



(An Autonomous Institution Affiliated to Anna University-Chennai

Approved by AICTE – Accredited by NBA New Delhi)

Elayampalayam, Tiruchengode – 637 205, Namakkal District, Tamilnadu.

CURRICULUM

FOR

B.E. COMPUTER SCIENCE AND ENGINEERING

REGULATION 2019

(After 14th BoS)

Curriculum and Syllabus (1 to 8 Semester)





B.E. COMPUTER SCIENCE AND ENGINEERING REGULATIONS – 2019

PROGRAMME EDUCTIONAL OBJECTIVES (PEOs):

PEO 1

Graduates will have successful careers with strong fundamental and technical skills in industry that meet the needs of Indian and multinational companies.

PEO 2

Graduates will become successful entrepreneurs with determination, development, self-reliance, leadership, ethic and moral values to exploit employability.

PEO 3

Graduates will pursue higher education and engage in lifelong learning to foster personal and organizational growth.

PROGRAMME OUTCOMES (POs):

Graduates of Computer Science and Engineering can able to:

PO1: Engineering Knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem Analysis: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/Development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct Investigations of Complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern Tool Usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: The Engineer and Society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Environment and Sustainability: : Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development

PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice

PO9: Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: 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.

PO11: 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 and in multidisciplinary environments.

PO12: Life-Long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

Graduates of Computer Science and Engineering can able to

PSO1: Develop computational solution to complex real world problems with modern programming tools

PSO2: Demonstrate basic knowledge of computer applications and apply standard practices in developing feasible solutions for IT enabled services

MAPPING OF PROGRAMME EDUCTIONAL OBJECTIVES (PEO) WITH PROGRAMME OUTCOMES (PO)

				P	ROGRA	MMF	E OUT	COM	ES			
PEO	Po1	Po2	Po3	Po4	Po5	Po6	Po7	Po8	Po9	Po10	Po11	Po12
1		\checkmark	\checkmark	\checkmark						\checkmark		\checkmark
2	\checkmark					\checkmark						
3					\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark

Course Articulation Matrix (CO – PO & PSO Mapping)

Sub Code	Sub Name	Se m	Po 1	Po 2	Po 3	Po 4	Po 5	Po 6	Po 7	Po 8	Po 9	Po 10	Po 11	Po 12	PS O 1	PS O2
U19MA101	Calculus	1	3	3	3	3									2	1
U19EN101	English For Communication- I	1						2			3	3		3		2
U19PH105	Engineering Physics	1	3	2	1	2	1	2							1	2
U19CS101	Programming for Problem Solving	1	3	3	3	2	2							2	3	2
U19GE101	Engineering Graphics	1	3	3	2	3	3								2	2
U19PH106	Physics Laboratory	1														
U19CS102	Computer Practices Laboratory	1	3	3	3	1	3			2	2	3		2	3	2
U19MA202	Linear Algebra and Ordinary Differential	2	3	3	3	2	1								2	1
U19EN202	English For Communication- II	2						2			3	3		3	2	2
U19CH207	Engineering Chemistry	2	3	3	2	2	1	2	2				1	2	2	1
U19EE201	Basic Electrical and Electronics Engineering	2	3	2		2								3	3	2
U19GE202	Basic Civil and Mechanical Engineering	2	3	3	2	1	2								2	1
U19CS203	Python Programming	2	3	3	1	1	2							2	3	2
U19CH208	Chemistry Laboratory	2	3	3	1	2	2	1	1					1	1	2
U19GE203	Engineering Practices Laboratory	2	3	2	3	3	2	1			2				2	1
U19MA304	Discrete Mathematics	3	3	3	2	2								2	2	2
U19CS304	Data Structures	3	3	3	3	2	2				1	2		2	2	3

U19CS305	Database Management Systems	3	3	3	3	2	2		1	1	1		1	2	2
U19CS306	Digital Logic Design	3	3	3	1	2	1				2		1	3	2
U19CS307	Object Oriented Programming	3	3	2	2	3	3			1	2			3	3
U19CS308	Data Structures Laboratory	3	3	3	3	2	2			2	2		2	3	3
U19CS309	Database Management Systems Laboratory	3	1	2	3	3	2		1	1	2		1	3	2
U19EN301	Communication Skills Laboratory	3						2		3	3		3		3
U19MA405	Statistics and Numerical Methods	4	3	3										2	
U19CS410	Computer Organization	4	3	2	1		1						1	3	2
U19CS411	Design and Analysis of Algorithms	4	2	3	2	3								2	2
U19CS412	Open Source Software	4	3	3	3	2	2			2		2	2	2	3
U19CS413	Operating Systems	4	3	3	2	2							2	2	2
U19CS414	Web Technology	4	3	1	3	1	3						2	2	3
U19CS415	Operating Systems Laboratory	4	3	3	3	2							2	3	2
U19CS416	Web Technology Laboratory	4	3	3	3	2	1			2			2	3	2
U19CS519	Artificial Intelligence	5	2	2	1		1	1		1	1			2	2
U19CS520	Computer Networks	5	3	3	3	2	1				2		2	2	2

U19CS521	Microprocessor and Interfacing	5	2	2	1		1	1			1	1			2	2
U19CS522	Theory of Computation	5	3	3	3	1	1			2	1	2		3	3	2
U19CS523	Computer Networks Laboratory	5	3	2	3	2	3			2	3	3		2	2	2
U19CS524	Hardware Laboratory	5	3	3	3		1				2	2		1	2	2
U19CS625	Cloud Computing	6	2	2	3	2	2			3	2	3		2	2	3
U19CS626	Compiler Design	6	3	3	3	2	2		1		2	1		2	3	3
U19CS627	Internet of Things	6	3	2	3	1	1				1	1		2	3	3
U19IT620	Software Engineering	6	3	2	1	1									3	3
U19CS628	Compiler Design Laboratory	6	3	3	3		2					2		2	2	2
U19CS629	Cloud and IoT Laboratory	6	3	3	3		2							2	2	2
U19CS730	Machine Learning	7	3	2	2	2	2						2	2	2	2
U19CS731	Mobile Computing	7	2	3	2	2	2							1	2	3
U19CS732	Machine Learning Laboratory	7	2	3	2	3	2						2	2	2	2
U19CS733	Internship Training and Summer Project	7	2	2	3	3	3			2	2	3	3	2	3	3
U19CSE01	Advanced Java & Framework		2	2	3	2	3				2				3	3
U19CSE02	Cyber Security		2	2	3		2	3							2	2
U19CSE03	Data Warehousing and Data Mining		2	2	1	2	2							3	3	2

U19CSE04	Security in Computing	2	2	2	2	2	2							2	2
U19CSE05	Smart Sensor Technologies	2	3	2	2						3			2	2
U19CSE06	Advanced Database Systems	2	2	3	3	2							2	2	3
U19CSE07	Cryptography and Network Security	3	3	2	2	2							2	2	2
U19CSE08	Data Science and Analytics	3	3	3	2	1							2	3	2
U19CSE09	Embedded Systems	2	2	2		1								2	2
U19CSE10	Semantic Web	2	3	2										2	1
U19CSE11	Computer Graphics and Multimedia Systems	2	2	2		1								2	2
U19CSE12	Cyber Law and Ethical Hacking	2	2	3		2	3							2	2
U19CSE13	Design Thinking	2	3	2	2	2								2	2
U19CSE14	Mobile Adhoc Networks	2	2	2		1								2	2
U19CSE15	Soft Computing	2	3	2	2	2							1	2	3
U19CSE16	Digital Image Processing	2	3	2	2	2								2	2
U19CSE17	Game Theory	2	2	2		1								2	2
U19CSE18	Professional Ethics in Engineering	2	1	2			2	1	3					1	2
U19CSE19	Social Network Analysis	2	2	2		1								2	2
U19CSE20	Total Quality Management	3	3	3	2					2		2		2	3
U19CSE21	Agile Software Development	1				2				2	1	2	2	1	2
U19CSE22	Fundamentals of Deep Learning	3	2	2	2	2						2	2	2	2
U19CSE23	Information Security	2	2	3		2	3							2	2

U19CSE24	Knowledge Management		2	3	2	2	2								2	2
U19CSE25	Wireless Sensor Networks		3	3	3	2	1					2		2	2	2
U19CSE26	E-Commerce		3	3	3	2								2	3	2
U19CSE27	Green Computing		3	3	3										3	2
U19CSE28	Parallel and Distributed Computing		3	3	3	2									3	2
U19CSE29	Software Testing and Quality Assurance		3	3	1						2				2	3
U19CSE30	Software Project Management		3	3	3	2					2		2		2	3
U19CSOE1	Introduction to IoT		2	2	3	3		2						2	2	3
U19CSOE2	Ethical Hacking		2	3		2	2			2					2	3
U19CSOE3	Smart Sensor Technologies		2	2	3		2	2							2	2
U19CSOE4	Web Designing		2	2	2	2	3								3	2
U19CSOE5	Data Analytics		3	3	3	3	2							2	2	3
U19CSOE6	Enterprise Java		3	3	3	2	2							1	2	3
U19CSOE7	Open Source Software		2	1	3	2	1					1		2	2	3
U19CSOE8	Python Programming		3	3	1	1	2							2	3	2
U19CS834	Project Work	8	2	3	3	2	2	2	3	3	2	3	3	3	2	3

HUMANITIES AND SOCIAL SCIENCES COURSES (HSC)

S.NO	COURSE CODE	COURSE NAME	CATEGORY	CONTACT PEROIDS	L	Т	Р	С
1.	U19EN101	English For Communication- I	HSC	3	3	0	0	3
2.	U19EN202	English For Communication- II	HSC	3	3	0	0	3

BASIC SCIENCE COURSES (BSC)

S.NO	COURSE CODE	COURSE NAME	CATEGORY	CONTACT PEROIDS	L	Т	Р	С
1.	U19MA101	Calculus	BSC	4	3	1	0	4
2.	U19PH105	Engineering Physics	BSC	3	3	0	0	3
3.	U19PH106	Physics Laboratory	BSC	4	0	0	4	2
4.	U19CH207	Engineering Chemistry	BSC	3	3	0	0	3
5.	U19MA202	Linear Algebra and Ordinary Differential Equations	BSC	4	3	1	0	4
6.	U19CH208	Chemistry Laboratory	BSC	4	0	0	4	2
7.	U19MA304	Discrete Mathematics	BSC	4	3	1	0	4
8.	U19MA405	Statistics and Numerical Methods	BSC	4	3	1	0	4

ENGINEERING SCIENCE COURSES (ESC)

S.NO	COURSE CODE	COURSE NAME	CATEGORY	CONTACT PEROIDS	L	Т	Р	С
1.	U19CS101	Programming for Problem Solving	ESC	3	3	0	0	3
2.	U19GE101	Engineering Graphics	ESC	3	3	2	0	3
3.	U19CS102	Computer Practices Laboratory	ESC	4	0	0	4	2
4.	U19EE201	Basic Electrical and Electronics Engineering	ESC	3	3	0	0	3

5.	U19GE202	Basic Civil and Mechanical Engineering	ESC	3	3	0	0	3
6.	U19CS203	Python Programming	ESC	3	2	0	2	3
7.	U19GE203	Engineering Practices Laboratory	ESC	4	0	0	4	2
8.	U19CS306	Digital Logic Design	ESC	3	3	0	0	3
9.	U19CS410	Computer Organization	ESC	3	3	0	0	3
10.	U19CS521	Microprocessor and Interfacing	ESC	3	3	0	0	3
11.	U19CS524	Hardware Laboratory	ESC	4	0	0	4	2

PROFESSIONAL CORE COURSES (PCC)

S.NO	COURSE CODE	COURSE NAME	CATEGORY	CONTACT PEROIDS	L	Т	Р	С
1.	U19CS304	Data Structures	PCC	3	3	0	0	3
2.	U19CS305	Database Management Systems	PCC	3	3	0	0	3
3.	U19CS307	Object Oriented Programming	PCC	4	2	0	2	3
4.	U19CS308	Data Structures Laboratory	PCC	4	0	0	4	2
5.	U19CS309	Database Management Systems Laboratory	PCC	4	0	0	4	2
6.	U19CS411	Design and Analysis of Algorithms	PCC	3	3	0	0	3
7.	U19CS412	Open Source Software	PCC	3	2	0	2	3
8.	U19CS413	Operating Systems	PCC	3	3	0	0	3
9.	U19CS414	Web Technology	PCC	3	3	0	0	3
10.	U19CS415	Operating Systems Laboratory	PCC	4	0	0	4	2
11.	U19CS416	Web Technology Laboratory	PCC	4	0	0	4	2
12.	U19CS519	Artificial Intelligence	PCC	3	3	0	0	3
13.	U19CS520	Computer Networks	PCC	3	3	0	0	3

14.	U19CS522	Theory of Computation	PCC	3	3	0	0	3
15.	U19CS523	Computer Networks Laboratory	PCC	4	0	0	4	2
16.	U19CS625	Cloud Computing	PCC	3	3	0	0	3
17.	U19CS626	Compiler Design	PCC	3	3	0	0	3
18.	U19CS627	Internet of Things	PCC	3	3	0	0	3
19.	U19IT620	Software Engineering	PCC	3	3	0	0	3
20.	U19CS628	Compiler Design Laboratory	PCC	4	0	0	4	1
21.	U19CS629	Cloud and IoT Laboratory	PCC	4	0	0	4	2
22.	U19CS730	Machine Learning	PCC	3	3	0	0	3
23.	U19CS731	Mobile Computing	PCC	3	3	0	0	3
24.	U19CS732	Machine Learning Laboratory	PCC	4	0	0	4	2

EMPLOYABILITY ENHANCEMENT COURSES (EEC)

S.NO	COURSE CODE	COURSE NAME	CATEGORY	CONTACT PEROIDS	L	Т	Р	С
1.	U19EN301	Communication Skills Laboratory	EEC	2	0	0	2	1
2.	U19CS733	Internship Training and Summer Project	EEC	8	0	0	8	4
3.	U19CS834	Project Work	EEC	16	0	0	16	8

S.No	Category	Credit Per Semester										
		1	2	3	4	5	6	7	8			
1	HSC	3	3							6		
2	BSC	9	9	4	4					26		
3	ESC	8	11	3	3	5				30		
4	PCC			13	16	11	15	8		63		
5	PEC					3	3	6	6	18		
6	EEC			1				4	8	13		
7	OEC					3	3	3		9		
	Total	20	23	21	23	22	21	21	14	165		

Credit Distribution

	VIVEKANANDHA COLL (Autonomous Institution, Elayampalay	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
Programme	B.E. / B.Tech. P.	rogramme C	ode			Reg	ulation	n 2	019		
Department	COMPUTER SCIENCE AND EN	GINEERIN	Ĵ			Se	emester		I		
(Ap	CU plicable to the students admitted	J RRICULU d from the a	J M cade	mic ye	ear 201	9 - 2020	onwa	rds)			
Course	Course Name	Category	Per	iods /	Week	Credit	Max	imum	mum Marks		
Code	Course Maine		L	Т	Р	С	CA	ESE	Total		
THEORY											
U19MA101	Calculus* BSC 3 1 0 4 50							50	100		
U19EN101	English For Communication- I *	HSC	3	0	0	3	50	50	100		
U19PH105	Engineering Physics ^{\$}	BSC	3	0	0	3	50	50	100		
U19CS101	Programming for Problem Solving*	ESC	3	0	0	3	50	50	100		
U19GE101	Engineering Graphics*	ESC	2	0	3	3	50	50	100		
	I	PRACTICA	L								
U19PH106	Physics Laboratory ^{\$}	BSC	0	0	4	2	50	50	100		
U19CS102	Computer Practices Laboratory*	ESC	0	0	4	2	50	50	100		
	MANDA	ATORY CO	OUR	SES							
	Mandatory Course - I	MC	3	0	0	0	100	-	100		
	Total 20 450 350 800										

BSC - Basic Science Courses, ESC- Engineering Science Courses, MC - Mandatory courses, HSC-Humanities and Social Sciences, CA- Continuous Assessment, ESE - End Semester Examination.

*Common for all branches

\$ Common for CSE,CST,IT,BT

	VIVEKANANDHA (Autonomous Inst Elayar	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
Programme	B.E. / B.Tech.	Pr	ogramme Co	ode			Regu	lation	20	019	
Department	COMPUTER SCIENCE A	AND EN	GINEERING	Ť			Sen	nester		II	
(Ap	plicable to the students a	CU dmitted	RRICULU from the a	J M cadei	mic ye	ear 2019	9 - 2020	onwai	ds)		
Course	Course Name		Catal	Per	iods /	Week	Credit	Max	imum	Marks	
Code	Course rvanie		Category	L	Т	Р	С	CA	ESE	Total	
	THEORY										
U19MA202	Linear Algebra and Ord Differential Equations	inear Algebra and Ordinary Differential Equations α BSC 3 1 0 4 50 50 100									
U19EN202	English For Communic II $^{\alpha}$	HSC	3	0	0	3	50	50	100		
U19CH207	Engineering Chemistry	,*	BSC	3	0	0	3	50	50	100	
U19EE201	Basic Electrical and Electronics Engineering	g ^{\$}	ESC	3	0	0	3	50	50	100	
U19GE202	Basic Civil and Mechan Engineering ^{α}	nical	ESC	3	0	0	3	50	50	100	
U19CS203	Python Programming &	:	ESC	2	0	2	3	50	50	100	
		Р	RACTICA	L							
U19CH208	Chemistry Laboratory*		BSC	0	0	4	2	50	50	100	
U19GE203	Engineering Practices Laboratory $^{\alpha}$		ESC	0	0	4	2	50	50	100	
	Ν	IANDA	TORY CO)UR	SES						
	Mandatory course – II		MC	3	0	0	0	100	-	100	
	Total 23 500 400 900										

CA- Continuous Assessment, ESE - End Semester Examination.

