and Brute-Force Tools – John the Ripper, L0htcrack, Pwdump, HTC-Hydra, Burp Suite, XSSHunter, sqlmap, Shodan, BuiltWith, Nikto	2	10
	TOTAL	30	100

Sr. No.	Name of Practical	Hours
1.	Deploy and verify HTTPS on a local web server.	3
2.	Perform Search engine footprinting using search engine dorks.	4
3.	Implement CSRF Protection: Secure a web app with CSRF tokens.	4
4.	XSS Mitigation: Implement input sanitization and CSP to secure an application.	3
5.	Simulate and mitigate SQL injection on a vulnerable application.	3
6.	Perform banner grabbing using nmap & netcat.	4
7.	Perform security assessments with OWASP ZAP and Burp Suite.	4
8.	Setup a Web Application Firewall and test its effectiveness.	2
9.	Use Postman to test API authentication and authorization.	3
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Web Application Security A	Sullivan, Bryan, and Vincent Liu	McGraw Hill
Beginner's Guide		Professional

Reference Book(s):

Title	Author(s)	Publication
The Basics of Hacking and	Patrick Engebretson	Elsevier, 2nd Edition
Penetration Testing: Ethical		
Hacking and Penetration Testing		
Made Easy		
Seven Deadliest Web Application	Mike Shema	O'Reilly
Attacks"		
Web Application Security:	Andrew Hoffman	O'Reilly
Exploitation and Countermeasures		
for Modern Web Applications		
The Web Application Hacker	Dafydd Stuttard and Marcus	WILEY
handbook 2	Pinto	

Web Material Link(s):

https://owasp.org/ https://www.fortinet.com/resources/cyberglossary/what-is-web-security https://www.freecodecamp.org/news/tag/web-security/

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

SEIT3660	WEB SECURITY
CO 1	Identify the vulnerabilities in the web applications
CO 2	Apply the security principles in developing a reliable web application.
CO 3	Use industry standard tools for web application security.
CO 4	Apply penetration testing to improve the security of web applications.

Mapping of CO with PO

SEIT3660	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	2	2	3	2	2	1	2	2	1	2
CO 2	3	3	3	2	3	2	2	2	2	2	1	2
CO 3	3	3	2	3	3	2	1	1	1	2	1	2
CO 4	3	3	3	3	3	2	2	2	2	2	1	2

Mapping of CO with PSO

SEIT3660	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	3	2	3
CO 3	3	2	2
CO 4	3	3	3

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

Module No	Content	RBT Level
1.	Overview of Web Applications:	1,2
2.	Security Fundamentals:	1,2
3.	Information Gathering:	1,2,3
4.	Web Application Vulnerabilities:	2,3,4,5
5.	Web Application Mitigations:	3,4,5
6.	Web Application Tools:	3,4,5,6

Department of Computer Engineering

Course Code: SEIT3670 Course Name: Application Security Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminati	on Schei	ne (Mar	ks)				
Theory	Theory Drastical Tutorial Cr		Tutorial Credit		Tutorial Credit		eory	Prac	ctical	Tut	orial	Total
Theory	Flattical	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI		
2	2	0	3	40	60	40	60	0	0	200		

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

- Understand application types and architecture
- Master secure software development life cycle
- Understand secure supply chain management
- Understand cloud and container security principles
- Understand evaluation and mitigate security risks

Section I							
Module No.	Content	Hours	Weightage in %				
1.	Application Types:Introduction,Client/ServerApplications,ComponentsofClient/ServerApplications(Logical & Physical Architecture),WebApplications:AboutWeb Applications,Technologiesused to createWebApplications,ComponentsofWeb ApplicationArchitecture,DataWarehouseApplications:AboutDWApplications,Uses,Physical &LogicalArchitecture,ManagementInformationSystems	06	20				
2.	Understanding secure SDLC Introduction, Application Security Terms & Definition, Application Security Goal, NIST.	04	10				
3.	Defense in Depth: API Security, Content Security Policy, Server-Side Request Forgery, Vulnerability Management, Common Vulnerability Scoring System, Security Misconfiguration.	05	20				
	Section II						
Module No.	Content	Hours	Weightage in %				
4.	Supply Chain Security: Introduction, Supply Chain Defenses, .Software Composition Analysis, Software Bill of Material, Dependency Track.	04	10				
5.	Cloud and Container Security: Introduction to Cloud Security Concepts, AWS Security Pillar, AWS Identity and Access Management, AWS Data Protection, AWS Application Security, Container Security.	06	20				
6.	Basic Threat Modeling: Introduction to Risk Rating, Security Controls, Introduction to Threat Modeling, Types of Threat Modelling, Manual Threat Modeling, Microsoft Threat Model Tool.	05	20				