- α Common for all branches
- * Common for CSE, CST, IT, BT
- & Common for CSE, CST & EEE
- \$ Common for BME, CSE, CST, IT, ECE, BT

	VIVEKANANDH (Autonomous) Ela	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205								atagement ystem 2 5001 2015 In status In statu	
Programme	B.E.	Pr	ogramme Co	ode	101		Regu	lation	20)19	
Department	COMPUTER SCIENC	CE AND EN	GINEERIN	J			Sen	nester	III		
CURRICULUM (Applicable to the students admitted from the academic year 2019 - 2020 o							onwa	rds)			
Course	Course Nam	٩	Catagory	Per	iods /	Week	Credit	Max	imum	Marks	
Code					Т	Р	С	CA	ESE	Total	
			THEORY			•					
U19MA304	Discrete Mathematic	s [#]	BSC	3	1	0	4	50	50	100	
U19CS304	Data Structures *	PCC	3	0	0	3	50	50	100		
U19CS305	Database Manageme Systems	ent	PCC	3	0	0	3	50	50	100	
U19CS306	Digital Logic Design	1	ESC	3	0	0	3	50	50	100	
U19CS307	Object Oriented Prog	gramming ^{&}	PCC	2	0	2	3	50	50	100	
		Р	RACTICA	L							
U19CS308	Data Structures Labo	oratory ^{\$}	PCC	0	0	4	2	50	50	100	
U19CS309	Database Manageme Systems Laboratory	ent	PCC	0	0	4	2	50	50	100	
U19EN301	U19EN301 Communication Skills Laboratory				0	2	1	100	-	100	
		MANDA	TORY CO	DUR	SES						
	Mandatory Course – I	Π	MC	2	0	0	0	100	-	100	
	Total 21 550 350 900										

CA - Continuous Assessment, ESE - End Semester Examination, ESC- Engineering Science Courses, PCC - Professional Core course

- * Common to CSE, ECE and EEE, BME (Semester IV)
- # Common to CSE, IT and CST
- \$ Common to CSE and ECE & BME (Semester IV)
- $\& \ \mbox{Common for CSE} \ \mbox{and CST}$

	VIVEKANANDHA COL (Autonomous Institutio Elayampala	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205										
Programme	B.E.	Programme Co	ode	101		Re	gulatio	on 2	2019			
Department	COMPUTER SCIENCE AND E	NGINEERIN	3			2	Semest	er	IV			
(Ap	C plicable to the students admitte	URRICULU	J M .cade	mic y	ear 201	9 - 2020	onwa	rds)				
Course	Course Name		Per	riods /	Week	Credit	Max	imum	Marks			
Code	Code Category L T P C CA E							ESE	Total			
THEORY							<u></u>					
U19MA405	$\begin{array}{c cccc} \text{Statistics and Numerical} \\ \text{Methods}^{\#} \end{array} \qquad \qquad \text{BSC} \qquad 3 1 0 4 50 50 \end{array}$											
U19CS410	Computer Organization	ESC	3	0	0	3	50	50	100			
U19CS411	Design and Analysis of Algorithms	PCC	3	0	0	3	50	50	100			
U19CS412	Open Source Software	PCC	2	0	2	3	50	50	100			
U19CS413	Operating Systems	PCC	3	0	0	3	50	50	100			
U19CS414	Web Technology	PCC	3	0	0	3	50	50	100			
		PRACTICA	L									
U19CS415	Operating Systems Laboratory	PCC	0	0	4	2	50	50	100			
U19CS416	Web Technology Laboratory	PCC	0	0	4	2	50	50	100			
	MAND	ATORY CO	OUR	SES								
	Mandatory Course – IV	MC	2	0	0	0	100	-	100			
	Total 23 500 400 900											

CA - Continuous Assessment, ESE - End Semester Examination, ESC- Engineering Science Courses

U19CS417 – Data Structures (EEE) & BME

U19CS418 - Data Structures Laboratory - BME

Common to CSE, IT and CST

	VIVEKANANDH (Autonomous I E	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
Programme	B.E.	P	rogramme Co	ode	101		Regulati	on	201	9	
Department	COMPUTER SCIEN	ICE AND EN	GINEERING	Ĵ			Semes	ter	V		
(Ap	plicable to the stude	CU nts admitted	J RRICULU d from the a	J M cade	mic ye	ear 201	9 - 2020	onwa	rds)		
Course	Course Nar	ne	C .	Per	iods /	Week	Credit	Max	timum	Marks	
Code	L	Т	Р	С	CA	ESE	Total				
			THEORY								
U19CS519Artificial IntelligencePCC30035050100										100	
U19CS520	Computer Network	omputer Networks			0	0	3	50	50	100	
U19CS521	Microprocessor and Interfacing	1	ESC	3	0	0	3	50	50	100	
U19CS522	Theory of Computation	tion	PCC	3	0	0	3	50	50	100	
	Professional Electiv	ve – I	PEC	3	0	0	3	50	50	100	
	Open Elective -1		OEC	3	0	0	3	50	50	100	
		I	PRACTICA	L							
U19CS523	Computer Network Laboratory	s	PCC	0	0	4	2	50	50	100	
U19CS524	Hardware Laborato	ry	ESC	0	0	4	2	50	50	100	
		MANDA	ATORY CO	OUR	SES						
	Mandatory Course -	V	MC	2	0	0	0	100	-	100	
	Total 22 550 350 900										

CA - Continuous Assessment, ESE - End Semester Examination, PEC- Professional Elective courses, OEC- Open Elective courses, ESC- Engineering Science Courses

	VIVEKANANDHA COLI (Autonomous Institution Elayampal	IVEKANANDHA COLLEGE OF ENGINEERING FOR WOME (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205									
Programme	B.E.	Programme C	ode	101		Regulati	on	201	9		
Department	COMPUTER SCIENCE AND	ENGINEERIN	G			Semes	ter	V	[
CURRICULUM (Applicable to the students admitted from the academic year 2019 - 2020 onwa							onwa	rds)			
Course	Course Nome		Per	iods /	Week	Credit	Max	kimum	Marks		
Code	Course Manie	Category	L	Т	Р	С	CA	ESE	Total		
THEORY											
U19CS625	Cloud Computing PCC 3 0 0 3 50 50 100										
U19CS626	Compiler Design*	PCC	3	0	0	3	50	50	100		
U19CS627	Internet of Things	PCC	3	0	0	3	50	50	100		
U19IT620	Software Engineering*	PCC	3	0	0	3	50	50	100		
	Professional Elective – II	PEC	3	0	0	3	50	50	100		
	Open Elective –II	OEC	3	0	0	3	50	50	100		
		PRACTICA	L		•			L			
U19CS628	Compiler Design Laborator	y PCC	0	0	4	1	50	50	100		
U19CS629	Cloud and IoT Laboratory	PCC	0	0	4	2	50	50	100		
	MAN	DATORY CO	OUR	SES				1	1		
	Mandatory Course – VI	MC	2	0	0	0	100	-	100		
	Total 21 500 400 900										

CA- Continuous Assessment, ESE - End Semester Examination, PEC- Professional Elective courses, OEC- Open Elective courses

* Common to CSE & IT

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VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205



Programme	B.E.	I	Programme C	ode	101		Regulat	tion	202	19	
Department	COMPUTER SCIEN	NCE AND E	NGINEERIN	5			Seme	ster	VII		
(An	nlicable to the stude	C	URRICULU	J M cadei	mic ve	ear 201	9 - 2020	onwa	rds)		
Course	pricable to the stude			D			0 1.4	Max	zimum	Marks	
Course	Course Nan	ne	Category	Per	lods /	week	Credit	1VIu/	linuin	WIGHNS	
Code			Cutogory	L	Т	Р	С	CA	ESE	Total	
			THEORY								
U19CS730	Machine Learning	chine Learning PCC 3 0 0 3 50 50							100		
U19CS731	Mobile Computing	bile Computing			0	0	3	50	50	100	
	Professional Electiv	∕e−III*	PEC	3	0	0	3	50	50	100	
	Professional Electiv	ve – IV	PEC	3	0	0	3	50	50	100	
	Open Elective –III		OEC	3	0	0	3	50	50	100	
			PRACTICA	L							
U19CS732	Machine Learning Laboratory		PCC	0	0	4	2	50	50	100	
U19CS733	Internship Training Summer Project	nternship Training and Summer Project				8	4	100	-	100	
		Total 21 4							300	700	

CA - Continuous Assessment, ESE - End Semester Examination, EEC- Employability Enhancement Courses, PEC- Professional Elective courses, OEC- Open Elective courses

* Professional Readiness for Innovation, Employability and Entrepreneurship –Mandatory Course (Anna University) / Professional Elective – III may be selected from the Professional Elective list.

	VIVEKANANDI (Autonomous	HA COLLE Institution, A Elayampalaya	GE OF ENC Affiliated to A am, Tirucher	GINE Anna ngode	ERIN Unive - 637	G FOR rsity, Cl 205	WOME	N	TÜVRHeinand CERTFED	gemeet m 0012015 0022015	
Programme	B.E.	P	rogramme C	ode	101		Regula	tion	20	19	
Department	COMPUTER SCIEN	NCE AND EN	GINEERIN	Ĵ			Seme	ster	VI	VIII	
(Ap	CURRICULUM (Applicable to the students admitted from the academic year 2019 - 2020 onwards)										
Course	Course Na	Course Name Category Pe				Week	Credit M		laximum Marks		
Code	Course Ma	Course Name Categor			Т	Р	С	CA	ESE	Total	
			THEORY								
	Professional Electiv	ve – V	PEC	3	0	0	3	50	50	100	
	Professional Electiv	ve – VI	PEC	3	0	0	3	50	50	100	
		I	PRACTICA	L							
U19CS834	Project Work		EEC	0	0	16	8	60	40	100	
	Total 14 160 140 300										

CA - Continuous Assessment, ESE - End Semester Examination, EEC- Employability Enhancement Courses, PEC- Professional Elective courses

Cumulative Credits = 165

List of Professional Electives

Course code	Course name	Category	L	Т	Р	С	CA	ESE	Total
U19CSE01	Advanced Java & Framework	PEC	3	0	0	3	50	50	100
U19CSE02	Cyber Security	PEC	3	0	0	3	50	50	100
U19CSE03	Data Warehousing and Data Mining	PEC	3	0	0	3	50	50	100
U19CSE04	Security in Computing	PEC	3	0	0	3	50	50	100
U19CSE05	Smart Sensor Technologies	PEC	3	0	0	3	50	50	100
U19CSE06	Advanced Database Systems	PEC	3	0	0	3	50	50	100
U19CSE07	Cryptography and Network Security*	PEC	3	0	0	3	50	50	100
U19CSE08	Data Science and Analytics	PEC	3	0	0	3	50	50	100
U19CSE09	Embedded Systems	PEC	3	0	0	3	50	50	100
U19CSE10	Semantic Web	PEC	3	0	0	3	50	50	100
U19CSE11	Computer Graphics and Multimedia Systems	PEC	3	0	0	3	50	50	100
U19CSE12	Cyber Law and Ethical Hacking	PEC	3	0	0	3	50	50	100
U19CSE13	Design Thinking	PEC	3	0	0	3	50	50	100
U19CSE14	Mobile Adhoc Networks	PEC	3	0	0	3	50	50	100
U19CSE15	Soft Computing	PEC	3	0	0	3	50	50	100
U19CSE16	Digital Image Processing	PEC	3	0	0	3	50	50	100
U19CSE17	Game Theory	PEC	3	0	0	3	50	50	100
U19CSE18	Professional Ethics in Engineering	PEC	3	0	0	3	50	50	100
U19CSE19	Social Network Analysis	PEC	3	0	0	3	50	50	100
U19CSE20	Total Quality Management	PEC	3	0	0	3	50	50	100
U19CSE21	Agile Software Development	PEC	3	0	0	3	50	50	100
U19CSE22	Fundamentals of Deep Learning	PEC	3	0	0	3	50	50	100
U19CSE23	Information Security	PEC	3	0	0	3	50	50	100
U19CSE24	Knowledge Management	PEC	3	0	0	3	50	50	100
U19CSE25	Wireless Sensor Networks	PEC	3	0	0	3	50	50	100
U19CSE26	E-Commerce	PEC	3	0	0	3	50	50	100

U19CSE27	Green Computing	PEC	3	0	0	3	50	50	100
U19CSE28	Parallel and Distributed Computing	PEC	3	0	0	3	50	50	100
U19CSE29	Software Testing and Quality Assurance	PEC	3	0	0	3	50	50	100
U19CSE30	Software Project Management	PEC	3	0	0	3	50	50	100

* Common to CSE & IT

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Course code	Course name	Category	L	Т	Р	С	CA	ESE	Total
U19MCFY1	Environmental Science and Engineering	МС	3	0	0	0	100	-	100
U19MCFY2	Indian Constitution and Universal Human Values	МС	3	0	0	0	100	-	100
U19MCSY4	Verbal Ability	МС	2	0	0	0	100	-	100
U19MCSY3	Numerical Ability	МС	2	0	0	0	100	-	100
U19MCTY5	Logical Reasoning	МС	2	0	0	0	100	-	100
U19MCTY6	Personality Development	МС	2	0	0	0	100	-	100

LIST OF ONE CREDIT COURSES

COURSE CODE	COURSE NAME	CONTACT PEROIDS
U19CSOC1	Data Mining Laboratory	30
U19CSOC2	Python Programming Laboratory	30
U19CSOC3	PHP Programming Laboratory	30
U19CSOC4	Entrepreneurship Development	30
U19CSOC5	Cloud Laboratory	30
U19CSOC6	Big Data Laboratory	30

LIST OF ADDITIONAL CREDIT COURSES

- 1. NPTEL, Coursera Courses
- 2. AICTE IDEA Lab Courses
- 3. DELL and Intel Recommended Courses on DS, NLP and CV

LIST OF OPEN ELECTIVE COURSE (OEC) OFFERED TO OTHER DEPARTMENT

Course code	Course name	Category	L	Т	Р	С	CA	ESE	Total
U19CSOE1	Introduction to IoT	OEC	3	0	0	3	50	50	100
U19CSOE2	Ethical Hacking	OEC	3	0	0	3	50	50	100
U19CSOE3	Smart Sensor Technologies	OEC	3	0	0	3	50	50	100
U19CSOE4	Web Designing	OEC	3	0	0	3	50	50	100
U19CSOE5	Data Analytics	OEC	3	0	0	3	50	50	100
U19CSOE6	Enterprise Java	OEC	3	0	0	3	50	50	100
U19CSOE7	Open Source Software	OEC	3	0	0	3	50	50	100
U19CSOE8	Python Programming	OEC	3	0	0	3	50	50	100

LIST OF OPEN ELECTIVE COURSE – EEE

		Perio	ds / V	Veek	Credit	Max	imum I	Marks
Course Code	Course Name	L	Т	Р	С	CA	ESE	Total
U19EEOE1	Electron Devices	3	0	0	3	50	50	100
U19EEOE2	Electrical Safety	3	0	0	3	50	50	100
U19EEOE3	Energy Auditing	3	0	0	3	50	50	100
U19EEOE4	Energy Storage Technologies	3	0	0	3	50	50	100
U19EEOE5	Biomass Energy Systems	3	0	0	3	50	50	100
U19EEOE6	Energy Efficient Lighting System	3	0	0	3	50	50	100
U19EEOE7	Soft Computing techniques	3	0	0	3	50	50	100
U19EEOE8	Electrical Systems in Industries	3	0	0	3	50	50	100

Course Code	Course Norse	Perio	ds / V	Veek	Credit	Maximum Marks			
Course Code	Course Name	L	Т	Р	С	CA	ESE	Total	
U19ECOE1	Speech Processing	3	0	0	3	50	50	100	
U19ECOE2	Biomedical Instrumentation	3	0	0	3	50	50	100	
U19ECOE3	Automotive Electronics	3	0	0	3	50	50	100	
U19ECOE4	Satellite Communication	3	0	0	3	50	50	100	
U19ECOE5	VLSI Design and Its Applications	3	0	0	3	50	50	100	
U19ECOE6	Digital Image Processing	3	0	0	3	50	50	100	
U19ECOE7	Basics of Communication Systems	3	0	0	3	50	50	100	
U19ECOE8	Wireless Sensor Networks	3	0	0	3	50	50	100	
U19ECOE9	PCB Design and Fabrication	3	0	0	3	50	50	100	

LIST OF OPEN ELECTIVE COURSE - ECE

LIST OF OPEN ELECTIVE COURSE - IT

Course Code	Course Nome	Perio	ds / V	Veek	Credit	Max	Marks	
Course Code	Course manie	L	Т	Р	С	CA	ESE	Total
U19ITOE1	Mobile application development	3	0	0	3	50	50	100
U19ITOE2	Robotics	3	0	0	3	50	50	100
U19ITOE3	Basics of Cloud Computing	3	0	0	3	50	50	100
U19ITOE4	Introduction to Data Structures	3	0	0	3	50	50	100
U19ITOE7	Business intelligence and its Applications	3	0	0	3	50	50	100
U19ITOE8	Internet of Things	3	0	0	3	50	50	100
U19ITOE9	Introduction to Java Programming	3	0	0	3	50	50	100
U19ITOE10	Introduction to R Programming	3	0	0	3	50	50	100
U19ITOE11	Ethical Hacking	3	0	0	3	50	50	100
U19ITOE12	Cyber Forensics	3	0	0	3	50	50	100
U19ITOE13	E Learning Techniques	3	0	0	3	50	50	100

Course Code	Course Nome	Perio	ods /	Week	Credit	Maximum Marks			
Course Coue	Course Name	L	Т	Р	С	CA	ESE	Total	
U19BTOE1	Biology for Engineers	3	0	0	3	50	50	100	
U19BTOE2	Biofuels and Bioenergy	3	0	0	3	50	50	100	
U19BTOE3	Bio-Business	3	0	0	3	50	50	100	
U19BTOE4	Basics of Bioinformatics	3	0	0	3	50	50	100	
U19BTOE5	Human Health and Nutritional Disorders	3	0	0	3	50	50	100	
U19BTOE6	Waste Management	3	0	0	3	50	50	100	
U19BTOE7	Food Processing and Preservation Technology	3	0	0	3	50	50	100	
U19BTOE8	Forensic Technology	3	0	0	3	50	50	100	
U19BTOE9	Biodiversity and Bioproprespecting	3	0	0	3	50	50	100	

LIST OF OPEN ELECTIVE COURSE – BT

LIST OF OPEN ELECTIVE COURSE – BME

Course Code	Course Nome	Perio	ds / V	Veek	Credit	Max	imum N	Marks
Course Coue	Course Name	L	Т	Р	С	CA	ESE	Total
U19BMOE1	Biotelemetry	3	0	0	3	50	50	100
U19BMOE2	Virtual Instrumentation	3	0	0	3	50	50	100
U19BMOE3	Hospital Waste Management	3	0	0	3	50	50	100
U19BMOE4	Medical Robotics	3	0	0	3	50	50	100
U19BMOE5	Healthcare Management Systems	3	0	0	3	50	50	100
U19BMOE6	Biometric Systems And Their Applications	3	0	0	3	50	50	100
U19BMOE7	Basics of Biomedical Instrumentation	3	0	0	3	50	50	100
U19BMOE8	Medical Informatics	3	0	0	3	50	50	100
U19BMOE9	ICU and Operation Theatre Equipments	3	0	0	3	50	50	100

LIST OF OPEN ELECTIVE COURSE - CST

Come Colo	Comme Name	Periods / Week			Credit	Max	imum Marks		
Course Code	Course Name	L	Т	Р	С	CA	ESE	Total	
U19CTOE1	Fundamentals of Artificial Intelligence	3	0	0	3	50	50	100	
U19CTOE2	Fundamentals of Information Security	3	0	0	3	50	50	100	
U19CTOE3	Fundamentals of Data Science	3	0	0	3	50	50	100	
U19CTOE4	Fundamentals of Machine Learning	3	0	0	3	50	50	100	
U19CTOE5	Fundamentals of Data Visualization	3	0	0	3	50	50	100	
U19CTOE6	Computer Forensics	3	0	0	3	50	50	100	

Semester – I

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Prog	gramme	B.E	/•				Prog	amm	e Cod	e	101	Reg	ulatior	1	201	19	
Dep	artment	Com	puter	Scien	ce & En	gineer	ring					Se	emeste	r	Ι		
Course	Code		Cou	maa Na	ma	F	Periods	Per	Week	C	redit		Max	kimum	n Mark	S	
Course	Code		Col	irse ma	me		L	Т	Р		С	(CA	ESE Total			
U19M	A101	Calc	ulus				3	1	0		4		50	50 100			
Course Objectiv	Course The Main Objective of the course is to Objective Provide the information about Review of limits, continuity and differentiability. Understand maxima and minima of functions of two variables. Demonstrate Integral calculus. Identify the problems based on area, surface and volume. To Recognize the Second order linear differential equations.																
• To Recognize the Second order linear differential equations. • To Recognize the Second order linear differential equations. • To Recognize the Second order linear differential equations. • To Recognize the Second order linear differential equations. • To Recognize the Second order linear differential equations. • To Recognize the Second order linear differential equations. • Course • C01: Apply Mean value theorem and Taylor's theorem. • C02: Analyze Total derivative. • C03: Formulate Reduction Formulae. • K3,K5 • C04: Translete, Change of order of integration												level (3) (4) (5) (5)					
		CO5	:Appl	y meth	od of va	riation	of par	amet	ers.						K3,K	5	
Pre-requ	isites	-															
COs	(3/2/	/1 indica	ates str	ength of	CO / PO f correlat	Mappion) 3-	ping Strong	$\frac{2-N}{(POs)}$	Aediur	n, 1 -	Weak	5		CO/F Map	PSO ping		
003	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7		/ 8 P	0.9	PO	PO	PO	PSO	PSO		
60.1											10	11	12	1	2		
CO1	3	3	3	3										2	1		
CO 3	3	3	3	2										2	1		
CO 4	3	3	3	2										2	1		
CO 5	3	3	3	3										2			
Course A Direct 1.	Assessm	ent Me uous As	thods	ent Tes	t I, II & J	III											

- 2. Assignment.
- 3. End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus

Unit – I	DIFFERENTIAL	CALCULUS

Periods

Limit, continuity, differentiability, rules of differentiation, differentiation of various functions, Rolle's theorem(excluding proof), Mean value theorem(excluding proof), Taylor's theorem(excluding proof), Maxima and Minima.Physical Applications (Newton's law of cooling – Heat flow problems, Rate of decay of radioactive materials – Chemical reactions and solutions, Ohm's law, Kirchoff's law- Simple electric circuit problems)

12

Unit - I	I FUNCTIONS OF SEVERAL VARIABLES	Periods	12											
Partial diff	erentiation - Homogeneous functions and Euler's theorem(exclu	iding proof) -	Total derivative -											
Change of	variables - Jacobians - Partial differentiation of implicit function	ns – Taylor's s	series for functions											
of two vari	ables(excluding proof) – Maxima and minima of functions of two	variables .												
Unit – l	II INTEGRAL CALCULUS	Periods	12											
Riemann in	tegral-Fundamental theorem of calculus(excluding proof) - meth	ods of integrat	tion (Integration by											
parts, Trig	parts, Irigonometric integrals, Irigonometric substitutions, Integration of rational functions by partial π π													
fraction, Integration of irrational functions) -Reduction formula on $\int_{0}^{\frac{\pi}{2}} \cos^{n} x dx$, $\int_{0}^{\frac{\pi}{2}} \sin^{n} x dx$.														
Unit - I	V MUTIPLE INTEGRALS	Periods	12											
Double integrals – Change of order of integration – Double integrals in polar coordinates – Area enclosed by														
plane curve	s – Triple integrals – Volume of solids – Change of variables in d	ouble and trip	e integrals.											
Unit –	V ORDINARY DIFFERENTIAL EQUATIONS	Periods												
Second order Linear ordinary differential equations with constant coefficients, Cauchy's - Euler equations(excluding proof)- Legendre's Linear differential equations(excluding proof) - Method of variation of parameters.														
Total Periods 60														
Text Book	s		·											
1.	Stewart, J. Calculus: Early Transcendentals (8th Edition), Cengag	e Learning, 20)15.											
2.	Grewal B.S., "Higher Engineering Mathematics", Khanna Publis 2014.	hers, New Del	hi, 43rd Edition,											
References														
1.	Kreyszig E, Advanced Engineering Mathematics (10 th Edition), John V	Viley (2015).												
2.	Boyce W E and DiPrima R, Elementary Differential Equations (9 th Edit	tion), John Wile	y (2005).											
3.	Nishant Shukla, Elementary Integral Calculus													
4.	Anton H, Calculus: Early Transcendentals, 10th Edition, Wiley	(2012).												
5.	B V Ramana, Higher Engineering Mathematics, Tata McGraw H Delhi (2012)	lill Education l	Pvt Ltd., New											
E-Resourc	25													
1.	https://freevideolectures.com > All Courses > Calculus > UCLA													
2.	www.learnerstv.com/Free-engineering-Video-lectures													
3.	www.nptel.ac.in													

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Programme	B.E/B.TECH	Pr	ogram	me co	de		10)1	I	Regul	201	19		
Department	B.E-CSE								Seme	ester			Ι	
Course code	C	urse name			I	Perio	ds per	week	Credi	t	Max	kimum	Marks	
		Jurse name			1	Ĺ	Т	Р	C		CA	ESE	Tot	al
U19EN101	English for Com	munication	- I			3	0	0	3		50	50	100	0
Objective	The main objective To make le To make le To make le Assist stude may engage Identify ar	ve of this cou earners listen earners read ve earners develo lents in the de ge in life-long nd begin to ap	urse is to audi widely i op voca evelopri learnin ply the	to: io files in orde abulary nent of ng.	and re r to pra and st intelle nge fea	plicat actice rengt ectual tures	e it in a writin hen gra flexibi of acad	speakin g ammatio ility, cre demic a	g contexts cal unders cativity, ar	tandin nd cult tional	ig tural liter writing a	racy so t	that they aking	7
	The students who	complete th	is cou	rse suo	ccessfi	ully a	are exp	pected t	:0:				Knowle Leve	edge el
CO1: Speak adequately from the inputs they gained through listening.														.2
	CO2: Write appropriately based on the knowledge gained through reading of a variety of materials													
Outcomes	CO3: Use language through their grammatical acquisition and their knowledge about using right word at the right context.													
	CO4: Listen the accents and tones of the language properly.													
	CO5: Comprehend and retain the contextual and syntax understanding from reading.													
Pre-Requisities	Nil													
	(3/2) COs	/1 indicates st	rength	CO / of corr Progr	PO M relation amme	Lappi 1) 3-S Outco	ng trong, omes (1	2 – Mec POs)	lium, 1 - V	Weak		CO/F Map	2SO ping	
	PO 1	PO PO 2 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS 01	PSO 2	
	CO 1				2			3	3		3		2	
	CO 2 CO 3				2			3	3		3		2	
	CO 4				2			3	3		3		2	
					Z			3	3		3		2	
	Course Assessme	nt Methods												
	1. Continue	ous Assessme	ent Tes	st I. II a	& III									
	2. Assignm 3. End-Sen	ent: Simulat	ion usi	ng too	1									
	Indirect													
	2. Course -	end survey												
	Content of the sy	llabus			_									

U	nit - I		Periods	9										
Liste	ning-Introd	uction to Different Types of Listening. Listening to Casual Co.	nversations. Speaking-Intro	duction to										
devel	op the Art	of Speaking, Giving Self Introduction, Reading-Understanding t	he Basics of Reading Skill	s, Reading										
Instru	ictions and	Technical Manuals, Writing- Introduction to writing strategies, Wri	ting Definitions, Focus on I	Language -										
-Tech	nical terms	s (Jargon), Word Formation with Prefixes and Suffixes, Using A	ctive Voice and Passive Vo	oice, Basic										
sente	nce patterns	s, Tenses (past, present, perfect and continuous tenses).												
U	nit - II		Periods	9										
Liste	ning- Liste	ening to lectures, listening to description of equipment.	Speaking- Strategies for I	Developing										
Conv	Conversational Skills, Short Conversations through Role Play Activities, Reading - Reading Comprehension, Reading e-													
mails	, Reading I	Headlines, Predicting the Content, Writing- Note making, Writing	g Descriptions, Focus on I	Language										
Collo	cations, Fu	nctional Use of Tenses, Subject - verb agreement		0 0										
Ur	nit - III		Periods	9										
Liste	ning- Liste	ning to different kinds of interviews (Face - to - face, radio, TV a	and telephone interviews).	Speaking-										
Desci	ribing an O	bject, Asking Questions, Participating in Discussions Reading – Ir	tensive reading, Reading pa	assages for										
gist.	Writing- I	formal writing -short e-mails with emphasis on Brevity, Clarity,	Coherence and Cohesion),	Focus on										
Lang	uage-Sequ	ential Connectives, Impersonal Passive												
Uı	nit - IV		Periods	9										
Liste	ning-Note	Taking, Speaking- Improving Fluency through Narration. Rea	ading–Reading passages for	or specific										
inform	nation- Ph	one messages, Reading and Transferring Information. Writing-	Effective writing strategies	s, Informal										
writir	ng, Writing	g a Memo, Focus on Language- Pronunciation Practice (Phone	etic sounds - Vowels, Conse	onants and										
Dipht	thongs), Ca	use and Effect, Conditional Statements (if - clauses and types), Usag	e of Modal Verbs.											
U	nit - V		Periods	9										
Liste	ning- Liste	ning to understand Modulation, Listening to Welcome Speeches, Sp	eaking- Delivering Welcom	ne Address,										
Unde	rstanding S	egmental and Suprasegmental Features-Practicing Stress, Pause an	d Intonation, Reading – Rea	ading for a										
purpo	ose, Reading	g Business Documents, Interpreting Charts and Graphs,. Writing-	Writing Business e-mails, D	escribing a										
Proce	ess. Focus o	n Language -Synonyms and Antonyms, Common Errors in English												
			Total Periods	45										
Text	Books:													
1.	Sumant. s.	Pereira Joyce, Shameem.M, Selvarajan.R-English Communication	Skills, Vijay Nicole imprints	Pvt.Ltd,										
	2015.		2010											
2.	Sokkaalin	gam, S.RM., The Art Of Speaking EnglishVersatile Publishing Hous	se,2018.											
Refe	rences:													
1.	Dr. Padma	a Ravindran, Poorvadevi, M. Y. Abdur Razack- English for life, E	English for work, students E	Book, Ebek										
	language l	aboratory pvt ltd, 2011.												
2.	Dutt Rajee	evan, Prakash. A Course in Communication Skill (Anna University,	Coimbatore edition): Cambri	idge										
	University	^v Press India Pvt.Ltd, 2007.												
3.	S.P. Dhan	avel, English and Communication Skills for Students of Science and	nd Engineering, Orient Black	kswan Pvt,										
	Ltd, 2009.													
4.	Technical	English – I & II, Sonaversity, Sona College of Technology, Salem, I	First Edition, 2012.											
5	Meenaksh	mi Raman and Sangeeta Sharma- 'Technical communication]	English Skills for Enginee	ers; oxford										
5.	University	^v Press, 2008.												
E-Re	sources.													
1	http://www	w.sparknotes.com/lit/the-alchemist/summary.html												
2	https://ww	w.stephencovey.com/7habits/7habits.php												
3	http://en.w	vikipedia.org/wiki/The Seven_Habits_of_Highly_Effective_People												

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Prog	gramme	B	B.E.			Progr	amme	Code		101			Regula	ation	2	019	
Dep	artment	Cor	nputer	Scien	ce and I	Engin	eering						Sem	ester		Ι	
Course	Codo		Col	ireo Ne	mo]	Period	s Per V	Week	Cr	edit		Max	imun	n Mark	S	
Course	Coue		COL	1150 INC	une		L	Т	Р	(С	(CA	ES	SE	Total	
U19PI	H105		ENG Pl	INEEF HYSIC	RING CS		3	0	0		3		50	5	0	100	
Course Objectiv	7e	• u • g • ic p • c te a: • c	 understand the basic concepts of properties of matter gain knowledge about the conduction properties of metals identify the different types of crystal structures and crystal growth techniques. Study the production and applications of ultrasonics. correlate better understanding the carrier concentration and its variations with temperature in a semiconductor. Study the properties of modern engineering materials and its uses categorize the types of laser and fiber optics 														
Course Outcom	e	At the end of the course, the student will be able to Image: Constraint of the student will be able to • understand the elastic properties of the materials Image: Constraint of the student will be able to • gain knowledge about the conduction properties of metals Image: Constraint of the student will be able to • gain knowledge about the conduction properties of metals Image: Constraint of the student will be able to • determine packing factor for various unit cells and understand different types of crystal imperfections and learn the engineering, medical applications. • discuss the basic idea of semiconducting materials and realize the function of modern engineering materials												Kilowledge Level K2 K3 K1 K1 K1			
Pre-requ	isites																
COs	(3/2)	/1 indio	cates str	ength o	CO / PO f correla Program	D Map tion) 3- nme Ou	ping -Strong itcomes	<u>g, 2 – N</u> s (POs)	/lediun	n, 1 -	Weak	- -		CO/I Map PSOs	PSO ping		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	РО	8 P	09	РО 10	PO 11	PO 12	PSO 1	PSO 2		
CO 1	3	2	3	1	2	1								1	2		
CO 2 CO 3	3 3	2	5	3 3	1	1 2								1	2	+	
CO 4	3	-	2	1	1	2								2	2		
CO 5	3			1	2	2									2		
Course A Direct Indirec	Course Assessment Methods Direct 1.Continuous Assessment Test I, II & III 2.End-Semester examinations Indirect 1.Course - end survey																
Content	or the s	ynavu															

Uni	t – I	PROPERTIES OF MATTER	Periods	9										
Elasti	city: T	pes of moduli of elasticity - Stress - Strain Diagram	n – uses. Yo	oung's modulus:										
Exper	imental of	letermination by non-uniform bending - Twisting cou	uple on a win	re –Application:										
Torsic	onal pend	ulum.												
Viscosi	i ty: Co-e	fficient of viscosity - Poiseuilles' formula - Experiment	al determinat	tion – uses.										
Uni	t - II	ELECTRONS IN SOLID	Periods	9										
Classical theory: Classical free electron theory of metals- Expressions for electrical conductivity														
and The	and Thermal Conductivity of metals – Wiedemann-Franz law (Qualitative) - Success and failures.													
Quantum theory: de Broglie's hypothesis - Schrödinger's time independent and time dependent														
wave e	wave equations (Qualitative) - Particle in a one-dimensional box- Fermi – Dirac Statistics - Density of energy states (Qualitative).													
energy s	Unit - III CRYSTAL PHYSICS AND III TRASONICS Periods 0													
Unit	– 111	CRYSTAL PHYSICS AND ULTRASONICS	Periods	9										
Crystal	lography	- Unit cell - Crystal systems - Bravais lattices- Lat	ttice planes -	Miller indices -										
Inter-pl	lanar spa	cing in cubic lattice- Calculation of number of atoms	per unit cell-	· Atomic radius –										
	nation nu	Imper- Packing Factor for HCP structures.	mathada A	anlingtional Cound										
Ultras Navigat	ion and R	anging ($SONAR$) Non – Destructive Testing (NDT) and Sector	methods – A	pplications: Sound										
ituvigut	ion and i	SEMICONDUCTING & MODERN												
Unit	- IV	ENGINEERING MATERIALS	Periods	9										
Intrinsi	Intrinsic semiconductor: (Oualitative only) – Carrier concentration – Fermi level – Electrical													
conduc	conductivity - Band gap determination. Extrinsic semiconductors: Carrier concentration in $n - type$ and $p - conductivity$													
type sen	niconduct	or (Qualitative) - Variation of Fermi level with temperature	2.											
Metalli	ic glass	es: preparation, properties and applications - Sha	ape memory	alloys (SMA):										
Characteristics and applications of NiTi alloy.														
Unit	t - V	LASER AND FIBER OPTICS	Periods	9										
Laser:	Character	istics of laser –Derivation of Einstein's A and B coeffic	cients. Types:	Nd-YAG laser -										
Semicor	nductor la	ser: Homo junction - Applications.	• • •	1 (
optical	Dualitativ	rinciple of propagation of light through optical fiber - Nu	imerical apertu	block diagram) -										
Applica	tion: Med	ical endoscope.	ion system (block diagram) -										
TT ···		r i i i i i i i i i i i i i i i i i i i	Fotal Periods	45										
Text Bo	ooks													
1.	R.K. Ga	ur and Gupta. S.L, Engineering Physics, Dhanpat Rai Publish	ers, 2017.											
2.	S.O Pilla	ai., Solid state physics, New Age International Private Limited.												
3.	Dr.P.Ma	ni, "Engineering Physics", Shri Dhanam publisher, Chennai –	600 042											
Referen	ces													
1.	B.K. Par	dey, S. Chaturvedi. "Engineering Physics", 1st Edition, Cengage I	Learning India P	Pvt Ltd, (2012).										
2.	Fundame India Pv	entals Of Physics Extended 8/Ed 8th Edition, David Halliday, Ettd, 2008.	Robert Resnick	Jearl Walker, Wiley										
3.	Lawrenc	e H.Vanvlack, "Elements of materials Science Engineering, 6th Ed	lition, Pearson H	Publication.										
4.	S.O.Pilla	i, "Solid State Physics", New Age International Publishers												
5.	Dr.V.Ra	endran, "Engineering Physics", Tata McGraw Hill Education Priv	vate Limited, Ne	ew Delhi										
E-Resou	urces													
1.	www.e-	booksdirectory.com												
2.	Home.ii	k.ac.in												
	mhrusiaa	au ac bd/												