TOTAL	30	100

Sr. No.	Name of Practical	Hours
1.	Introduction to Secure Coding Environment.	04
2.	Implementing Secure Input Validation Techniques.	04
3.	Threat Modeling Using STRIDE Model.	06
4.	Implementing Encryption Techniques in Applications.	06
5.	Implementing security for cloud data.	06
6.	Compliance & Security Policies Case Study.	04
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Fundamentals of Secure Software	Derek Fisher	Packt

Reference Book(s):

Title	Author(s)	Publication			
Securing Systems: Applied Security	Brook S. E. Schoenfield	CRC Press			
Architecture and Threat Models					
Threat Modeling: Designing for	Adam Shostack	Wiley			
Security					
Security for Containers and	Luigi Aversa	BPB Publications			
Kubernetes					
A Practical Guide to Software	E-Book	Red Hat			
Supply Chain Security					

Web Material Link(s):

- <u>https://github.com/paragonie/awesome-appsec</u>
- <u>https://www.cisa.gov/resources-tools/resources/free-cybersecurity-services-and-tools</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 completion of the course, the students will be able to

SEIT3670	APPLICATION SECURITY
CO 1	Demonstrate Understanding of Application Architectures and Security Principles
CO 2	Implement Secure Software Development Practices
CO 3	Apply Defense-in-Depth Strategies
CO 4	Secure Cloud and Container Environments
CO 5	Perform Threat Modeling and Risk Assessment

Mapping of CO with PO

SEIT3670	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	2	1	1	1	2	1	2	1	2	1	2
CO 2	3	3	3	1	2	2	1	2	3	3	1	3
CO 3	3	3	3	1	3	2	1	2	2	2	1	3
CO 4	3	3	3	3	3	2	3	1	3	3	1	3
CO 5	3	3	3	3	3	2	1	2	3	3	3	3

Mapping of CO with PSO

SEIT3670	PSO1	PSO2	PSO3
CO 1	2	1	2
CO 2	3	1	3
CO 3	3	1	2
CO 4	3	1	3
CO 5	2	1	3

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

Module	Content	RBT Level
NU		
1.	Application Types	1, 2
2.	Understanding secure SDLC	1, 2, 3
3.	Defense in Depth	2, 3, 4
4.	Supply Chain Security	2, 3
5.	Cloud and Container Security	1, 2, 3, 4
6.	Basic Threat Modeling	1, 2, 3, 4, 5

Department of Computer Engineering

Course Code: SECE3920 Course Name: Summer Training Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Examination Scheme (Marks)							
Theory	Practical	Tutorial	Credit	Theory			Practical		Tutorial			
Theory	Practical	Tutorial		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				
Grand Total:					

Course Outcome(s):

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

SECE3920	SUMMER TRAINING
CO 1	Study, analysis and describe about the surrounding industrial environment.
CO 2	Describe use of advanced tools and techniques industry.
CO 3	Interact with industrial personnel and follow engineering practices and discipline prescribed in industry.
CO 4	Develop awareness about general workplace behavior and build interpersonal and team skills.
CO 5	Prepare professional work reports and presentations.

Mapping of CO with PO

SECE3920	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
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

SECE3920	PSO1	PSO2	PSO3
CO 1	2	2	1
CO 2	3	2	2
CO 3	2	1	2
CO 4	1	1	2
CO 5	1	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: SECE3221 Course Name: Internet of Things Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)			Examination Scheme (Marks)							
Theory	Practical	Tutorial Credit		The	eory	Prac	ctical	Tut	orial	Total
Theory	Flactical	Tutoriai	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAI
2	4	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 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						
Module No.	Content	Hours	Weightage 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 Raspberry Pi and its capabilities in IoT, Setting up the Raspberry Pi development environment	04	13				
	Section II						
Module No.	Content	Hours	Weightage in %				
5.	IoT Communication Protocols: IoT Network Layer Protocols: RPL, 6LoWPAN, LoRaWAN, Wireless Connectivity Options: Wi-Fi, Bluetooth/BLE, Zigbee, Cellular, NFC,	06	20				

	Communication Protocols: MQTT, HTTP, CoAP		
6.	IoT Cloud and IoT Applications: Cloud computing models, Cloud services for IoT, IoT Cloud Platforms, IoT data management, Importance of data analytics in IoT, IoT Applications: RFID, iBeacon, Industry 4.0	05	17
7.	IoT Security: Security Concerns in IoT: Data privacy, device vulnerabilities, best practice to Secure IoT: Authentication, authorization, encryption, access control, secure boot, firmware updates, Case study	03	10
	TOTAL	30	100