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Prog	gramme	B.	E./B.Te	ech.			Progr	amm	e Cod	e		Reg	ulatio	n	20	19	
Depa	artment	CSI	E, EEE	, ECE,	IT, Bi	o-Tech	, CST	& B	ME			Se	emeste	r	Ι		
Course	Code		Cot	irse Na	me	F	Periods	Per T	Week P	Cre	edit	($\frac{Max}{CA}$	ximum ES	mum Marks		
U19C	S101	Pro Pro	gram blem	ning f Solvin	or g		3	0	0	3	3		50	50)	100	
Course Objectiv	7 e	The • •	main o Learn Under Write Write	bjectiv the fur stand (the pro the pro	e of thi ndamen C progra ograms ograms	s cours tals of ammin using a using f	e is to compu g conc urrays a functio	: epts and s ns	and ac trings	quire	prob	olem s	olving	g skills			
• write the programs using structures. K Course At the end of the course, the student should be able to, K CO1:Write the algorithms and to draw flowcharts for solving problems. CO2: describe the building blocks of C programming language and write simple programs using Control Flow Statements CO3: Implement the C programs using arrays and pointers.												Knowledge Level K3 K3 K3					
		CO	4: Deve	elop C j	orogran	ns usin	g the f	uncti	ons an	d strii	ngs.				K3		
		CO	5: Writ	e the re	al time	proble	ms usi	ng St	tructur	es and	d uni	ion			K3		
Pre requ	uisites	NII	4														
	(3/2/	1 indi	cates str	ength of	CO / PO f correla) Mapp tion) 3-	p ing Strong,	2 – N	Mediun	n, 1 - V	Weak	[CO/I Map	PSO ping		
COs	201		20.0		Program	ime Out	tcomes	(POs)			1.8.0		PSOs			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO	8 P	59	PO 10	PO 11	PO 12	PSO 1	PSO 2		
CO 1	3	3	2		2								2	3	2		
CO 2 CO 3	3	3	3	1	2								2	3	1		
CO 4	3	3	3	2	3								2	3	2		
CO 5	3	3	3	3	3								2	3	2		
Course Assessment Methods Direct 1. Continuous Assessment Test I, II & III 2. Assignment 3. End-Semester examinations Indirect 1. Course - end survey																	
Cent	- f 41	.11 7	~														
Content Unit	of the sy	/llabu	S INTRA		FION 7	LU DD	OBI I	M S		NC		Por	iode		0		
Basic O Interpret	rganizat er-Algoring Algorithm	tion tion rithm tithm	of Con - Build ns - Illu	nputer ling Ble strative	- Progocks of	gramm Algor ems: Fi	ing L ithm - ind Mi	angua Algo nimu	ages- orithm m value	Flow ic Pro	char obler om lis	t - 1 n Sol st of e	Pseudo ving-S elemer	code Simple Sis, Gu	- Co Strate	mpilers- egies for 1 Integer	

Number in	n a Ran	ge, Factorial of a given number.											
Unit -	II	C PROGRAMMING	Periods	9									
Introductio	on to C	- Features - Data Types - Constants - Variables - I/O Stat	ement - Opera	tors – Expressions -									
Decision N	Making	and Branching - Looping Statements - Break, Goto, Contin	nue.										
Unit –	III	ARRAYS AND POINTERS	Periods	9									
Arrays: Co	oncepts	- Need - one dimensional array - array declaration - feat	tures – array in	nitialization - Two-									
Dimensional Arrays- Multidimensional Arrays.													
Pointers: Introduction, pointer declaration-accessing variable through pointer-pointers and Arrays, Pointers													
and strings – Pointers structures-pointer Arithmetic - Array of Pointers – dynamic memory allocation.													
Unit - I	IV	FUNCTIONS AND STRINGS	Periods	9									
Function: Introduction, function declaration, defining and accessing functions, User-defined Functions-													
storage cla	asses-fu	nction prototypes-parameter passing methods-recursion.											
Strings: Concepts - Strings manipulation - String Input / Output Functions- Strings standard functions -													
Arrays of Strings.													
Unit - VSTRUCTURES AND UNIONSPeriods9													
Structures	-Introd	action- nested structures- Arrays of Structures - Structu	res and Funct	ions - Pointers to									
Structures	– Unic	ns- Type Definition – Bitfields- Enumerated Types.		r									
		,	Fotal Periods	45									
Text Book	ks												
1.	Kern	ighan BW and Ritchie DM, "The C Programming Languag	e", 2nd Editio	n, Prentice Hall of									
	India	, 2017.											
2.	E. Ba	lagurusamy, Programming in ANSI C, Seventh Edition, Mo	c Graw Hill, 20)17.									
Reference	es												
1.	Herb	ert Schildt, C: The Complete Reference, Mc Graw Hill, 4th	Edition										
2.	Dr.V Publi	Rameshbabu, Dr.R.Samyutha, M.Muni Rathnan, "C shers Pvt.Ltd,	omputer Prog	gramming", VRB									
3.	Reen	na Thareja, Programming in C, Oxford University Press, 2018	•										
E-Resour	ces												
1.	https	//www.geeksforgeeks.org/c-language-set-1-introduction/											
2.	https:	//www.programiz.com/c-programming											
3.	https	//www.cprogramming.com/											

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RONEN ENDONEM						Elaya	mpalay	vam, Ti	rucher	ngode –	637 20)5	,			CERTIFIED Week	n Cefi NGC3
Program	me	B.E					Prog	ramm	e Co	de 1	01	Regi	ilation			2019	
Departm	ent	Con	npute	er Sci	ence	& En	iginee	ering				Sem	ester			I	
Course (ode	Cou	rse N	ame				Pe	riods	Per W	/eek	C	redit	M	Iaxin	num N	Iarks
		Cou						Ι		T	Р		C	C.	A	ESE	Total
U19GE	E101	Eng	ineer	ing G	rapl	hics		2	2	0	3		3	5	0	50	100
Cour Objec	-se tive	 Develop skills to enhance their ability to know the concept of engin graphics and to draw the points kept in various positions, lines and planes. Project the drawing of various solids. Sketch sectioned views of solids. Draw the development of surfaces. Draw the isometric and orthographic projections for any given object required standard. 														engin anes. bbject	eering to the
		At t	he en	d of t	he co	ourse,	the st	udent	shou	ld be a	able to)				Knov	vledge
			1 9			,										Le	evel
Cour	se	CO plan	CO1: Construct plane curves and develop projection of points , lines and plane surfaces														K2
Outco	mes	CO2	2: Co	nstruc	et pro	jectio	on of s	olids	with	variou	s con	ditions				ŀ	Κ4
		CO	CO3: Design the section of solids and analyze the true shape of the section														Κ3
		CO4	CO4: Design and develop the different solid surfaces.													ŀ	K2
		CO5: Construct isometric and orthographic projection of different solids.													5.	ŀ	K1
Pre	-	Nil															
requis	ites					<u> </u>	DO M	•								10	
		(3/2/1	indica	tes stre	ength	of corre Progra	PO M elation) umme (apping) 3-Stro Dutcom	g ong, 2 nes (P0	– Medi Ds)	um, 1 -	Weak		N	Iappi PSOs	ng s	-
	COs	PO 1	PO	PO	PO	PO	PO	PO 7	PO	PO	PO 10	PO 11	PO 12	PSO	PSO		
	CO 1	3	3	3	4	3	-	-	-	-	-	-	-	3	2		_
	CO 2	3	3	2	2	2	-	-	-	-	-	-	-	2	-		_
	CO 3	3	2	2	2	3	-	-	-	-	-	-	-	2	2		
	CO 4	3	2	3	3	2	-	-	-	-	-	-	-	3	3		
	CO 5	3	3	2	3	3	-	-	-	-	-	-	-	2	2		
Course	Assess	ment	Meth	ods													
Dire	ct																
1.	Contin	uous	Asses	smen	t Tes	t I, II	& III										
$\begin{vmatrix} 2 \\ 3 \end{vmatrix}$	Assign	ment	or ovo	mina	tion												
J. J.	rect	meste		mma	uon												
1.	Course	- end	surv	ev													
Content	of the	Sylla	bus	J													I
Con	cepts &	Importance of graphics in engineering applications - Use of															
-----------------	-------------------------	---	------------------------	----------------													
Con	ventions(drafting instruments – BIS conventions and specifications –	Periods	1													
	lot for	Size, layout and folding of drawing sheets – Lettering and															
Exar	nination)	dimensioning.															
U	nit – I	PROJECTION OF POINTS, LINES AND PLANE	Periods	3+8													
		SURFACES		••••													
Intro	duction to	Plane curves, Orthographic projection – principles – projection	of points,	straight lines													
(only	first angle	projections) and plane surfaces (polygonal and circular).	D • 1	2.0													
U	nıt - 11	PROJECTION OF SOLIDS	Periods	3+8													
Proje refere	ections of a ence plane	simple solids like prisms, pyramids, cylinder and cone when the	e axis is in	clined to one													
Ur	nit - III	SECTION OF SOLIDS	Periods	3+8													
Secti	oning of s	olids - prisms, pyramids, cylinder and cone in simple vertical po	osition by c	utting planes													
inclin	ned to one	reference plane and perpendicular to the other - Obtaining true sha	pe of section	on.													
Ur	nit - IV	DEVELOPMENT OF SURFACES	Periods	3+8													
Deve	elopment of	of lateral surfaces of simple solids like prisms, pyramids,	cylinders a	and cones –													
deve	lopment of	simple truncated solids involving prisms, pyramids, cylinders and	cones.														
U	nit - V	ISOMETRIC PROJECTIONS, ORTHOGRAPHIC	Periods	5+10													
		VIEWS FROM PICTORIAL VIEWS	1 Ulious	0110													
Isom	etric Proj	ection and Introduction to AutoCAD / Solid Edge: Principles	of isometrie	c projection -													
Isom	etric scale	-Isometric projections of simple solids like prisms, pyramids,	cylinders	and cones &													
ortho	graphic vi	ews from pictorial views.															
Dem	onstration	l only: ded Drafting (Auto CAD / Solid Edge): Introduction to	drafting n	ackages and													
demo	onstration of	of their use.	uraning p	ackages and													
denne		Tota	al Periods	60													
Text	Book:																
T1	Basant A	grawal and C.M Agrawal, "Engineering Drawing", Tata McGraw	Hill ,Third	Edition,2019													
T2	Jain and	Gautam "Engineering Graphics & Design", Khanna Publishing Ho	ouse, 2018														
Refe	rence Boo	k:	,														
R1	Dr.P.Kan	nan and Dr.J.Bensam Raj, "Engineering Graphics", JBR Tri Sea P	ublishers P	vt. Ltd,2018.													
	K.V Nata	rajan, "Engineering Drawing and Graphics", M/s. N.Dhanalakshm	i, Chennai,	2014.													
N2.	K.Venug	opal and V. Prabhu Raja, "Engineering Graphics" New Age Interna	ational Publ	ishers,2011.													
<u>K3.</u>	N.S Parth	asarathy and Velamurali, "Engineering Graphics", Oxford Univer	rsity, New I	Delhi,2015													
R4. R5.	Bhatt N.I	D and Panchal V.M, "Engineering Drawing", Charotar Publishing	House,50 th	Edition,2010													
e-RE	SOURCE	S:	,	,													
E1.	http://npt	el.ac.in/courses/105104148, "Engineering Graphics" - Dr. Nihar R	anjan Patra	, IIT Kanpur													
E2.	http://cfd	.annauniv.edu/webcontent.htm, "Engineering Graphics" - Dr.Vela	murali														
E3.	http://link	<u></u>															

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Programme	B.E	Programme co	de		101		Regu	lation	20	19
Department	Computer Scie	nce and Engineering (CSE)				Se	mester]	[
	(Course name	Perio	ods per	week	(Credit	Maxi	mum N	Iarks
Course code			L	Т	Р		С	CA	ESE	Tota 1
U19PH106	PHYSIC	CS LABORATORY	0	0	4		2	50	50	100
Objectives	To introduce of optics, therma	lifferent experiments to tes l physics, properties of mat	t basic u tter and	understa liquids	anding o	of ph	iysics coi	ncepts ap	oplied i	n
	SUGGE	STED LIST OF EXPERI	MENT	ſS						
 Determinati Determination 	on of Young's i ion of Young's ion of Rigidity ion of Coefficie ion of thickness ion of thickness ion of thermal c ion of thermal c ion of velocity o ation of Waveles	PHYSICS modulus of the material - U modulus of the material - N modulus – Torsion pendulu nt of viscosity of a liquid – of a thin material – Air we th of mercury spectrum – s re power of a prism – Spect onductivity of metallic glas of sound and compressibility ngth and particle size using	Iniform Non unit Im. - Poiseu edge me spectror tromete ss using ty of liq	bendin form be ille's m ethod. neter gr r. g Lee's uid – U	g metho ending n hethod. rating. Disc Mo Iltrasoni	ethoo	od. d. terferome	eter.		
							Т	otal Peri	ods	40
Outcomes: Up	oon completion	of the course, the students	will be	able to:	ainearin	a pro	nartias of	matorial	ç	

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Programme	B.E. / B.Tech.,	Prog	gramme	Code		Regul	ation	•	2019						
Department	CSE, EEE, ECE, IT	, Bio-Tech, CST	& BMI	£		Sem	lester		Ι						
Course Code	Course N	ame	Period	s Per V	Week	Credit	М	aximu	m Marks						
Course Code	Course I	anc	L	Т	Р	C	CA	ESE	Total						
U19CS102	Computer Practic	Imputer Practices Laboratory00425050100Main Objective of the course is to													
Course Objective	 The Main Objective of Make the stu Make the stu Understand t Develop a pr Articulate w solutions to real worl Develop mod 	of the course is to dents to learn the he basic program ogram with a des where computer d problems lular, efficient an	program ming con ired runt program d readab	nming nstruct ime ex is fit le C p	langua ts and kecution in th rogram	age articulate on flow e provisi ns by han	e how fon of ds-on	they ar comp experie	e used outer based ence.						
	At the end of the cours		ulu de al			•			Level						
~	COI: Prepare docum	ent using word p	rocessor	and sp	pread a	sheet			K3						
Course Outcome	flowcharts	of execution of	t C pro	grams	usin	g algorit	hm ar	nd	K3						
	CO3: Write the simp	le C Programs us	ing deci	sion ai	nd looj	ping state	ments		K3						
	CO4: Demonstrate c and pointers.	ode reusability w	ith the h	nelp of	user	defined f	unctio	18	K4						
	CO5: Write program	s that perform op	erations	using	derive	d data ty	pes.		K3						
Pre-	NIL														
requisites															

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Cos			PSOs												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2	
CO 1	3	3	3		3			1	1	2		3	3	2	
CO 2	3	3	3		3			2	1	3		2	3	2	
CO 3	3	3	3	2	3			2	2	3		2	3	2	
CO 4	3	3	3	2	3			2	2	3		2	3	2	
CO 5	3	3	3	3	3			2	2	3		2	3	1	

Direct

- 1.
- Prelab and post lab test Conduct of experiments & Viva 2.
- 3. End-Semester examinations

Indirect

1. Course - end survey

LIST OF EXPERIMENTS:

1. Design an algorithm and flowchart using word processor that reads the customer number and power consumed and prints the amount to be paid by the customer. An electric power distribution company charges its domestic consumers as follows

Consumption UnitsRate of Charge0-200Rs.0.50 per unit201-400Rs.100 plus Rs.0.65 per unit excess 200401-600Rs.230 plus Rs.0.80 per unit excess of 400.

2. Design an algorithm and flowchart for a simple calculator program using word processor for performing various arithmetic operations such as

"+" - Addition

"-" - Subtraction

"*" - Multiplication

"/" - Division

"%" - Modulus

3. Design and develop a C program to accept a number from the user and check whether it is a palindrome or not.

Palindrome number : (a number is a Palindrome which when read in reverse order is same as read in the right order)

Example: Palindrome :11, 101, 151

Not a Palindrome:123, 100

4. Develop a C program to find the sum of the digits of an integer and the number of digits in the integer that is given as input by the user.

Test Case:

Sample Input: 15390

Sample Output:

Sum of the digits=18

No. of digits = 5

For an incorrect choice, an appropriate error message should be displayed.

5. Develop a program to perform the following operations using two dimensional or multidimensional matrices:

a. Addition of two matrices (3x3)

b. Subtraction of two matrices (2x2)

c. Multiplication of two matrices using dynamic memory allocation.

6. Write a program to find the maximum and minimum element in a set of inputs using one dimensional array.

7. Write a program to count the total number of vowels and consonants in a string. For example Input string: I am proud to be an Indian

Output: Total vowels – 10 and Total consonants - 10

8. Develop a program to perform the following string manipulations without using string functions:

- d. String copy
- e. String Concatenate
- f. String length
- g. String Compare
- 9. The Fibonacci numbers are defined recursively as follows:

F1=1

F2=1

Fn = Fn-1 + Fn-2, n>2

Write a function that will generate and print the first n Fibonacci numbers.

Test the function for n=5,10,15

10. Write a function using pointers to exchange the values stored in two locations in the memory. Test Case :

Input : A=10, B=-5

Output : A= -5 , B=10

11. Develop a program to build a database of students with the following attribute: Roll no, Name, Course, Stream, Percentage, and Division. Take input for each student in all fields except division. Calculate division of each student such that those students having percentage $\geq=60\%$ are belongs to first division. Similarly, for second and third division students having conditions 50 % < =percentage<60% and 35 % < =percentage<50% respectively. If any student has percentage less than 35% then write "fail" in division field. After building the database display the database of the students. Hint: create database using structure.

Total Periods 45

E-Resources

1. https://www.programiz.com/c-programming

2. https://www.cprogramming.com/

3. https://beginnersbook.com/2015/02/simple-c-programs/

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U19MCFY1	Envir	onmen	tal Sci	ence ai	nd Eng	gineer	ing	3	0	0		0	1	00	0	100
Objective	The ma	 e main objective of this course is to: Familiarize basics of ecosystem and creating environmental awareness. Congregate quality and standards requirement of water. Contrast water management procedures. Acquire knowledge on air pollution and its control. Summarize Solid waste and its prevention methods. 														
	The stu	Acquire knowledge on air pollution and its control. Summarize Solid waste and its prevention methods. Knowledge Level														
	CO1:	Disting	uish the	e types	of Eco	systen	n and i	mplici	t the	knov	vlec	lge.			ŀ	K1
Outcomes	CO2: 1	Recogn	ize qua	lity, sta	andard	and co	$\frac{\text{ontrol s}}{\cdot}$	trateg	ies of	f poll	ute	d water			ł	K3
	CO3:	Infer an	d expre	ess air j	pollutio	on and	its cor	trol.		1 dia		al maath	od		ł	<u>K3</u>
	CO4: 1	Acquire	ess abo	ut popi	looul F	growt	h hum	an rig	$\frac{1}{hts}$ at	i disp nd Fr	oosa	an mem	t t		יז ג	<u>x3</u> 7
Pre- requisites	Nil			<u></u>		8							-		-	
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Unit - I	I	ntrodu	ction to	o Envir	ronme	ntal S	cience	and F	Engin	eerii	ng				Period	ls 9
Nature and s	scope of	f enviro	onment	al edu	cation-	Natu	ral Re	source	es –	(Fore	est,	Water	, Foo	od, E	nergy	&Land
Resources) pr	roblems	and rer	nedial	measur	es, Eco	osyster	n and 1	Biodiv	versit	y- Ec	cosy	/stem-S	Struct	ure, (Charac	teristics
and functions	s of ecos	system	(in gen	eral)- 1	Biodiv	ersity -	– Defi	nition	- Cc	nser	vati	ion of 1	Biodi	versi	ty (in-s	situ and

Ex-situ)	- Environmental awareness and sustainable development		
Unit -	II Water pollution and Waste water treatment process.	Periods	9
Water]	pollution-causes, effects and control measures of water pollution- case study	y- Waste water treatr	nent
process	Primary, Secondary, Tertiary and desalination -Water quality parameters- I	Hardness, Alkalinity,	DO,
COD, E	OD-Water quality standard- WHO and BIS.		
Unit -	III Air Pollution and its Control	Periods	9
Air Pol	lution - Types of Air pollutants-CO2,SO2, NO2, PAN etc Sources- causes,	effects (Acid rain, G	reen
house	effect, Ozone layer depletion and global warming)- control measures (E	lectro static precipita	ator,
Gravita	ional settling chamber, Baghouse filter, Wet Scrubber and cyclone separator).		
Unit -	IV Radioactive Pollution and Solid waste management	Periods	9
Radio a	ctive pollutants-sources, effects, Nuclear Energy - Nuclear Fusion - Nucle	ar Fission-Nuclear po	ower
plant- l	light water nuclear power plant- Diagram- illustration- working – pollution-	on- impacts-and con	ntrol
measure	es- case study- solid waste-definition-Types of solid waste- Disposal method	l and its problem in s	solid
waste n	anagement-Significance for prevention of hazardous waste management.		
Unit -	V Human population and the environment	Periods	9
Populat	ion growth, Human rights, Value education, environment and Human health,	Family welfare Progr	ram,
Women	and Child welfare, Role of information technology in environment - Satellite	, Data base, Geograph	nical
Informa	tion System (GIA), Environmental impact Analysis (EIA) and Human health.		
		Total Periods	45
Text be	ooks		
1.	Dr.S. Vairam, "Environment Science and Engineering" Gems publication. Ec	lition 2018	
2.	Gilbert.M.Masters-"Environmental Science"-Pearson education. Edition-2-20)13	
Refere	nce books		
1.	Linda Williams- "Environmental Science"-Tata McGRAW – Hill Edition. Edit	tion-I-2008	
2.	T.G.Miller Jr-"Environmental Science"-Wadsworth publishing Co. Edition -10	0-2004	
3.	William P. Cunningham, Barbara Woodworth Saigo- Tata McGraw Hill.Edition	on-4-2011	
4.	NPTEL Course Notes		
5.	Cunnighum and cooper-"Environmental Science"-Jaico Publ, House Edition-4	-2007	
E-Reso	urses		
1	https://libraries.ou.edu/		
2	https://libguides.reading.ac.uk/		
3	https://libguides.reading.ac.uk/		

Semester – II

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Course		CO2:	Identif	y vector	r differe	ential cal	culus.								K2, 1	K3
Outcom	e	CO3:	Apply	Green's	, Stoke's	s and Gau	uss Div	ergence	e theo	rems					K1, 1	K5
		CO4: CO5: functi	Recogr ons.	nize the	Laplac	tunction e transf	orm of	unit s	tep a	nd un	it imp	ulse	;		K2, 1 K5, 1	K3
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CO 5	3	3	3	2	2									2	1	
Course A	Assessn	nent M	ethods													
Direct 1. 2. 3. Indirect	irect 1. Continuous Assessment Test I, II & III 2. Assignment: Simulation using tool 3. End-Semester examinations direct															
1.	Cours	e - end	survey													

Content of the	syllabus		
Unit – I	MATRICES	Periods	12
Characteristic of	equation - Eigen values and Eigenvectors of a real matrix-	- Properties of	f Eigen values and
Eigenvectors -	Cayley-Hamilton theorem(excluding proof) - Diagonalizati	on of matrice	s – Reduction of a

quadratic f	orm to canonical form by orthogonal transformation - Natu	ure of quadra	tic forms. Simple
application	in encoding message using 2×2 matrix.		
Unit - II	VECTOR DIFFERENTIAL CALCULUS	Periods	12
Vector Dif	ferentiation: Vector and Scalar Functions- Derivatives- Curve	es, Gradient o	of a Scalar Field-
Directional	Derivative -Divergence of a Vector Field - Curl of a Vector Field	l – Tangents an	nd Normals.
Unit – II	VECTOR INTEGRAL CALCULUS	Periods	12
Line, Surfa	ce and Volume integrals, Green's theorem in a plane(exclu	iding proof),	Gauss Divergence
theorem(ex	cluding proof), Stokes theorem (Excluding proof) - simple ap	oplications inv	olving rectangular
parallelepip	eds and spheres.		10
Unit - IV	ANALYTIC FUNCTIONS	Periods	12
Analytic fu	nctions – Necessary and sufficient conditions for analyticity in (Cartesian and	polar coordinates -
Properties -	- Harmonic conjugates – Construction of analytic function - Co	onformal mapp	oing – Mapping by
Iunctions c-	LADIACE TRANSFORMS	Darioda	12
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Existence c	onditions – Transforms of elementary functions – Transform of u	nit step functio	on and unit impulse
Initial and f	inal value theorems(excluding proof) – Inverse transforms – Conv	s of derivatives	s and integrals –
proof) – Tra	unsform of periodic functions – Application to solution of linear s	econd order or	dinary differential
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equations w	ith constant coefficients.		, , , , , , , , , , , , , , , , , , ,
equations w	ith constant coefficients.	Total Periods	60
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U19EN202	English	n for C	ommu	nicatio	n - II			3	0	0	3		50	50		100
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	• To j	provide	suitable	listenii	ng tasks	s to dev	elop co	ommun	icative	ability	for acad	emic	and pr	ofessio	onal pr	ogress
Ohiostino	• To i	inculcat	e chann	elized r	eading	to make	e learne	ers prof	icient i	n the cl	nosen pr	ofessi	ional v	vriting	contex	xts.
Objective	• To i	improve	learner	s' voca	bulary	and gra	mmar t	o supp	lement	their la	nguage	use at	profe	ssional	conte	xts
	• Ass	ist stude	ents in t	he deve	lopmer	nt of int	ellectu	al flexi	bility,	creativi	ty, and o	cultur	al liter	acy so	that th	ney may
	eng	age in li	fe-long	learnin	g.											5 5
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						0 0							U		Kno	wledge
	The stu	ne students who complete this course successfully are expected to:														
		O1: Acquire sufficient command over language to speak at an academic or professional														
	context	D1: Acquire sufficient command over language to speak at an academic or professional mtext through continuous exposure to similar listening tasks. K2														
		Intext through continuous exposure to similar listening tasks. K2 O2: Write technically well at a professional contexts through exposing them to similar K2														
Outcomes	reading	O2: Write technically well at a professional contexts through exposing them to similar K3 adings.														
	CO3:	Use la	nguage	at le	ngth a	t tech	nical	and p	rofessi	onal s	ituatio	ns th	rough	the	_	
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	CO4: 5	Student	s shoul	d be a	ble to	ethica	lly gat	ther, u	nderst	and, e	valuate	and	synth	esize		70
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	CO5: S	tudents	s should	d be pro	oficien	t in ora	al com	munic	ation a	nd wri	ting.				I	K4
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requisites																
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	Conten	t of the	syllab	us												
Unit - I													Per	riods		9

I istoni			
Listenn	ng- Listening for Cultural Awareness, Listening to Professional Conversation	ons, Talks, Interviews	and Lectures
Speakir	ng- Developing Confidence to get rid of Fear on the Dias, Discussion a	t a Corporate Contex	xt. Reading –
Inferent	ial Reading, Reading Short Messages and Technical Articles, Writing- Intro	oduction to Letter Wr	iting, Writing
Formal	and Informal Letters, Thanking Letters, Letters Calling for Quotations, I	Letters Placing an Or	rder, Seeking
clarifica	tion, Letters of Complaint. Focus on Language–Adjectives and Degrees of C	Comparisons	
Unit	- II	Periods	9
Listenii	ng- Listening to specific information relating to technical content, Lis	stening for statistical	information
Speakir	ng- Expressing opinions, Formal Discussions, Describing Role Play at Bu	siness Context and (Consolidating
Ideas. R	eading-Reading Technical Articles in Journals and Comparing Articles. Wi	riting- Letter seeking	permission to
undergo	practical training and to undertake project work. Focus on Language-	Simple, compound	and complex
sentence	es and Transformation of Sentences.	D 1 1	0
Unit		Periods	9
Listenii	ng- Listening to understand the overall meaning, Listening to Interviews an	d Presentations. Spea	king- Giving
Instruct	ions and Showing Directions and Rephrasing Instructions. Reading– Skin	nming and Scanning,	Reading Job
Advertis	sements. Writing- Applying for a Job, Writing a CV. Focus on Lan	guage– Pronouns, P	hrasal verbs,
Restrict	ive and Non - restrictive clauses.	Daula 1	0
Unit		Periods	9
Listenii Voice N	1g - Listening and retrieving information. Speaking- Developing fluency and Adulation and Interaction Improving Value Quality Deading Deading a	Conerence, Accent N	leutralization,
VOICE N	Addulation, and intonation, improving voice Quality. Reading -Reading a	ind understanding Ad	vertisements.
w riting	- Letters to the Editor, Letter of Complaint, various kinds of Reports, Per	mission to go for inc	
Focus (in Language – Countable, Uncountable nouns, Recommendations, Discour	rse Markers and Con	iparative and
Unit X	7 The Connectives, Imperatives.	Dariada	0
Unit - V	. Listoning to Freemanted Tayte and Filling in the Planks. Speeling Min	d Manning Davalani	9 Cohamanaa
and Sol	f Expression Making presentations. Paralinguistic and Extra linguistic Expression	d Mapping, Developing	
and Ser	I-EXDICSSION, MAKING DICSCHIAUONS, FALANNGUISUU ANU EXUA IMPUISUU I'U	\mathbf{h}	$\gamma $ P anding
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Objective	The main To react the term of	 The main objective of this course is to: To recognize the basic technology requirements in water treatment To gain knowledge in Polymeric materials towards engineering applications. To enrich the Knowledge of the students with the basics of Nano materials, their properties and applications. Familiarize about the renewable energy and different types of batteries in the engineering application. Gain knowledge in destruction of metals and protection for engineering applications 														
	The stud CO1: In	Gain knowledge in destruction of metals and protection for engineering applications The students who complete this course successfully are expected to: Knowledge Level CO1: Implement innovative solutions inwastewater treatment process. K3														
	CO2: Io	lentify	the ap	oplicat	ions o	of a spe	ecific p	olyme	er in t	he fie	ld of er	nginee	ring.		K	.2
Outcomes	CO3: F	orecas	t the in	nforma	ation o	of Nan	opartic	eles an	d the	r indu	strial a	pplica	tions		K	2
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	1.	Cont	tinuous	s Asses	sment	Test I	, II & I	II								
	2.	Assi	gnmen	t : sim	ulation	i using	tools									
	J.	End-	semes	aer exa	uminat	ions										
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Introduction- Determinatio	Sources n of Hare	and ir Iness l	npuriti by ED	ies in TA m	Wate ethod,	r, Sof Dom	t and estic V	Hard Vater [water Freati	, Wa nent.	ter qua Boiler	lity p Feed	aramet Water	ers, Types –Requisites	of Haro s, Proble	dness – ms due

to ha	rd water in boilers - Scale and Sludge formation in boilers-Caustic Embritt	lement-Boiler corrosion	n, Treatment of
boile	feed Water – Internal conditioning (Carbonate, Phosphate, and Calgon con-	ditioning) External con	ditioning – Ion
excha	inge process, Zeolite process, Brackish water –Water purification by Reverse o	smosis.	-
Unit	- II POLYMER CHEMISTRY	Periods	9
Introc	luction - Occurrence, definitions – Functionality - Degree of Polymerization,	Classification of polyn	ners – structure
(Line	ar, Branched & network polymer structure) block, random & graft copolymers	, properties of polymer	s, Tacticity, Tg,
copol	unar weight - number and weight average method. Types of polyment	zationis: Addition, col	ndensation and
Prepa	ration, properties and applications of PE, PMMA, PC, nylon6, nylon 66, PET.	and Bakelite.	orymerization , .
Unit	- III NANO CHEMISTRY	Periods	9
Basic	s- distinction between molecules, nanoparticles and bulk materials; size	dependent properties.	Nanoparticles:
nanoc	cluster, nanorod, nanotube (CNT) and nanowires. Synthesis: Sol-gel, Preci-	pitation, Thermolysis -	· hydrothermal,
solvo	thermal, Electro deposition, Spray Pyrolysis, Chemical Vapour deposit	ion, Laser ablation;	Properties and
applic	cations of nano materials in medical and electronic devices.		-
Unit	- IV RENEWABLE ENERGY AND STORAGE DEVICES	Periods	9
Rene	wable energy and its sources - Solar Energy - Photo voltaic cells, Importance	of Solar cells - p-n jui	nctions in Solar
cells	- Working of Photovoltaic cell, Recent advances in solar cell materials, Wind	energy - Types of Wir	nd Power Plants
(wri Tidal	bower systems	ants (1115), Darrage a	lu Noll-Dallage
Batte	ries and fuel cells: Types of batteries - Dry cells-Alkaline battery, lead storage	battery. Ni-Cd battery.	lithium battery.
Fuel	cell - H_2 - O_2 fuel cell-applications.		
Unit	- V CORROSION AND ITS CONTROL	Periods	9
Intro	duction, Types of corrosion - chemical and electrochemical corrosion, mechan	nism, Pilling -Bedworth	n rule, Types of
electi	rochemical corrosion - Galvanic corrosion, Pitting corrosion, Crevice corrosior	n, Corrosion on wire fer	ice and Pipeline
corro	sion, Factors influencing rate of corrosion, corrosion control methods - Sac	rificial anode and imp	ressed cathodic
curre	nt. 	· · · · · · · · · · · · · · · · · · ·	(1
Flect	ctive coatings – Paints: constituents and functions, Metallic coatings - steps roplating Electroplating (Au) Electro less plating (Ni)	s involved in cleaning	the surface for
Lieet	rophaning, Dieed ophaning (174), Dieed o 1000 phaning (174).	Total Periods	45
Text	Books:		
1.	O.G.Palanna, "Engineering Chemistry "Tata Mc GrawHill PVT, Ltd. Second I	Edition -2017	
2	Dr.S.Vairam .Dr.S.Mageswari.Dr.K.Balachandran, Engineering Cher	nistrv : First Ed	dition. Wilev
2.	publication,Reprint-2016	,	
Refe	rences:		
1.	Engineering Chemistry: Jain & Jain, Dhanpat Rai Publishing Company Edition	n- 16- 2015.	
2.	Arun Bahl, B.S. Bahl, G.D. Tuli, Essentials of Physical Chemistry, Published	by S. Chand & Compar	ny Ltd, 2014
3.	Puri, Sharma and Pathnia, Physical Chemistry-II, Vishal Publishers, Edition-	2019.	
4.	Engineering Chemistry: Sashi Chawla, Dhanpat Rai & Co (pvt.)ltd. Edition-	5-2013.	
5.	Dr.S.Vairam ,Dr.Suba Ramesh, Engineering Chemistry: First Edition, Wiley	publication,Reprint-201	6
E-Re	sources.		
1	https://www.who.int/water_sanitation_health/dwq/arsenicun6.pdf		
2	https://www.schandpublishing.com/books/tech-professional/applied-science/a chemistry/9788121941129/# XdZ214MzY2w	-textbook-polymer-	
3	https://www.elsevier.com/books/nanochemistrv/klabunde/978-0-444-59397-9		

		VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205 B E Programme Code 102 Regulation												Aragement System SO 3001/2015 CETIFED Protector		
Programm	e B.	Ε.					Progr	amme	e Code	1	102	Re	gulation		2019	
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U19EE201	Bas Elec	c Elec tronic	trical s Eng	and gineer	ing		3	5	0		0	3	50	50	100	
Course Objective	The	 he students should made to Learn the basic concepts of electrical parameters and electrical machines Learn the electrical wiring methods Learn the basics about semiconductor families and digital logics 														
	At th	e end	of the	cours	e, the	studen	t shoul	d be a	ble to,						Knowledg Level	<u>g</u> e
	CO 2	CO1:Understand the basics of electric circuits and type of the connection												K2		
Course Outcome	CO2 AC	2: Undenachin	erstand es.	the ba	asics o	of electi	omagn	etic la	ws and	basic	work	ing prin	ciple of	DC and	К2	
outcome	CO: and	:Unde safety	erstance measu	d the c ures.	conce	pts of 1	tariff, e	energ	y savir	ıg, ill	umina	tion, e	lectric la	amps	K2	
	CO	Unde	rstand	the ba	sic op	erating	charac	teristi	cs of se	mico	nducto	r device	es.		K2	
	CO	Unde	rstand	the fur	ndame	entals o	f digita	l logic	es and i	ntegra	ated ci	rcuits.			K2	
Pre-requisites	Basi	c conc	epts ar	nd und	lerstai	nding o	of magi	netic f	ields							
(3/2)	'1 indica	tes stre	ngth of	CO / I f corre	PO M lation	apping) 3-Stro	g ong, 2 -	- Medi	um, 1	- Wea	k		CO/PS) Mappir	ıg	
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CO 1	3 2		2	5	•	,	0	,	10	11	2	3	2			
CO 2	3 2	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$														

CO 3

CO 4

CO 5

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment
- 3. End-Semester examinations

Indirect

Course – end Survey

Content of the syllabus

Unit –	I INTRODUCTION OF ELECTRICAL CIRCUITS	Periods	9
Definition o	f Voltage, Current, Power, Energy, Power factor, Circuit parameters, O	hm"s law, Kircł	off's law. Concepts
of AC Circu	its- RMS value, Average value, Form and Peak factors, Concept of re	al and reactive	power. Introduction
to three pha	se systems - types of connections, relationship between line and phase	alues. Concept	of DC circuits
Unit - I	I INTRODUCTION OF ELECTRICAL MACHINES AND MEASUREMENTS	Periods	9
Faraday's la	aws of electromagnetic induction - Lens law - Fleming's left hand	rule and Right	hand rule. Working
principle an	d construction of AC and DC machines -Working principle and const	ruction of Trans	former- Introduction
to electrical	measuring instruments - Analog and Digital Instruments (Qualitative)	1	
Unit – I	II WIRING AND ILLUMINATION	Periods	9
Types of w Electrical ta Illumination	iring-staircase and corridor wiring - wiring accessories. Different ty ariff - Energy conservation. Simple layout of power system-variou - Different types of electrical lamps.	pes of safety r s energy resou	neasures - Earthing. Irces,. The Laws of
Unit - I	V SEMICONDUCTOR DEVICES	Periods	9
PN junction Transistor c characteristi	diodes - Zener diodes - characteristics. Transistors: PNP and NPN configurations -characteristics - comparison. Special semiconductor cs –UPS – SMPS.	transistors - T devices: FET -	heory of operation - SCR - LED – V-I
Unit – T	V DIGITAL FUNDAMENTALS	Periods	9
Number sys using Gates	tems - Boolean Theorems – De Morgan's Theorem - Logic gates -Im - Introduction to Operational Amplifier.	plementation of	Boolean Expression
		Total Periods	45
Text Books			
1.	D.P. Kotharti and I.J Nagarath, Basic Electrical and Electronics Engin 2016.	eering, Mc Grav	v Hill, Third Edition,
2.	M.S. Sukhija and T.K. Nagsarkar, Basic Electrical and Electronics Engin	eering, Oxford, 2	016.
References			
1.	S.B. Lal Seksena and Kaustuv Dasgupta, Fundaments of Electrical Engin	eering, Cambridg	ge, 2016
2.	Mittle, Mittal, Basic Electrical Engineering, 2nd Edition, Tata McGraw-H	Hill Edition, 2016	
3.	S.K.Sahdev, Basic of Electrical Engineering, Pearson, 2015.		
4.	John Bird, -Electrical and Electronic Principles and Technology, Fourth	Edition, Elsevie	r, 2010.
5.	K Murugesh Kumar, Elements of Electrical Engineering, Vikas Publishir	g House Pvt. Ltd	.2011.
E-Resource	s		
1.	https://nptel.ac.in/courses		
2.	https://www.electrical4u.com/electrical-engineering-articles/illuminat	ion-engineering/	/
3.	https://ocw.mit.edu/courses/electrical-engineering-and-computer-scienspring-2007/lecture-notes	nce/6-002-circui	ts-and-electronics-