Sr. No.	Name of Practical	Hours
1.	Understand the fundamentals of IoT hardware and software, including electronics	04
	basics, Arduino IDE setup, and Tinkercad circuit simulation and IoT career	
	pathways.	
2.	Explore GPIO interfacing with Arduino to control digital and analog devices using	04
	sensors, LEDs, buttons, and PWM techniques for motor and brightness control.	
3.	Interface temperature, obstacle/motion, distance measure sensors with Arduino to acquire real-world data and develop mini-projects like temperature monitoring	06
	and motion-activated systems.	
4.	Set up and program NodeMCU/ESP8266 for IoT applications with Wi-Fi connectivity and build basic HTTP offline/online web servers for data communication.	04
5	Develop IoT applications with NodeMCII, integrating sensors like DHT22 to log	06
0.	data using offline http server and MPU6050 to control devices such as LEDs	00
	through gesture recognition.	
6.	Implement MQTT protocol for IoT communication by setting up a broker and	06
	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 actuator	04
	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 data	04
	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	06
	devices via MQTT or HTTP, enabling real-time monitoring and operation.	
11.	Capstone Project	10
	TOTAL	60

Text Book(s):

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

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.
CO 2	Select and interface appropriate sensors, actuators, and microcontrollers for IoT
02	projects.
CO 2	Develop and implement simple IoT applications using Arduino, NodeMCU, and
0.05	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

11 0												
SECE3221	P01	PO2	PO3	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 No	Content	RBT Level
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 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)			Examination Scheme (Marks)							
Theory P	Drastical	Tutorial	Credit	Theory		Practical		Tutorial		Total
	Practical			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 Platform Deployment, Global Exchange of Cloud Resources. Administrating the Clouds, Cloud Management Products, Emerging Cloud Management Standards	06	15			
Section II						
Module	Content	Hours	Weightage in %			
--------	---	-------	-------------------			
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	Hours
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:	Christenhar M. Mayor	Pearson Addison-		
Concepts, Patterns and Projects	Christopher M. Moyer	Wesley Professional		

Cloud Computing Design Patterns Thomas Erl Prentice Hall
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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

010101	
CO 1	Describe various cloud computing features, challenges through various models and
001	services.
CO 2	Apply different approaches of cloud computing system for efficient data storage with
02	minimal cost.
CO 3	Identify various management related services of aws.
CO 4	Distinguish various security and compliance related issues with aws.
CO 5	Deploy applications over commercial cloud computing infrastructures such as amazon.

Mapping of CO with PO

SECE3231	P01	P02	P03	P04	P05	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: SEIT3281

Course Name: Cyber Forensic and Investigation

Prerequisite Course(s): Cybersecurity Foundation(SECE3250)

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Ex	aminati	on Scher	ne (Mar	ks)		
Theory	Dractical	Dractical	Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total
Theory	Flattical	Tutorial	Credit	Crean	CE	ESE	CE	ESE	CE	ESE	TOLAI
2	2	0	3	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 basics of digital forensics technology, systems and services.
- learn about data recovery, data seizure, digital evidence controls and forensics analysis.
- To learn and develop different tools for digital forensic acquisition and analysis.

Course Content:

	Section I							
Module No.	Content	Hours	Weightage in %					
1.	Introduction to Digital Forensics: Digital forensics fundamentals: Use of Computer Forensics - Benefits of Professional Forensics Methodology - Steps Taken by Computer Forensics Specialists - Case Studies - Types of Computer Forensics Technology: Military, Law Enforcement, Business - Specialized Forensics Techniques - Hidden Data and How to Find It - Protecting Data from Being Compromised - Internet Tracing Methods.	4	10					
2.	Forensics Evidence and Capture: Data Recovery: Data Backup and Recovery, Data-Recovery Solution, Hiding and Recovering Hidden Data - Evidence Collection and Data Seizure: Collection of Evidence and Options, Obstacles – Types of Evidence - The Rules of Evidence - Volatile Evidence - Volatile Memory Forensics- Controlling Contamination: The Chain of Custody, Reconstructing the Attack.	5	20					
3.	Data Preservation and Forensics Analysis: Duplication and Preservation of Digital Evidence: Preserving the Digital Crime Scene – Computer Evidence Processing Steps - Legal Aspects of Collecting and Preserving Evidence - Computer Image Verification and Authentication - Computer Forensics Analysis: Discovery of Electronic Evidence - Identification of Data - Reconstructing Past Events - disk and file system analysis.	6	20					
	Section II							
Module No.	Content	Hours	Weightage in %					
4.	Network and Operating System Forensics:Network forensics: Investigation on virtual network and Email,Internet Artifacts – Damaging Computer Evidence - System Testing -Operating System Artifacts: Windows System Artifacts, Linux SystemArtifacts	5	20					
5.	Mobile and Cloud Forensics: Mobile Forensics: Acquisition Procedures for Mobile, Equipment,	6	20					

	Tools, Internet of Anything – Cloud Forensics: Service Levels, cloud vendors, Legal Challenges and Technical Challenges, Acquisition, Investigation, Tools: Open-Stack, F-Response, AXIOM.		
6.	Forensics Tools: Open-source tools: The Sleuth Kit (TSK) and Autopsy - SANS SIFT Investigative tool - Voltality - CAINE investigative environment - windows System Internals-Commercial tools: Encase, FTK, PRO Discover Basic, Nirsoft.	4	10
	TOTAL	30	100