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Departm	ent	Con	npute	er Sci	ence	& Er	iginee	ering				Sem	ester			II			
Course (Code	Cou	rse N	ame					Pe	riods l Week	Per	C	redit	N	/laxir	num N	/larks		
									L	Т	Р		С	C	ĽA	ESE	Total		
U19GI	E 202	Basi Eng	ic Civ gineer	vil and ing	d Me	chan	ical		3	0	0		3	5	50	50	100		
Cour Objec	rse tive	 The main objective of this course is to: Familiarize the materials and measurements used in Civil Engineering. Provide the exposure on the fundamental elements of civil engineering components Impart basic knowledge of power plants, pumps & boilers. Study the various types of IC engines and understand the features of IC engine. Enable the students to distinguish the components and working principle of refrig conditioning system. 											and str	uctures. and air					
		At t	he end	l of the	e cou	rse, th	e stude	ent sho	ould b	e able	to					Knov Le	wledge evel		
		CO of po	1: Exp pints in	plain t n surv	he us eying	age o	f civil	engin	eering	mater	rials ar	nd meas	sure th	e locat	tion	K2			
Cour	se	CO 2: Identify the nature of building components, structures and material qualities.													K1				
Outco	mes	CO 3: Classify the various types of power plant, pump, turbine & boiler]	K2		
		CO 4 : Compare spark ignition and compression ignition of two stroke and four stroke engine.]	K2				
		CO syste	5: Ela em.	borate	the v	vorkin	g prin	ciple o	of refr	igerati	on and	air cor	ndition	ing	K3				
Pre	- vitos	Nil																	
Tequis						CO/	PO M	apping	2					(CO/PS	50	1		
		(3/2/1	indica	tes stre	ngth	of corre	elation) 3-Stro	ong, 2	– Medi	um, 1 -	Weak		Ν	Aappi	ng			
	COs				1	Progra	amme (Dutcon	nes (PC	Ds)	•				PSO	S			
	0.03	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2				
	CO 1	3	3	3	2	3	-	-	-	-	-	-	-	3	2				
	CO 2	3	3	3	2	3	-	-	-	-	-	-	-	3	-		_		
	CO3	3	2	$\frac{2}{2}$	-	2	-	-	-	-	-	-	-	$\frac{2}{2}$	2				
	CO 4	3	2	2	-	$\frac{2}{2}$	-	-	-	-	-	-	-	2	2	-			
Course	Assess	ment	 Meth	ods		-								-	_				
Dire	ect																		
1. 2.	Continu Assignr	ious A nent	ssessi	nent T	Test I,	II & 1	III												
3.	End-Se	mester	r exam	inatio	n														
Indi	rect	and		7															
1.	Course	- end	survey	/															

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Con	ntent of the Syllabus		D • 1	0								
U	Unit – I CIVIL ENGINEERING MATE	RIALS AND SURVEYING	Periods	9								
Civi	il Engineering Materials: Bricks – Stones – S	and – Cement – Concrete – Ste	el sections.									
Surv	Veying: Introduction to Surveying & Leveling.		Dominda	0								
U	Unit - II BUILDING COMPONENTS A		Periods	9								
Four	Indations: Site selection, Foundation – I ypes –	Requirement of good foundation	ons. Doofing	Flooring								
Plast	stering.	– Beams – Columns – Linteis	s – Rooning	- Flooring -								
Uı	Init - III POWER PLANT ENGINEERI	NG	Periods	9								
Intro	oduction, Classification of Power Plants – Boil	ler - Working principle of steam	n , Gas , Di	esel, Hydro-								
elect	ctric, Solar, Wind and Nuclear Power plants -	Merits and Demerits – Pumps	and turbine	es – Working								
princ	ciple of reciprocating pumps (single acting and	l double acting) – Centrifugal P	ump.									
U	Jnit - IV IC ENGINES		Periods	9								
Intro	oduction to Electric vehicles- Internal combus	stion engines as automotive po	wer plant -	- Four stroke								
and	two stroke cycles – Working of SI and CI	engines - Comparison of four	r stroke and	d two stroke								
engi	$\frac{11105}{11105}$	CONDITIONING SYSTEM	Dominda	0								
Torra	minology of refrigeration and air conditioning	Dringinla of vanour compressio	rerious	y ur observation								
refri	igeration system – Layout of typical dome	stic refrigerator – Window a	nd split ty	ne room air								
Tem	refrigeration system - Layout of typical domestic refrigerator - Window and split type room air											
l cond	ditioner.	-		-								
cond	ditioner.	Tota	al Periods	45								
cond Text	ditioner.	Tota	al Periods	45								
Text	ditioner. At Book: Dr.P.Kannan, "Basic Mechanical Engineerin	Tota ng", JBR Tri Sea Publishers Pvt	al Periods	. 45								
Text T1. T2	ditioner. At Book: Dr.P.Kannan, "Basic Mechanical Engineerin Pravin Kumar, "Basic Mechanical Engineeri	Totang", JBR Tri Sea Publishers Pvt	al Periods	45								
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	÷		VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205													
Program	nme	B.E.	,			I	Program	nme Co	ode		Reg	ulation		2019		
Departr	nent	CSE, C	ST & F	CEE			-				Se	emester		II		
			C	N		F	Periods	Per W	eek	Credit		Maxi	mum M	Iarks		
Course C	Jode		Cour	se Nam	ie		L	Т	Р	С		CA	ESE	Total		
U19CS	203	Pythor	n Prog	rammi	ng		2	0	2	3		50	50	100		
		The stu	dent sh	ould be	made to	,										
Course Objectiv	7e	• • •	 Understand the fundamentals of Python programming Handle list, tuples, sets and Dictionaries data types Learn function prototypes and string functions. Use files and modules for data processing Understand packages in Python and data visualization 													
		At the end of the course, the student should be able to, Knowledge Level Knowledge														
Course		CO1: Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements. K3														
Outcom	e	CO2: Perform operations on list, tuples, sets and Dictionaries using python. K3,K4														
	CO3: Implement function prototypes and string functions. K3,K4															
		CO4: /	Apply f	files and	d modu	les and	perfor	m oper	ations	on CSV	/ files	5.		K3,K4		
		CO5: F	erform	data vi	isualiza	tion an	d apply	Pytho	on pack	ages fo	r CSV	V files		K3,K4		
Pre- requisites	5	Nil														
			CO / PO Mapping CO / PO Mapping													
	()	3/2/1 ind	/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak Mapping													
Cos	(.	3/2/1 ind	icates st	Programme Outcomes (POs) PSOs PSOs												
Cos	(. PO 1	3/2/1 indi PO 2	PO 3	PO 4	Program PO 5	mme O	PO 7	(POs) PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2		
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pattern			
Uni	t - II LISTS, TUPLES, SETS AND DICTIONARIES	Periods	12
Lists:	ist operations, list slices, list methods, list loop, mutability, a	aliasing, cloni	ng lists, list
parame Dictior	ters; Tuples: tuple assignment, tuple as return value; Sets: aries: operations and methods.	methods an	d operators,
Illustr Dictior	tive programs : find minimum in a list, list operations, create ary, operations on sets and tuples.	and insert el	ements in a
Uni	FUNCTIONS AND STRINGS	Periods	12
Function method method	ns definition, declaration, arguments, parameters – formal and s - function prototypes, recursion; Strings: string slices, immuta s, string module, regular expressions.	l local, param bility, string f	eter passing unctions and
Illustration length values	Ative programs : String manipulations, function that takes a list of the longest one, counting the vowels and consonants in a given using recursion.	of words and string, excha	l returns the nging of two
Uni	FILES AND MODULES	Periods	12
Files an	d exception: Text files, reading and writing files, format operator	; command lin	e arguments,
errors a	nd exceptions, handling exceptions, modules, accessing CSV file.		
Illustra	tive programs: Word count, file copy, file operations: accessin	g a CSV file	and generate
reports			
Uni	t – V PACKAGES AND DATA VISUALIZATION	Periods	12
Text pi	ocessing, Numerical processing: numpy package – mean, medium	and mode, par	idas package
- vecto	r, dataframe, data visualization: matplotlib, Time operations.		
Illustra using F	tive programs : Bar chart, Pie Chart, Create and display a data fra andas, Create a 3x3 matrix with values from 2 to 10 using numpy.	me from a dic	tionary input
		Total Periods	60
Text Be	oks		•
1.	Anurag Gupta,G.P BISWAS ," Python Programming – Problem solv Edition 1, Tata McGraw Hill, 2019	/ing, packages	and Libraries,
2.	E Balagurusamy, "Problem Solving and Python Programming", Edition	<u>11, TataMcGra</u>	w Hill, 2018
3.	Reema Inareja, "Python Programming using Problem Solving Appl Press 2017	oach, OXFOR	D University
Referen	Ces		
1.	Allen B. Downey, "Think Python: How to Think Like a Computer Sci for Python 3, Shroff/O'Reilly Publishers, 2016.	entist", 2nd edi	tion, Updated
2.	John V Guttag, —Introduction to Computation and Programming U expanded Edition, MIT Press, 2021	Jsing Python",	Revised and
3.	Guido van Rossum (Author), The Python Development Team (Author) Tutorial and What's New ,2022,Shroff Publishers first edition	or),An Introduct	ion to Python
E-Reso	Irces		
1.	http://greenteapress.com/wp/think- python/)		
2.	https://www.python.org/about/gettingstarted/		
3.	https://beginnersbook.com/2018/03/python-tutorial-learn-programming	<u></u>	
4.	https://www.tutorialspoint.com/python/index.htm		
5.	https://www.learnpython.org/		
6.	https://www.udemy.com/topic/python/free		

	VIV	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution Affiliated to Anna University Chennai) Elayampalayam, Tiruchengode – 637 205 Image: College of the second seco																
Programme	B.E/I	B.TE	CH		I	Progr	amme	code				Reg	ulatio	n	201	9		
Department				B.I	E-CSI	£					-	Se	meste	r				
Course		Cou	irse n	ame			Peri	iods p	er w	reek	Crea	lit		Iaximu	ım Ma	rks		
	CHEM	тетр			DATO					P 4	<u> </u>		CA 50	ESI	$\frac{\mathbf{ESE}}{50} = \frac{1000}{100}$			
019CH208	The main	151 K	CI LA	of th		JK I	s to:	0		4	2		30	30		100		
Objective		 Gather basic simple acid-base reactions and study the mechanism of acid mixture with base. Learn pH and potential of hydrogen in a sample solution. Study the redox reaction through potential difference. Quote iron forms complex with thiocyanate. Gather knowledge on hardness producing salts and removal of hardness through estimation. Collect data required for dissolved oxygen present in water sample. Understand alkalinity and available chlorine present in water sample. 																
	The stud	ents v	who c	ompl	ete th	is co	urse s	ucces	sfully	y are	expect	ed to	:		Kno Lev	owledge rel		
	CO1: In mixture	Infer knowledge on neutralization reaction between acid, acid e with base and identify the concentrations.											cid	K3				
Outcomes	CO2: S hydroger	pot t n and	he co redoz	oncen k reac	tratio	on of	samj	ple so	olutio	on th	rough	pote	ential	of	K3			
	CO3: Es	stimat	te Iroi	n by c	ompl	exati	on rea	ction	spec	trome	etricall	y.			K5			
	CO4: Do supply.	eterm	ine h	ardne	ss and	d diss	solved	l oxyg	gen p	resen	t in do	omest	tic wa	ter	K5			
	CO5: Io sample.	dentif	fy all	kalini	ty an	id av	ailabl	e ch	lorin	e pre	esent i	n th	e giv	ren	K5			
Pre- requisites	Nil																	
	(3/2/	1 indi	cates s	streng	Contract the contract of the c	O / P	O Ma j ation) 3	pping 3-Stro	ng, 2	– Mee	dium, 1	- We	eak	CO/PS	SO Maj	pping		
	COs				Pro	ogram	me Ou	utcom	es (P	Os)					PSOs			
		РО 1	PO 2	PO 3	РО 4	РО 5	PO 6	РО 7	РО 8	PO 9	PO 10	РО 11	PO 12	PSO1	PSO 2	PSO 3		
	CO 1	3	3		2	2	1	1					2	1	2			
	CO 2 3 3 2 1 1 2																	
	CO 3	3	3		2	1								1	2			
	CO 4	3	3	1	2	2	2	2					2	1	2			
	CO 5	2	3	1	2	2	2	2					2	1	2			

1.	Estimation of HCL using NaOH by Conductometric titration									
2.	Estimation of Mixture of acid using	NaOH by Conductometric titration.								
3.	Estimation of Barium chloride using sodium sulphate by									
	Conductometric precipitation titration.									
4.	Estimation of ferrous iron by Potentiometric titration									
5.	Determination of HCL using NaOH	l by pH metry .								
6.	Estimation of Ferric ion by Spectrop	photometry.								
7.	Determination of Total, temporary and permanent hardness of water by EDTA method.									
8.	Estimation of Dissolved Oxygen con	ntent in water by Winkler's method.								
9.	Estimation of alkalinity in water san	mple.								
10.	Estimation of available chlorine in bl	bleaching powder.								
		Total Periods	45							
Lab N	Manuals suggested:									
1.	Chemistry laboratory I & II by Dr.A.Ravikrishnan,Sri Krishna Pub,Revised Edition-2017									
2.	Chemistry laboratory Manual by Dr.Veeraiyan, Revised Edition-2017									

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN																		
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Programme	B.E	1			•	Prog	ramme	e Coc	le 1	101	R	egulatio	on	•	2019				
Department	Co	npute	er Sci	ence	& En	iginee	ering				S	emester			II				
Course Conta	Cou	ırse N	ame					Peri	ods	Per W	eek	Crec	lit 1	Maxi	mum N	/larks			
Course Code								Ι	_	Т	Р	С	(CA	ESE	Total			
U19GE203	Eng	gineer	ing P	racti	ices L	abora	atory	()	0	4	2		50	50	100			
	The	main o	objecti	ve of	this co	urse is	to:	•	ľ										
	The	The students should made to																	
Course	1.	 Know the plumbing line assemblies. Weld lap joint buttion and Trioint 																	
Objective	 Weld lap joint, butt joint and T-joint. Learn the assembling and dismantling methodology of home appliances. 																		
Objective	 Learn the assembling and dismantling methodology of home appliances. Learn the resistor value identification through colors coated on resistor. Learn the basics of signal generation in CRO. 																		
	 Learn the basics of signal generation in CRO. Learn the soldering techniques in PCB board for designing the projects. 																		
	At t	he end	of the	cours	se. the	studen	t shoul	d be a	ble to).					Knov	vledge			
	At the end of the course, the student should be able to,											Le	evel						
	CO1: Perform basic machining operations and finish the job to the requirements											ł	K2						
	CO	2: Ma	ke va	rious	joint	s such	as cr	oss 1	ap jo	oint ar	nd To	e lap j	oint in	the V2					
Course	carp	carpentry.													1	12			
Outcomes	CO basi	CO3: Understand the basics of house wiring techniques and the measurements of basic electrical quantities.												ts of	ł	K2			
	CO	CO4 : Understand the resistor value identification through colors coated on												т	70				
	resi	resistor.												ł	\$2				
	CO	5: Un	dersta	nd th	ne solo	dering	techn	ques	in 1	PCB t	oard	for des	signing	the	ł	K2			
	proj	ects.																	
Pre -	Nil																		
requisites																			
	(2/2/1				CO /	PO M	apping	2	м	12 1	XX 7.	.1		CO/P	SO				
	(3/2/1	indica	tes stre	ength	Progra	amme () 5-Stro	ng, 2 - es (PC	$\frac{-\text{Mec}}{(s)}$	num, i	- we	ак		PSO	ing Is	_			
COs	PO	РО	РО	PO	PO	РО	PO	PO	PO	PO	P	D PO	PSO	PSC		-			
<u> </u>	1	2	3	4	5	6	7	8	9 2	10	1	1 12	1	2		_			
CO 2	3	2	3	2	2	-	-	-	2	-	-	-	2	2		_			
CO 3	3	2	2	3	2	2	-	-	2	-	-	_	3	-					
CO 4	3	2	2	3	2	2	-	-	2	-	-	-	2	-	_	_			
CO 5	3	2	3	3	-	2	-	-	2	-	-	-	3	-					
Content of th	e Sylla	abus																	
				(CTT)	п от		GROU	<u>JPA</u>				`							
	INTERI			(CIV	<u>IL&N</u> F	ЛЕСН	ANIC	AL E	NGL	NEER	ING	<u>)</u>							
1. <u>CIVILENG</u>	INEE	MING	KAU		<u>Ľ</u>														
(a)Studvofnine	ineioir	ts.itsle	ocatio	nandf	unctio	ns:val	ves.tan	s, cor	pling	zs. uni	ons r	educers	and						
elbowsinhouse	noldfitt	ings.					p	.,	r		, 1								
	elbowsinhouseholdfittings. h)Hands-on-exercise:Basicpipeconnections-Mixedpipematerialconnection-Pipe connectionswithdifferent																		

joiningcomponents.

2.Carpentry:

 $(a) \\ Study of the joint sinroofs, doors, windows and furniture.$

(b)Hands-on-exercise: Woodwork, joints by sawing, planning and cutting.

II. MECHANICALENGINEERINGPRACTICE

1.Welding:

(a)Preparationofarcweldingofbuttjoints, lap joints and tee joints.

(b)Gasweldingpractice

2.BasicMachining:

(a)Turningand Facing.

(b)DrillingPractice

3.Sheet Metal Work:

(a) Forming&Bending

(b) Model making–Tray and Basket.

4.Demonstrationon:

(a) Foundryoperationslikemouldpreparationforgear and stepcone pulley.

(b) Fitting-Exercises-Preparationofsquarefittingandvee-fittingmodels.

5. Study of Air Conditioner & Centrifugal Pump.

GROUPB

(ELECTRICAL& ELECTRONICS ENGINEERING)

III. ELECTRICALENGINEERINGPRACTICE

1. Residential housewiringusingswitches, fuse, indicator, lampandenergymeter.

2.Fluorescentlampwiring.

3.Stair case wiring

4. Measurementofelectrical quantities-voltage, current, power & power factor in RLC circuit.

5. Measurement of energy using single phase energy meter.

6. Measurement of resistance to earth of electrical equipment.

7. Demonstration on Soldering & Brazing

8. Hands on exercises/assembly of Computer, Laptop, Cell phone, Fan, Iron box etc.

IV. ELECTRONICSENGINEERINGPRACTICE

1. Study of Electronic components and equipments – Resistor, colour coding measurement of AC signal parameter (peak-peak, RMS period, frequency) using CR.