Sr. No.	Name of Practical	Hours
1.	Analyze the memory sample and extract User ID, password, Name of the	4
	computer, and use other volatility plugins.	
2.	Analyze the malicious process from various memory samples.	3
3.	Setup lab for android forensics environment.	3
4.	Perform a practical to bypass screen lock using ADB.	5
5.	Perform a practical to extracting data from call logs and SMS.	5
6.	Familiarize with common forensics tools like Autopsy, FTK Imager, EnCase, and	5
	Sleuth Kit.	
7.	Investigate network traffic and identify malicious activities.	5
	TOTAL	30

Text Book(s):

Title	Author/s	Publication
Digital Forensics with Open-Source Tools:	Cory Altheide, Harlan Carvey	Syngress
Using Open-Source Platform Tools		

Reference Book(s):

Title	Author(s)	Publication
Computer Forensics: Computer crime Scene	John R. Vacca,	Charles River Media
Investigation		
Guide to Computer Forensics and	B. Nelson, A. Phillips, F.	CENGAGE
Investigation	Enfinger, and C. Steuar	
A practical guide to computer forensic	Darren Hayes	Pearson
investigations",		

Web Material Link(s):

- <u>https://www.cyberforensics.in/</u>
- <u>https://www.geeksforgeeks.org/cyber-forensics/</u>
- <u>https://www.splunk.com/en_us/blog/learn/cyber-forensics.html</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

1	
SEIT3281	CYBER FORENSIC AND INVESTIGATION
CO 1	Understand digital forensic methodologies and evidence handling.
CO 2	Apply techniques for data recovery and forensic analysis.
CO 3	Analyze forensic data from systems, networks, and cloud environments.
CO 4	Evaluate forensic tools for investigating cyber incidents.

Mapping of CO with PO

SEIT3281	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	2	2	3	2	1	2	2	2	1	2
CO 2	3	3	3	3	3	2	2	1	2	2	1	2
CO 3	3	3	3	3	3	2	2	2	2	2	1	2
CO 4	3	3	3	3	3	2	2	2	2	2	1	2

Mapping of CO with PSO

SEIT3281	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	3	1	3
CO 3	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 No	Content	RBT Level
1.	Introduction to Digital Forensics:	1,2
2.	Forensics Evidence and Capture:	1,2,4
3.	Data Preservation and Forensics Analysis:	3,4,5
4.	Network and Operating System Forensics:	4,5
5.	Mobile and Cloud Forensics:	4,5
6.	Forensics Tools:	4,5,6

Department of Computer Engineering

Course Code: SECE3560 Course Name: Project-I Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Ex	aminati	on Scher	ne (Mar	ks)			
Theory Drastical T		Tutorial	Tutorial Credit		rial Cradit		eory	Prac	ctical	Tut	orial	Total
Theory	Flattical	i i utoriai		CE	ESE	CE	ESE	CE	ESE	TOLAI		
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	Weightage 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.	-
3.	First Progress Report: Within the initial weeks of commencing the project, students are required to submit a detailed report outlining their progress, achievements, and any challenges encountered.	5
4.	First Review:	10

r		
	This report serves as an early checkpoint, allowing for an assessment of whether the project is on track with the proposed timeline and objectives. Students should highlight key accomplishments, provide insights into the methodologies employed, and address any deviations from the initial plan.	
	Second Progress Report:	
5.	This report explores into the details of the progress made since the First Progress Report and First Review, offering a comprehensive overview of achievements, setbacks, and adaptations to the project plan. Students should reflect on the effectiveness of their methodologies, address any unforeseen obstacles, and demonstrate a proactive approach to overcoming challenges.	5
	Third Progress Report:	
6.	At this stage, students provide a comprehensive update on the continuous evolution of their projects, demonstrating the resilience and adaptability required for successful project development. In the Third Progress Report, students delve into the nuances of their progress since the Second Progress Report, showcasing not only achievements but also a reflective analysis of the journey thus far.	5
	Second Review:	
7.	During this stage, internal evaluators and expert panels engage in a comprehensive assessment of the project's overall development and achievements. The Second Review provides students with an opportunity to present their progress, methodologies, and outcomes to a panel of experts.	10
	Fourth Progress Report:	
8.	In this report, students provide an updated justification of their progress, building on the insights gained from the Second Review. The Fourth Progress Report encapsulates the continuous refinement and optimization of project strategies. Students delve into the accomplishments achieved post-Second Review, addressing any recommendations made by external evaluators.	5
	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 a reflection on the entire project lifecycle, providing insights into the iterative process of development. The students should submit the final report to the mentor which will be further sent for evaluation.	10
	Final Report Evaluation & Final Presentation:	
10.	 During this phase, students present their comprehensive Final Report, encapsulating the entire project lifecycle, methodologies employed, 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. 	50
	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

SECE3560	PROJECT-I				
<u> </u>	Analyze user requirements and implement innovative ideas for social and				
01	environmental benefits.				
CO 2	Apply new technologies and design techniques concerned for devising a solution for				
CU 2	a problem statement.				
<u> </u>	Apply project management skills like task scheduling, teamwork, working in confine				
LU 3	deadlines etc., for successfully development of the project.				
CO 4	Prepare reports and presentations to communicate technical information.				