2.StudyoflogicgatesAND,OR,EORand NOT.

3.GenerationofClockSignal.

4. Soldering practice-Components Devices and Circuits-Using general purpose PCB.

5.Measurement ofripplefactorofHWRandFWR.

	Total Periods 45
Refe	rence Book :
R 1	Dr.P.Kannan, Mr.T.Satheeskumar & Mr.K.Rajasekar, "Engineering Practices Laboratory" Manual.
KI.	First Edition, 2017.
R2	Mr.T.Jeyapoovan, Mr.M.Saravana Pandian, "Engineering Practices Lab" Manual, Vikas Publishing
K2.	House Pvt Ltd, 2017.

	VIVEKA (Au	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205											
Programme	B.E		Pro	gramm	e Code	101	Regulation		2019				
Department	Computer S	Science and Eng	ineerin	g			Semester		Π				
Course Code	Cour	num M	larks										
Course Code	Cour	se Name	L	Т	Р	С	CA	ESE	Total				
U19MCFY2	Indian Co Universal l	Indian Constitution and Universal Human Values30001000											
Course Objective	i) To ii) To iii) To iii) To	bjective of this co know about Ind know about cen know about Ind	ian con tral and ian soc	to: stituti l state iety.	on. govern	nment fu	inctionalities	in Ind	ia				
	At the end of	f the course, the st	udent sh	nould b	e able to),]	Knowledge level				
	• Underst	tand the function	ns of th	e Indi	an gov	ernmen	t		K1				
	• Underst	tand and abide t	he rule	s of th	e India	n consti	itution		K1				
Outcome	• Underst	tand and apprec	iate dif	ferent	culture	e among	the people		K1				
Course	 Understand material 	anding human be	ing as a	co-exi	stence	of the set	ntient 'I' and t	he	K1,K2				
	 'Body' a profession Ability t ecofrien 	 material 'Body' and the needs of Self ('I') and 'Body' and Ability to utilize the professional competence for augmenting universal human order and Ability to identify the scope and characteristics of people-friendly and ecofriendly Production systems. 											
Pre-requisites													

COs	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													CO/PSO Mapping PSOs	
0.03	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
CO 1						3	2	3	2		1	2			
CO 2						3	2	3	3		1	2			
CO 3						3	2	3	2		2	2			
CO 4						3	2	3	3		1	2			
CO 5						3	2	3	3		2	2			

Direct

- Continuous Assessment Test I, II & III
 Assignment: Simulation using tool

Indirect

1. Course - end survey

content of	the syllabus		
Unit –	I INTRODUCTION	Periods	9
Historical	Background - Constituent Assembly of India - Fundamental Righ	ts – Citizensh	ip – Constitutional
Remedies	for citizens		
Unit -	II STRUCTURE AND FUNCTION OF CENTRAL	Periods	9
Union Go President	overnment – Structures of the Union Government and F – Prime Minister – Cabinet – Parliament – Supreme Court of	unctions – F India	President – Vice
Unit – I	II STRUCTURE AND FUCTION OF STATE	Periods	9
State Gov	vernment - Structure and Functions - Governor - Chief	Minister –	Cabinet – State
Legislatur	e – Judicial System in States – High Courts and other Subord	linate Courts	
Unit - I	V UNIVERSAL HUMAN VALUES	Periods	9
Course Ir	troduction - Need, Basic Guidelines, Content and Process for	r Value Educa	ation
Unit –	V OPTOEL Universal Human Values - Professional Ethics ECTRONICS	Periods	9
Understan	ding Harmony in the Human Being - Harmony in Myself and	l society.	
]	Fotal Periods	45
Text Book	s		
1.	Durga Das Basu, "Introduction to the Constitution of India Delhi	", Prentice H	all of India, New
2.	Tanushukla, Human Values and professional Ethics, Cengag	e publication	
Reference		e puoneution	S.
NULLIUNU	25	e publication	S.
1.	es R.C.Agarwal, (1997) "Indian Political System", S.Chand an	d Company,	s. New Delhi
1. 2.	es R.C.Agarwal, (1997) "Indian Political System", S.Chand an Indian polity, M.Laksmikanth,Tatamchrawhill publications	d Company, T	s. New Delhi
1. 2. 3.	R.C.Agarwal, (1997) "Indian Political System", S.Chand an Indian polity, M.Laksmikanth, Tatamchrawhill publications R R Gaur, R Sangal, G P Bagaria, A foundation co professional Ethics, Excel books, New Delhi, 2010, ISBN 9	d Company, T ourse in Hur 78-8-174-467	s. New Delhi nan Values and /81-2
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Semester - III

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I	Program	nme	B.E/B.	Tech				Pro	gramm	e Code		F	Regulati	ion		2019
Ι	Departm	nent	CSE/IT	T/CST				-					Semes	ter		III
Co	ourse Co	ode		Co	urse Na	ime		Peri	ods Pe	r Week	Cre	dit	1	Maxii	num l	Marks
								L	Т	Р	С		CA		ESE	Total
U	19MA3	604	DISCR	ETE N	AATH	EMAT	ICS	3	1	0	4		50		50	100
Co Ob	urse jective		. The M	lain Ob Introdu Provide inferen Recogr Identify Recogr	jective ice basic e inform ce nize the y the do nize the	of the of tools a nation ab connect main an concept	course is and techn bout the c ion betwo d range c s of grou	s to iques i concept een set. of a rela ps	n Disc s neede operat	rete Mat d to test ions and	hematic the log l logic	cal St ic of	ructure a progra	am and	d Theo	ry of
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Co	11860		CO1:D	emonstr	ate the r	nathema	atical rea	soning	and log	gics					K	1,K2
	tcome		CO2: R	eformul	late state	ements f	rom com	imon la	nguage	to form	al langi	lage			K K	2,K5 2 K3
Uu	teome	·	CO4: A	nalvze i	the conn	ection b	netween f	function	is and i	elations					K	2,K5 3.K5
		-	CO5:D	emonst	rate Al	gebraic	facility	with S	bemigr	oups ,G	roups a	and l	Normal			1 1/2
			subgrou	ıps		C	5		U	1	ľ				K	1,K3
Pre	-requisi	ites	-													
	COa	(.	3/2/1 indi	cates str	ength o	CO / Po f correla	O Mapp ation) 3-S	ing Strong,	2 - Me	dium, 1	- Weak			CO/ Map	PSO oping	
				_	DO 4	Program		DO 7	POS)	DO 0	PO	DO	DO	PSO	S BEO	
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	cos	PO	I PO 2	PO 3	PO 4	105	100	PO /	PO 8	PU9	10	11	12	1	2	
	<u>CO1</u>	PO 1 3	PO 2	PO 3	2 2	103	100	P0 /	PO 8		10	11	12 1	1 2 2	2	
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Prope	ositions	- Logical connectives - Compound propositions - Conditional a	and bicondition	onal propositions –
Truth	tables –	Tautologies and contradictions - Contrapositive - Logical e	quivalences a	nd implications -
DeMor	gan's L	aws - Normal forms - Principal conjunctive normal form and Prin	ncipal disjunc	tive normal form –
Rules of	of infere	nce – Arguments – Validity of arguments.		
Unit	t - II	PREDICATE CALCULUS	Periods	12
Predica	ates – St	atement function - Variables - Free and bound variables - Quan	tifiers – Unive	erse of discourse -
Logica	l equiva	lences and implications for quantified statements - Theory of	inference –	Rules of universal
specific	cation ar	nd generalization – Validity of arguments.		
Unit	– III	SET THEORY	Periods	12
Set Th	eory: C	Cartesian product of sets - Relations on sets - Types of relation	ns and their p	roperties – Matrix
represe	entation	of a relation - Graph of a relation - Equivalence relations - P	artial ordering	g – Poset – Hasse
diagrar	n – Latti	ces – Properties of lattices		
Unit	- IV	FUNCTIONS	Periods	12
Definit	ion - Cl	assification of functions - Composition of functions - Inverse fur	nctions – Cha	racteristic function
of a	set	– Recurrence relations – Solution of recurrence	e relations	– Generating
Function	ons – So	lving recurrence relation by generating functions.		
Unit	t - V	GROUP THEORY	Periods	12
Algebr	aic syste	ems – Definitions – Examples – Properties – Semi groups – Mon-	oids – Sub ser	mi groups and Sub
monoic	ls - Gro	oups and Subgroups – Homomorphism – Cosets – Lagrange's	theorem – No	ormal subgroups –
Norma	l algebra	ic system with two binary operations.		
	0	<u> </u>		
]	Fotal Periods	60
Text B	ooks]	Fotal Periods	60
Text B 1.	ooks Tremb TMH,	lay J P and Manohar R., Discrete Mathematical Structures with Ap New Delhi – 2004.	Fotal Periods	60 Computer Science,
Text B 1. 2.	ooks Tremb TMH, Rosen Delhi,	T lay J P and Manohar R., Discrete Mathematical Structures with Ap New Delhi – 2004. K H, "Discrete Mathematics and its Applications", Sixth Edition, 2006.	Fotal Periods pplications to Tata McGraw	60 Computer Science, 7-Hill Pub.co. Ltd.,
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Text B 1. 2. Refere 1. 2. 3. 4. 5. E-Reso 1.	ooks Tremb TMH, Rosen Delhi, mces Kenne Publisl Singh 2017 Seymo Bernar Delhi, D.S.M urces https://	Iay J P and Manohar R., Discrete Mathematical Structures with Applications (New Delhi – 2004). K H, "Discrete Mathematics and its Applications", Sixth Edition, 2006. th H. Rosen, "Discrete Mathematics and its Applications", 7 ming Company, 2012 S.B., Jai Kishore and Ekata, "Discrete Structures", 3 rd Edition, 1 ur Lipschutz, Marclars Lipson, "Discrete Mathematics", Tata McC d Kolman, Robert Busby, Sharon C.Ross," Discrete Mathematical 6 th Edition, 2015. alik, "Discrete Mathematical Structures Theory and Applications", (Mathematical Structures Theory and Applications), (Mathematical Structures Theory and Structures), (Mathematical Structure	Fotal Periods opplications to Tata McGraw 7 th Edition, T Khanna Book Graw Hill.,New Structures", P , Thomson Pul	60 Computer Science, 7-Hill Pub.co. Ltd., Pata McGraw Hill Publishing, Delhi, v Delhi. Parson Education, polishers, 2004.
Text B 1. 2. Refere 1. 2. 3. 4. 5. E-Reso 1. 2.	ooks Tremb TMH, Rosen Delhi, nces Kenne Publisl Singh 2017 Seymo Bernar Delhi, D.S.M urces <u>https://</u>	J J Iay J P and Manohar R., Discrete Mathematical Structures with Applications New Delhi – 2004. K H, "Discrete Mathematics and its Applications", Sixth Edition, 2006. th H. Rosen, "Discrete Mathematics and its Applications", 7 ning Company, 2012 S.B., Jai Kishore and Ekata, "Discrete Structures", 3 rd Edition, 1 ur Lipschutz, Marclars Lipson, "Discrete Mathematics", Tata McC d Kolman, Robert Busby, Sharon C.Ross," Discrete Mathematical 6 th Edition, 2015. alik, "Discrete Mathematical Structures Theory and Applications", 7 earnerstv.com/Free-engineering-Video-lectures	Fotal Periods opplications to Tata McGraw 7 th Edition, T Khanna Book Graw Hill.,New Structures", P , Thomson Pul	60 Computer Science, 7-Hill Pub.co. Ltd., Pata McGraw Hill Publishing, Delhi, v Delhi. Pearson Education, polishers, 2004.

<u> </u>		VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOME (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205																
Progr	amme	B.F	Ε.				Pro	gramm	e Code	e	Re	gulatic	on	20)19			
Depar	rtment	CSE,	EEE, F	ECE, BI	ME						S	emest	er	Ι	П			
Course	Code		Cou	rse Na	me		Perio	ds Per	Week	Credit		Ma	aximu	n Mar	ks			
Course	Coue		Cou	1150 144	inc		L	Т	Р	C		CA	E	SE	Total			
U19CS	S304	Data	Struct	ures			3	0	0	3		50	5	50	100			
Course Objecti	ve	The s	e student should be made to, Impart the basic concept of list ADT. Learn the linear data structures such as stack and queue. Describe the non linear data structures such as Tree and Graphs. Examine various algorithms for finding shortest path and minimum spanning tree. Analyze various searching, sorting algorithms and hashing techniques.															
		At the CO1	e end o	f the co	ourse, th abstract	ne stud	lent sh type fo	ould b	e able	to, rations.				Knowledge level K3				
Commo		CO2	2: Appl	y the s	tack and	d queu	ie data	structi	are for	problem	solut	ion.		K	3, K4			
Outcom	ne	CO3 impl	3: Ana ement	lyze E compu	Binary ter base	tree, d solu	BST tions	and A	AVL t	ree data	stru	ctures	to	У К4				
		CO4 mini	l: Ana mum s	lyze a pannin	nd solv g using	e the graph	prob	lems i	n find	ing sho	rtest	path a	ind	K	5			
		CO5 techi	5: Dem niques	onstrat	the the va	arious	searcl	hing, so	orting a	algorithr	ns and	l hashi	ng	K	3,K4			
Pre-													•					
requisit	tes																	
					CO/PC) Mar	ping						CO/	PSO				
	(3/2	2/1 indic	ates str	ength of	f correla	tion) 3	-Strong	g, $2 - N$	ledium,	1 - Weal	c		Мар	ping				
COs				1	Program	nme Ou	itcome	s (POs)					PSO	5				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO	7 PO	8 PO	9 PO 10	PO 11	PO 12	PSO 1	PSO 2				
CO 1	3	3	3	2	2					1		2	2	2				
CO 2	3	3	3	2	2					2		2	2	2				
CO 3		- ≺	4		1 7	1	1	1	1 1	1 2	1	1 7	1 2	1 3	1 1			

Direct

CO 4

CO 5

1. Continuous Assessment Test I, II & III

 2. Assignment / Seminar

3. End-Semester examinations

Indirect

1. Course - end survey

Content of	° the syllabus		
Unit – I	I LINEAR DATA STRUCTURE – LIST	Periods	9
Abstract I Linked Lis (Insertion,	Data Types (ADTs) – List ADT – Array Implementation – Linked I sts – Circular Linked Lists – Doubly Linked Lists – Applications of Deletion, Merge, Traversal).	List Implement Lists – Polyno	ation — Singly mial operations
Unit - I	I LINEAR DATA STRUCTURE – STACKS, QUEUES	Periods	9
Stack AD expression queues.	 Γ – Operations – Application: Evaluating Arithmetic Expressions – – Queue ADT – Operations – Circular Queue – Priority Queue 	Conversion of – DeQueue –	Infix to postfix Applications of
Unit – I	II NON LINEAR DATA STRUCTURE – TREES	Periods	9
Terminolo Binary Sea	gies – Tree ADT – Binary Tree – Tree Traversals – Expression Tr arch Tree ADT - AVL Trees – B- Trees – Heap – Applications of Hea	ees – Applicat ap.	ions of Trees –
Unit - I	NON LINEAR DATA STRUCTURES – GRAPHS	Periods	9
Definition Topologic	– Representation of Graph – Types of graph – Breadth-First Trave al Sort – Shortest Path Algorithms - Minimum Spanning Tree - Appli	ersal – Depth-F cations of grap	first Traversal – hs.
Unit – V	SEARCHING, SORTING & HASHING TECHNIQUES	Periods	9
Searching:	Linear Search – Binary Search, Sorting: Bubble sort – Selection sor	t – Insertion so	rt – Shell sort –
Addressin	σ – Rehashing – Extendible Hashing	- Separate Ch	lanning – Open
1 Iuur ossin	To	tal Periods	45
Text Book	ίs		
1	Mark Allen Weiss - Data Structures and Algorithm Analysis in	n C, Second E	dition, Pearson
1.	Education, 2011		
2.	Reema Thareja — Data Structures Using C, Second Edition, Oxford	d University Pre	ess, 2011
3.	Gilberg and Forouzan: "Data Structure- A Pseudo code appr publication	roach with C'	' by Thomson
Reference	S		
1.	Thomas H. Cormen, Charles E. Leiserson, Ronald L.Rivest, Cliff Algorithms", Second Edition, Mcgraw Hill, 2010.	ford Stein — "	Introduction to
2.	Harry, Hariom Chaudhary, — "Data Structures: An Advanced Second Edition, Programmers Mind Inc, (7 December 2014)	Approach Us	ing C",
3.	Stephen G. Kochan, — "Programming in C", Third edition, Pearson	Education.	
4.	Birkhäuser— "An Introduction to Data Structures and Algorith Education, 2012.	hms", SecondE	dition,Pearson
5.	Steven S. Skiena — "The Algorithm Design Manual", Second Edition	on, Springer, 20)10.
E-Resour	ces		
1.	https://www.edx.org/course/algorithms-and-data-structures		
2.	https://hackr.io/tutorials/learn-data-structures-algorithms		
3.	https://www.learneroo.com/subjects/8		

	VIVE		To/Texture To/Texture Corrector						
Programme	B.E.	Prog	gramme (Code	101	Regu	lation	2	019
Department	Computer Se	cience and Engineering				Sen	nester		III
Course		Course Nome	Period	ls Per	Week	Credit	Max	ximum	Marks
Code		Course maine	L	Т	Р	С	CA	ESE	Total
U19CS305	Database N	Ianagement Systems	3	0	0	3	50	50	100
Course Objective	The student • Und • Und • Und • Und • Und	should be made to, lerstand the basics of Databas lerstand the construction of Re- lerstand the database design a lerstand the storage and struct	e and ER elational 1 nd remov curing con	mode Datab e the cepts	el conce ase and redund	epts. d querying t lancy from c	he dat latabas	abase. se.	
Course Outcome	At the end o CO1: Desi diagram CO2: Build CO3: Ana procedures. CO4: Cho database sto CO5: Prov	f the course, the student shou gn database for the simple ap d a relational database using S lyze and fine tune the des ose best storage structure ar orage.	ld be able oplication SQL Quer signed da nd efficie	e to, is and ies. itabas ent da	model e usin ta acco	l them using g normaliz ess method	g ER ation s for	Knov le]] K: K:	wledge evel K2 K3 K3 3,K4 3,K4
Pre- requisites	-		eenamsm	5 anu	Tecove		Jues		,
(Cos	3/2/1 indicates	CO / PO Mapping strength of correlation) 3-Strong. Programme Outcomes	, 2 – Medi (POs)	um, 1	- Weak		CO/P Map	PSO ping	

	(5/2/1 indicates strength of contention) 5 Strong, 2 intertain, 1 if eak												mapping				
Cos		Programme Outcomes (POs)												PSOs			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3		
CO 1	2	3	3	1									1	2			
CO 2	3	3	3	2	2				1	1		2	3	2			
CO 3	3	3	3		2			1	2	2		2	3	2			
CO 4	3	3	3		2			1	2	2		1	2	2			
CO 5	3	3	3	2	2			1	2	2		2	3	2			