Mapping of CO with PO

SECE3560	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

SECE3560	PSO1	PSO2	PSO3
CO 1	2	3	2
CO 2	3	2	3
CO 3			1
CO 4			1

Department of Computer Engineering

Course Code: SECE3660

Course Name: Image Processing & Steganography Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminati	on Scher	ne (Mar	ks)		
Theory	Dractical	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,

- Understand the fundamentals of image processing and techniques.
- Design and implement algorithms that perform basic image processing.
- To explore steganography methods for embedding and extracting hidden information in images.
- To understand the role of image processing and steganography in cybersecurity applications.

Course Content:

Section I					
Module No.	Content	Hours	Weightage 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 No.	Content	Hours	Weightage in %		
4.	Image Compression Introduction, coding Redundancy, Inter-pixel redundancy, image compression methods, Lossy and Lossless compression, Huffman coding, Arithmetic coding, LZW coding, IPEG compression standard.	03	12		
5.	Introduction to Steganography Information hiding, steganography, and watermarking, need, and application of steganography, History of watermarking and steganography, Importance of digital watermarking and steganography, Types of steganography: Text, audio, image, and video. Properties of Steganography and Steganalysis System.	04	10		

6.	Image Steganography Introduction. Text and Image steganography: Data hiding in Raw (BMP) images, LSB (Least Significant Bit) embedding, data hiding in palette (GIF) images- Palette format, hiding by decreasing color depth, GIF Shuffle. Data hiding in JPEG images: J-Steg data hiding algorithm.	06	10
7.	Steganalysis Principle, approaches, ROC analysis, attacks using histogram characteristics, function, spatial domain steganalysis	02	08
	TOTAL	30	100

Sr. No.	Name of Practical	Hours
1.	Introduction to Image Processing Toolbox.	04
2.	Read the image and perform 1. RGB to Gray image 2. RGB to Indexed image and 3. Cray to Indexed image	04
3.	Read an 8bit image and then apply different image enhancement techniques: (a) Brightness improvement (b) Brightness reduction (c) Thresholding (d) Negative of an image (e) Log transformation (f) Power Law transformation.	04
4.	Implement different interpolation techniques using MATLAB.	04
5.	Read an image, plot its histogram then do histogram equalization and comment about the result.	04
6.	(a) Implement Gray level slicing (intensity level slicing) in to read cameraman image. (b) Read an 8bit image and to see the effect of each bit on the image. (c) Read an image and to extract 8 different planes i.e. 'bit plane slicing."	06
7.	Implement various Smoothing spatial filter	04
8.	Read an image and apply (1) Gaussian 3x3 mask for burring (2) High pass filter mask with different masks (3) Laplacian operator with center value positive and negative (4) High boost filtering.	06
9.	Write a program to implement various low and high pass filters in the frequency domain.	04
10.	Introduction to Steganography tools and libraries.	
11.	Write a program to hide a secret message (in text) inside a grayscale image by modifying the least significant bit of the image pixels.	04
12.	Develop a program to encode and decode a secret message in an image using pixel intensity values.	04
13.	Study the application of steganography in secure communication and prepare a short report.	04
	TOTAL	60

Text Book(s):

Title	Author/s	Publication
Digital Image Processing	Rafael C. Gonzalez, Richard E. Woods	Pearson Education
Fundamentals Digital Image	ITL Education Solutions Limited	Prentice Hall India
Processing		Learning
Digital Watermarking	I.J.Cox, M.L.Miller	Morgen Kaufmann
and steganography		_

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
Steganography in Digital Media	J. Fridrich	Cambridge University Press

Web Material Link(s):

- https://nptel.ac.in/courses/106105032/
- What is Steganography? A Complete Guide with Types & Examples
- Image Steganography in Cryptography GeeksforGeeks

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

SECE3660	IMAGE PROCESSING & STEGANOGRAPHY
CO 1	Understand fundamental image processing concepts and their applications in
C0 1	cybersecurity.
CO 2	Analyze and implement basic image enhancement and restoration techniques.
CO 3	Design and evaluate image-based steganographic techniques for secure
0.0	communication.
CO 4	Apply steganalysis techniques to detect and prevent hidden information misuse.

Mapping of CO with PO

SECE3660	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3	2			2						
CO 2	3	3	3	2	2	2						
CO 3	3	3	3	3	3	3	2					
CO 4	3	3	3	3	3	2	2	2	3	2	2	3

Mapping of CO with PSO

SECE3660	PSO1	PSO2	PSO3
CO 1	3	2	2
CO 2	3	3	2
CO 3	3	3	3
CO 4	3	3	3

Level of Revised Bloom's Taxonomy in Assessment

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

Module	Content	RBT Level
No		
1.	Introduction to Digital Image Fundamentals	1,2
2.	Image Enhancements	1,2,4
3.	Image Restoration and Reconstruction	3,4
4.	Image Compression	3,4
5.	Introduction to Steganography	2,3
6.	Image Steganography	3,5,6
7.	Steganalysis	4,5,6

Department of Information Technology

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Ex	aminati	on Scher	ne (Mar	ks)	
Theory	Dractical	Tutorial	Futarial Cradit		eory	Prae	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.

Course	Content:

Section I						
Module No.	Content	Hours	Weightage 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					
Module No.	Content	Hours	Weightage in %			
4.	PHP MVC Framework – Laravel Introduction to Laravel and MVC, Environment Setup, Routes, Namespaces, Controllers, Views, Blade Templates, Migrations, Request-Response cycle, Redirections, Forms, Sessions, Cookies, Database Connectivity, and CRUD operations.	09	15			
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	08	15			

	Node.js with Angular.		
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

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	02
Ζ.	Function	
3.	Develop a Web Application in PHP Using Constructor and Destructor	02
4.	Write a PHP Program to Calculate Date and Time Functions	02
F	Create a Web Page to Advertise a Product of the Company Using Images and	02
э.	Audio	
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 Education
Science Perspective		
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):

CI		A DUANCED MED TECHNOLOGIEC
Afte	er the com	pletion of the course, the following course outcomes will be able to:

SEIT3640	ADVANCED WEB TECHNOLOGIES			
C01	dentify the basic concepts of web & markup languages.			
CO2	Develop web applications using scripting languages & frameworks.			
CO3	Creating controller working with and displaying in angular js and nested forms with ng-			
003	form.			
CO4	Working with the files in react is and constructing elements with data.			
CO5	Develop dynamic web pages with usage of server-side scripting NodeJS and MongoDB.			

Mapping of CO with PO

SEIT3640	P01	PO2	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
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	PS01	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

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Department of Information Technology

Course Code: SEIT3650

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

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Ex	aminati	on Schei	ne (Mar	ks)	
Theory	Dractical	Tutorial Credit		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.

т

	Section I					
Module No.	Content	Hours	Weightage 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 Engineering, Real Estate, Biology and Medicine, Virtual Mall, VR in Education, Virtual Laboratory, Factory Planning, Automobile Industry.	05	15			
	Section II					
Module No.	Content	Hours	Weightage in %			
5.	VR Development Tools and Frameworks Introduction to VR development platforms (Unity, Unreal Engine).	04	16			

Course Content:

	Creating 3D environments for VR, Basics of VR interactions and animations, Integration of audio and spatial effects in VR		
6.	Interaction Techniques in AR/VR Interaction design principles for AR/VR, Gesture recognition and tracking, Voice and eye-tracking in AR/VR systems	05	15
7.	AR/VR Project ImplementationProject planning and development lifecycle, Designing an end-to-endAR/VR solution, Presentation and evaluation of projects	04	12
	TOTAL	30	100

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 Reality:	Taylor & Francis Group	CRC Press,
Applications in Education and		
Industry		
Understanding Virtual Reality:	William R Sherman and	Understanding Virtual
Interface, Application and Design		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 Kuijff,	Addison Wesley
Practice	Joseph J LaViola	

Web Material Link(s):

- https://nptel.ac.in/courses/106/106/106106138/
- <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.

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.

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

<u>Mapping of CO</u> 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 AR	2,4.5
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

Department of Information Technology

Course Code: SEIT3680

Course Name: Disaster Recovery and Business Continuity Management Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)					Ex	aminati	on Scher	ne (Mar	ks)	
Theory	Theory Practical Tutorial	Cradit	The	eory	Prac	ctical	Tut	orial	Total	
Theory		Practical	Credit	CE	ESE	CE	ESE	CE	ESE	TOLAT
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 fundamental concepts of disaster recovery (DR) and business continuity management (BCM).
- Enable students to design, implement, and maintain comprehensive disaster recovery and business continuity plans.
- Provide practical experience in managing disruptions through hands-on labs, case studies, and simulation exercises.

	Section I		
Module No.	Content	Hours	Weightage in %
1.	Introduction to Disaster Recovery and Business Continuity Overview of DR and BC, Key Terminologies, and Importance in IT and Enterprise, Regulatory Standards (ISO 31000, ISO 22301) and Evolution of BC/DR Practices.	03	12
2.	Business Continuity Management (BCM) Principles of BCM, Lifecycle, and Framework, Governance, Policy Development, and Team Structure, Roles and Responsibilities in BCM.	04	15
3.	Risk Assessment and Business Impact Analysis (BIA) Conducting Risk Assessments and Identifying Critical Processes, Risk Mitigation Strategies and Business Impact Analysis Methodology, Quantitative and Qualitative Impact Metrics.	05	15
4.	Disaster Recovery Planning Steps to Develop DR Plans, Policies, and Procedures, Defining RTO, RPO, and Selection of Disaster Recovery Sites, Integration of BC/DR with Organizational Strategy.	05	15
	Section II		
Module No.	Content	Hours	Weightage in %
5.	Data Backup and Recovery Strategies Data Backup Techniques (Full, Incremental, Differential) and Storage Solutions, Recovery Techniques and Data Security Considerations, Virtualization-Based Disaster Recovery.	04	16
6.	System Recovery and Testing Centralized vs. Decentralized Recovery and IT Infrastructure Recovery, Disaster Recovery Testing, Simulation, and Evaluation, Training and Awareness Programs.	05	15
7.	Emerging Trends in BC/DR	04	12

Course Content:

Use of Virtualization for BC/DR, Cybersecurity Considerations in BC/DR, Case Studies and Real-World Applications		
TOTAL	30	100

Sr. No.	Name of Practical	Hours
1.	Simulate disaster scenarios and develop a basic disaster recovery plan for a small IT organization.	03
2.	Conduct a risk assessment for an IT infrastructure using simple tools and techniques to identify vulnerabilities.	03
3.	Perform a business impact analysis to prioritize critical operations and estimate downtime costs in a sample case study.	03
4.	Create and implement a basic data backup strategy using local storage and cloud platforms.	03
5.	Restore data from backup and evaluate the effectiveness of the recovery process under simulated disaster conditions.	03
6.	Design a virtualized disaster recovery environment and test failover mechanisms using open-source virtualization tools.	03
7.	Develop a centralized system recovery plan for critical business applications and simulate a recovery process.	03
8.	Test a sample disaster recovery plan by simulating a server failure and evaluate the recovery time objectives.	03
9.	Identify and map roles and responsibilities for a business continuity team in a mock organization setup.	03
10.	Analyze case studies on disaster recovery failures and propose actionable improvements for prevention and resilience.	03
	TOTAL	30

Text Book(s):

Title	Author/s	Publication		
Business Continuity and Disaster				
Recovery Planning for IT	Sucan Spedakor	Syngress Media,U.S.		
Professionals	Susan Sheuakei			
Disaster Recovery and Business	Theiendre Creeniver	IT Governance		
Continuity	Thejenura Sreenivas	Publishing		

Reference Book(s):

Title	Author(s)	Publication
Disaster Recovery Procedures for Business Continuity Management (Professional's Ready-To-Use Procedure)	Bizmanualz	Bizmanualz, Inc.
Business Continuity and Disaster Recovery for InfoSec Managers	John W. Rittinghouse	Digital Press

Web Material Link(s):
<u>https://www.youtube.com/@dcencompass</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

SEIT3680	DISASTER RECOVERY AND BUSINESS CONTINUITY MANAGEMENT
CO 1	Develop skills to design, implement, and manage effective disaster recovery and
	business continuity plans for organizational resilience.
CO 2	Analyze and assess risks to identify critical business functions and create strategies to
CU 2	mitigate potential disruptions effectively.
CO 2	Demonstrate proficiency in utilizing tools and techniques for data backup, recovery,
LU 3	and system restoration in disaster scenarios.
CO 4	Apply industry standards and regulatory frameworks to ensure compliance in
CU 4	business continuity and disaster recovery practices.

Mapping of CO with PO

SEIT3680	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	3	3		1	3					2	3	1
CO 2	3	2			3							1
CO 3	3	2	1	3	3					2	3	1
CO 4	3	2				3			3	2		1
CO 5	3	3	1		2					1	3	1

Mapping of CO with PSO

SEIT3680	PSO1	PSO2	PSO3
CO 1	3	3	3
CO 2	2	2	3
CO 3	3	2	
CO 4	3	2	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 Disaster Recovery and Business	1,2
	Continuity	
2.	Business Continuity Management (BCM)	1,2,3,6

3.	Risk Assessment and Business Impact Analysis (BIA)	3,4,5
4.	Disaster Recovery Planning	2,3,4,6
5.	Data Backup and Recovery Strategies	2,3,4,6
6.	System Recovery and Testing	2,3,5
7.	Emerging Trends in BC/DR	2,3

P P Savani University Training and Placement Cell

Course Code: TNPC3010

Course Name: Corporate Grooming & Etiquette Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Ex	aminati	on Schei	ne (Mar	·ks)		
Theory	Due eti eel	Tutorial	Creadit	The	eory	Pra	ctical	Tut	orial	Total
Theory	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
01	02	00	02	0	0	50	50			100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s) of the Course:

To help learners to

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

Course Content:

Section – I				
Module No.	Content	Hours	Weightage in %	
	Corporate Grooming			
	Introduction to corporate culture			
1	Corporate Expectations	03	25	
	Need of Self-Grooming to the Corporate Expectations			
	Understanding and importance of Professionalism			
	Personal Skills			
2	Behavioral skills, Language Skills, Knowledge Skills, Problem	04	25	
	Solving Skills, Developing professional attitude			
	Section – II			
2	Management Skills	04	25	
5	Self-management, Time management, Work life balance	04	25	
	Organizational Etiquettes			
4	General Workplace Etiquettes	0.4	25	
	Presentation Etiquettes	04	25	
	Meeting Etiquettes			

List of Practical:

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

Reference Book(s):

Title	Author/s	Publication
Grooming and Etiquette for Corporate Men and Women	John Chibaya Mbuya	2009

Effective Communication Skills for Public Relations	Andy Green	Kogan Page, 2006
Personality Development and Soft Skills	Barun Mitra	Oxford University Press, 2016
The EQ Edge: Emotional Intelligence and Your Success	Stein, Steven J. & Howard E. Book	Wiley & Sons, 2006.
Cross Cultural Management: Concepts and Cases	Madhavan	Oxford University Press, 2016
Corporate Grooming and Etiquette	Sarvesh Gulati	Rupa Publications India Pvt. Ltd., 2012
Behavioral Science: Achieving Behavioral Excellence for Success	Dr. Abha Singh	John Wiley & Sons, 2012

Course Evaluation:

Practical

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

Course Outcome(s):

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

TNPC3010	CORPORATE GROOMING & ETIQUETTE
CO 1	Understand the importance of professional etiquettes and ways to improve the same.
CO 2	Gain the knowledge and practice of skill sets required in corporate set up.
CO 3	Learn personal management skills in the organizational context.
CO 4	Develop an awareness about the corporate etiquettes.
CO 5	Understand the importance of self-grooming

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	Corporate Grooming	1,2,3,4,5
2	Personal Skills	1,2,3,4,5,6
3	Management Skills	1,2,3,4,5
4	Organizational Etiquettes	2,3,4,5

Department of Computer Engineering

Course Code: SECE3490 Course Name: MOOC Course / University Elective Prerequisite Course(s): --

Teaching & Examination Scheme:

Teaching Scheme (Hours/Week)				Examination Scheme (Marks)						
Theory Practical	Tutorial	Credit	Theory		Practical		Tutorial		Total	
	Practical	Tutorial	Credit	CE	ESE	CE	ESE	CE	ESE	Total
03	-	-	03	100	-	-	-	-	-	100

CE: Continuous Evaluation, ESE: End Semester Exam

Objective(s)of the Course:

To help the learners to

• Learn new subjects as per recent trends in the industry from national experts.

Course Content:

Performance analysis will be based on any one of the following subjects:

- 1. Deep Learning
- 2. Computer Graphics
- 3. Computer Vision
- 4. Design Engineering
- 5. Neural Networks
- 6. Applied Natural Language Processing
- 7. Social Networks
- 8. Virtual Reality
- 9. Augmented Reality
- 10. Real time systems
- 11. Big Data
- 12. Advanced graph theory
- 13. Theory of computation
- 14. Design And Engineering Of Computer Systems
- 15. Ethical Hacking
- 16. UI & UX
- 17. Data Analytics
- 18. Data Visualization
- 19. Algorithms For Big Data
- 20. Compiler Design

Or any other MOOC course; available time to time.

Course Evaluation:

Practical:

- Continuous Evaluation as per the guidelines of Course assignments/Internal Exams.
- The Course assignments/Internal Exams score will be directly fetched and converted out of 100.

Course Outcome(s):

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

SECE3490	MOOC COURSE / UNIVERSITY ELECTIVE
CO 1	Inculcate mode of self-learning.
CO 2	Exposure to relevant and newest tools and technologies.
CO 3	Value addition when the student is applying for jobs.
CO 4	Use MOOC program for GATE and high studies preparation.
CO 5	Facilitate students to attain certificate and to make them employable in the industry or pursue higher education program.

Mapping of CO with PO

SECE3490	P01	P02	P03	P04	P05	P06	P07	P08	P09	P010	P011	P012
CO 1	1		1		2	1	1		1			1
CO 2	1		2	2	2				1	1		2
CO 3		2	2	2	2			1		2		
CO 4	2	1		1	1	1				1		2
CO 5						1		1		2		3

Mapping of CO with PSO

SECE3490	PSO1	PSO2	PSO3
CO 1	2	2	3
CO 2	3	2	2
CO 3	2	3	3
CO 4	3	3	2
CO 5	3	3	3