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment/Seminar/Mini Projects
- **3.** End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus

Unit – I	INTRODUCTION TO DATABASES AND CONCEPTUAL	Periods	9
Detabase	DATA MODELING AND DATABASE DESIGN		f Data
Database s	ystem concepts and architecture - A Brief History of Database Appl nd Database Users, Database System Concepts and Architecture, Database	to Models, Schen	DI Data,
Instances '	Three-Schema Architecture and Data Independence Data Modeli	ng Using the	Fntity_
Relationshi	n (FR) Model - Entity Sets attributes and Keys Relationship Sets FR D	ing Using the Fu	banced
Entity_Rel	tionshin (FER) Model - Subclasses Superclasses and Inheritat	nce Specializati	on and
Generalizati	on Constraints	ice, Specializati	on and
Unit - II	THE RELATIONAL DATA MODEL AND SQL	Periods	9
Relational	Model Concepts - Relational Database Schemas, Dealing with Constrain	t Violations. Bas	sic SQL
- Basic Retr	ieval Queries in SQL, INSERT, DELETE, and UPDATE Statements in S	SQL. Complex (Jueries,
Triggers, V	iews, and Schema Modification. The Relational Algebra and Relational	tional Calculus	- Unary
Relational C	Operations, Binary Relational Operations: JOIN and DIVISION, Addition	al Relational Ope	erations,
The Tuple F	elational Calculus, The Domain Relational Calculus.		
Unit – III	RELATIONAL DATABASE DESIGN, DATA STORAGE AND	Periods	9
	QUERYING	i chiodas	,
Database D	esign and the E-R Model- First Normal Form, Decomposition Using F	unctional Dependent	dencies,
Functional-I	Dependency Theory, Decomposition Using Multivalued Dependencies	s, More Normal	Forms,
Database-De	esign Process. Storage and File Structure - Overview of Physical Storage	ge Media, Magne	tic Disk
and Flash St	orage, RAID, Tertiary Storage, File Organization, Organization of Record	ds in Files.	n
Unit - IV	INDEXING, HASHING AND TRANSACTIONS	Periods	9
Ordered ind	ices - B+ Tree index files - Multiple key access - Static and dynamic has	hing – Bit map ii	ndices –
Transaction	s concept - model - storage structure - Transaction atomicity and	durability – Isol	lation –
Serializabili	ty		n
Unit – V	CONCURRENCY CONTROL AND RECOVERY SYSTEM	Periods	9
0			
Validation	cy control: Lock Based Protocols - Multiple Granularity - Deadlock Ha	undling - Timesta	mp and
Validation I	ey control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System : Failure classification – Storage - R Buffar management – Failure with loss of nonvolatile storage – Farly	andling - Timesta accovery and atom	mp and micity -
Validation I Algorithm -	cy control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System : Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early	ndling - Timesta ecovery and ato lock release and	mp and micity - l logical
Validation I Algorithm - undo operat	ey control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System : Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early tons	ndling - Timesta ecovery and ator lock release and	mp and micity - l logical 45
Validation I Algorithm - undo operat	cy control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System: Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early ions Tota	ndling - Timesta ecovery and ato lock release and l Periods	imp and micity - l logical 45
Validation I Algorithm - undo operat	ey control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System: Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early tons Tota Abraham Silberschatz, Henry F. Korth and S. Sudarshan, "Database	Indling - Timesta accovery and atom lock release and I Periods	amp and micity - l logical 45
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Concurrence Validation I Algorithm - undo operat Text Books 1. 2.	ey control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System: Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early ions Tota Abraham Silberschatz, Henry F. Korth and S. Sudarshan, "Database S Edition, McGraw Hill, 2011. RamezElmasri and Shamkant B. Navathe, "Fundamentals of Datab Edition, Pearson Education, 2016.	Indling - Timesta accovery and atom lock release and I Periods System Concepts base Systems",	imp and micity - l logical 45 s" Sixth Seventh
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Concurrence Validation I Algorithm - undo operat Text Books 1. 2. References 1. 2. 1. 2. 1. 2. 1. 2. 1. 2.	ey control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System: Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early ions Tota Abraham Silberschatz, Henry F. Korth and S. Sudarshan, "Database S Edition, McGraw Hill, 2011. RamezElmasri and Shamkant B. Navathe, "Fundamentals of Datab Edition, Pearson Education, 2016. C. J. Date, A. Kannan and S. Swamynathan. "An Introduction to Database Pearson Education, 2006. Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom. " Database System Pearson Education, 2009.	Indling - Timesta accovery and atom lock release and I Periods System Concepts base Systems", Eighth s – The Complete	imp and micity - l logical 45 s" Sixth Seventh Edition, e Book "
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ConcurrentValidation IAlgorithm -undo operatText Books1.2.References1.2.3.4.5.E-Resource1.2.	ey control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System: Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early ions Tota Abraham Silberschatz, Henry F. Korth and S. Sudarshan, "Database E Edition, McGraw Hill, 2011. RamezElmasri and Shamkant B. Navathe, "Fundamentals of Datab Edition, Pearson Education, 2016. C. J. Date, A. Kannan and S. Swamynathan. "An Introduction to Database Pearson Education, 2006. Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom. " Database System Pearson Education, 2009. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems Hill, 2010.http://pages.cs.wisc.edu/~dbbook/ Rob Cornell, "Database Systems Design and Implementation", Cengage Learnin G.K.Gupta, "Database Management Systems", Tata McGraw Hill, 2011. es https://www.c-sharpcorner.com/topics/database-management-systems	Indling - Timesta Lecovery and atom lock release and I Periods System Concepts base Systems", Eighth as – The Complete ", Third Edition, I g, 2011.	imp and micity - l logical 45 3" Sixth Seventh Edition, e Book " McGraw
ConcurrentValidation I Algorithm - undo operatText Books1.2.References1.2.3.4.5.E-Resource1.2.3.	ey control: Lock Based Protocols - Multiple Granularity - Deadlock Ha Based Protocols. Recovery System: Failure classification – Storage - R Buffer management - Failure with loss of nonvolatile storage - Early ions Tota Abraham Silberschatz, Henry F. Korth and S. Sudarshan, "Database S Edition, McGraw Hill, 2011. RamezElmasri and Shamkant B. Navathe, "Fundamentals of Datab Edition, Pearson Education, 2016. C. J. Date, A. Kannan and S. Swamynathan. "An Introduction to Database Pearson Education, 2006. Hector Garcia-Molina, Jeffrey D. Ullman, Jennifer Widom. " Database System Pearson Education, 2009. Raghu Ramakrishnan and Johannes Gehrke, "Database Management Systems Hill, 2010.http://pages.cs.wisc.edu/~dbbook/ Rob Cornell, "Database Systems Design and Implementation", Cengage Learnin G.K.Gupta, "Database Management Systems", Tata McGraw Hill, 2011. es https://www.c-sharpcorner.com/topics/database-management-systems/ https://www.bmc.com/blogs/dbms-database-management-systems/ https://www.studytonight.com/dbms/components-of-dbms.php	Indling - Timesta lecovery and atom lock release and I Periods System Concepts base Systems", fighth ms – The Complete ", Third Edition, 1 g, 2011.	imp and micity - l logical 45 3" Sixth Seventh Edition, e Book " McGraw

Q		VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205												Normania Series Sources Sources 1 present 1 present 1 present	
Progran	nme	B.E.				P	rogran	ime C	Code	101	Re	gulation	-	2019	
Departn	nent	COMP	UTER	R SCIE	NCE AN	D E	NGIN	EER	ING		S	Semester		III	
Course	odo		Cour	a Nor		P	eriods	Per V	Veek	Credit		Maxim	um Ma	ırks	
Course C	oue		Cours	se maii	le]	L	Т	Р	C		CA	ESE	Total	
U19CS3	306 1	Digital	Logic	Design	1		3	0	0	3		50	50	100	
Course Objectiv	e	 The stu Ur De usi Ur PA Ur Ur Ur cir 	Student should be made to, Understand the concept of digital and binary number systems Design simple combinational logics using basic gates. Able to optimize simple logic using Karnaugh maps, understand "don't care". Understand the concept combinational logics circuits and Programmable Devices, PLA, PAL, ROM. Understand concepts of sequential circuits and to analyze sequential systems Understand the analysis and design of Synchronous and Asynchronous Sequential circuits												
		At the e	end of the second se	the cou	rse, the st	udent oerati	t shoul	d be a	able to	o, Der syste	em		К	nowledge Level K2	
Course Outcome	e t	CO2: technic	Simpl Jues	ify the	e Boolea	n ex	pressi	on u	sing	K-Map	and	Fabulatio	n	K2	
		CO3: combir	App nationa	ly Bo al hard	oolean ware circ	simp cuit.	olificat	ion	tech	niques	to	design	a	K3	
	(CO4: .	Analyz	ze the	given sec	quent	ial cir	cuit.						K3	
		CO5: (CO4: Analyze the given sequential circuit. K3												
		Nil K3													
Pre- requisite	s l	Nil		are Syr			<i>a</i> 110 y 1			~~ q ~~		icuits.			
Pre- requisite	s 1	Nil 3/2/1 inc	licates	strength	CO / PC) Maj	pping 3-Stron	g, 2 –	Mediu	um, 1 - W	eak		CO/P Mapj	PSO ping	
Pre- requisite COs	s 1	Nil 3/2/1 inc		strength	CO / PC of correlat Program) Maj tion) 3 me O	pping 3-Stron utcome	<u>g, 2 –</u> s (PO	Mediu s)	um, 1 - W	eak		CO/F Mapj PSOs	PSO bing	
Pre- requisite COs	s 1 (3 PO 1	Nil 3/2/1 inc PO 2	licates s	strength	CO / PC of correlat Program PO 5 P) Maj tion) 3 me O O 6	pping 3-Stron utcome PO 7	<u>g, 2 –</u> s (PO PO 8	Mediu s) B PO	1m, 1 - W	eak PO	PO 12	CO/F Mapj PSOs PSO1	PSO 2	
Pre- requisite COs CO 1	s 1 (3 PO 1 3	Nil 3/2/1 inc PO 2 2	licates s PO 3	strength PO 4	CO / PC of correlat Program PO 5 P) Maj tion) 3 me O O 6	pping 3-Stron utcome PO 7	g, 2 – ss (PO PO 8	Mediu s) 3 PO	um, 1 - W 09 PO 10	eak PO	PO 12	CO/F Mapj PSOs PSO1 3	PSO 2	
Pre- requisite COs CO1 CO2	s 1 (3 PO 1 3 2	Nil <u>B/2/1 ind</u> <u>PO 2</u> 2 3	licates s PO 3 2 1	strength PO 4 2 2	CO / PC of correlat Program PO 5 P - -) Maj tion) 3 me O O 6	pping 3-Stron utcome PO 7	g, 2 – s (PO PO 8	Mediu s) 3 PO	1 - W 1 - W	eak PO 11	PO 12	CO/F Mapj PSOs PSO1 3 3	SO ping PSO 2 2 2	
Pre- requisite COs CO1 CO2 CO3	s 1 (3 PO 1 3 2 3	Nil 3/2/1 ind PO 2 2 3 2	licates s PO 3 2 1 1	strength PO 4 2 1	CO / PC of correlat Program PO 5 P - - 2) Maj tion) 3 me O O 6	pping 3-Stron utcome PO 7	g, 2 – s (PO PO 8	Mediu s) B PO	um, 1 - W 09 PO 10 1 2 2	eak PO 11	PO 12 1 1 2	CO/F Mapp PSOs PSO1 3 3 3	PSO 2 2 2 2 2	

000	3	2	1	2	-			2	1	3	2
Course A	Assessm	ient M	ethods								
Direct											
1.	Contin	uous A	ssessm	ent Tes	t I, II &	III					
2.	Assign	ment/S	Seminar								
3.	End-Se	emester	r exami	nations							
Indirec	•t										

1. Course - End survey

Content of the syllabus											
Unit –	I	BOOLEAN ALGEBRA AND SWITCHING FUNCTIONS	Periods	9							
The natu	re of lo	gic- Boolean Algebra and switching functions- Number Systems- bina	ary, hexadec	imal and							
other systems. Representation and properties of switching functions and their logic realizations using GATES											
and Switches.											
Unit -	– II	OPTIMAL DESIGN	Periods	9							
Minterm	n – Ma	xterm - Sum of Products (SOP) - Product of Sums (POS) - Im	plicants an	d prime							
implican	nts- Min	imization using K-map- Quine-McCluskey algorithm for finding prime implicants.									
Unit -	- III	COMBINATIONAL CIRCUITS	Periods	9							
Combina	ationalc	ircuits-Analysis and design procedures-Circuits for arithmetic	c ope	erations-							
Codecor	CodeconversionDecoders and encoders-Multiplexers and emultiplexers-Implementation of										
combinational logic circuits using ROM, PLA, PAL-IntroductiontoHardwareDescription Language											
(HDL) -	$\frac{\text{HDL 10}}{\text{IV}}$		Pariods	0							
Sequenti	al logic	elements -Flin-Flons Registers Shift Registers and Counters- Evan	nles of ann	7 lications							
State red	uction a	nd state assignment - HDL for Sequential Circuits	ipies of app	incations.							
TI ·	X 7	SYNCHRONOUS AND ASYNCHRONOUS	D 1	0							
Unit – V		SEQUENTIAL CIRCUITS	Periods	9							
Synchronous Sequential Circuits: General Model - Classification - Design - Analysis of Synchronous											
Sequentia	al Circu	its. Asynchronous Sequential Circuits: Analysis and design of asyn	nchronous s	equential							
circuits -	Reducti	ion of state and flow tables – Race free state assignment – Hazards - D	esign of Haz	zard Free							
Switching	geneun	s -ASM Chart. Total Perio	ds 4	15							
Taxt Books											
1010 200	M. Mc	orris Mano, "Digital Design", 6 th Edition, Prentice Hall of India Pyt.	Ltd., 2008 /	Pearson							
1.	Education (Singapore) Pvt. Ltd., New Delhi, 2018.										
2.	Leach & Malvino, Digital Principles & Application, 8 th Edition, Mc Graw Hill Company,2014										
References											
1.	John F.Wakerly, "Digital Design", 4 th Edition, Pearson/PHI, 2008										
2.	John.M	John.M Yarbrough, "Digital Logic Applications and Design", Thomson Learning, 2006.									
3.	Charle	Charles H.Roth. "Fundamentals of Logic Design", 6 th Edition, Thomson Learning, 2013.									
4.	Thoma	Thomas L. Floyd, "Digital Fundamentals", 10 th Edition, Pearson Education Inc, 2011									
5.	Moder	Modern Digital Electronics, 2nd Edition, R.P. Jain. Tata Mc Graw Hill Company Limited.									
E-Resources											
1.	https://	circuitglobe.com/number-system-in-digital-electronics.html									
2	https://www.iitg.ac.in/asahu/cs221-2018/Lects/Lec08.pdf										
	http://p	ami.uwaterloo.ca/~basir/ECE124/QL.pdf									
3.	http://o	http://ocw.nctu.edu.tw/course/digitaldesign/LogicDesignCh04.pdf https://www.elprocus.com/what-are-pal-and-pla-design-and-differences/									
	1111/03.//										
4	http://w	www.eprocus.com/ what are part and pla design and differences/									
4.	http://w	www.eprocess.com/what are part and plat design and unreferences/ web.ee.nchu.edu.tw/~cpfan/FY92b-digital/Chapter-5.ppt ami_uwaterloo_ca/~basir/ECE124/Sync_Circuit_Apolysis_Design pdf									

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			VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205										1	Tives	Management Sotter SC Mit 2019 West South D Transmit	
Pro	gramme	B.E	B.E. Programme Code Regulati									ulatic	on	2019		
Department		CSE	CSE,CST Semes									emeste	er	III		
Course Code		Course Name			Pe	Periods Per Week		Cre	edit	Maxii		num Marks				
U19CS307		Object Oriented Programming		p	2	0	2	3	- }	50	50)	100			
Course Objecti	ve	 The student should be made to, Understand Object Oriented Programming concepts and basic characteristics of Java Know the principles of packages, inheritance and interfaces Define exceptions and use I/O streams Develop a java application with threads Design and build simple Graphical User Interfaces 											Java			
Course Outcome		At the end of the course, the student should be able to,											Knowledge Level			
		CO	CO1: Write Java programs using OOP principles											K2		
		CO2: Develop Java programs with the concepts inheritance, packages and interfaces											ges	К3		
		CO3: Build Java applications using exceptions and I/O streams												K3		
		CO	CO4: Develop Java applications with threads											K3,K4		
	CO5: Implement interactive Java programs using swings											K3,K4				
Pre-requisites -																
CO / PO MappingCO/PSO(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - WeakMapping											O ng					
COs			Programme Outcomes (POs) PSC									PSO	Ds			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO) 9 1	PO LO	PO 11	PO 12	PSO 1	PSO 2	
CO 1	3	3	3	3	3					4	2			3	2	
CO 2	3	2	2	2	2						2			3	2	
CO 3	2	3	2	3	3				2		2			3	3	
CO 5	3	2	2	2	3				1		2			3	3	
2															-	
Course Assessment Methods Direct 1. Continuous Assessment Test I, II & III 2. Assignment / Seminar 3. End-Semester examinations																
1. Course - end survey																
Content	f the syllabus															
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	- INTRODUCTION TO OOP AND JAVA															
Unit	- I FUNDAMENTALS	Periods	12													
Object 0	Driented Programming - objects and classes - Abstraction	- Encapsulation-	Inheritance -													
Polymor	hism- OOP in Java – Characteristics of Java – The Java Environ	ment - Java Source	File - Structure													
– Compi	ation. Fundamental Programming Structures in Java - Defin	ng classes in Java	- constructors,													
methods	access specifiers - static members - Data Types, Control Flow, A	rrays-Strings.														
Unit	II INHERITANCE AND PACKAGES	Periods	12													
Inheritan	e Basics - Multilevel Hierarchy - Constructors - Method Ov	erriding -Using sup	ber – Dynamic													
Method 1	Dispatch – Using final – Abstract Classes – Packages –	Access Protection	– Importing													
Packages	– Interfaces.															
Unit -	III EXCEPTION HANDLING AND I/O	Periods	12													
Exceptio	ns - exception hierarchy - throwing and catching exceptions -	built-in exceptions.	Input / Output													
Basics -	Streams - Byte streams and Character streams - Reading an	d Writing Console	- Reading and													
Writing I	iles															
Unit -	IV MULTITHREADING PROGRAMMING	Periods	12													
Difference	es between multi-threading and multitasking, thread life cyc	e, creating threads,	synchronizing													
threads, l	nter-thread communication, daemon threads, thread groups															
Unit	- V EVENT DRIVEN PROGRAMMING	Periods	12													
Graphics	programming - Frame - Components - working with 2D shape	s - Using color, font	s, and images -													
Basics of	event handling - event handlers - adapter classes - actions - me	ouse event. Introduc	tion to Swing –													
layout m	nagement - Swing Components - Text Fields, Text Areas - Bu	tons- Check Boxes -	- Radio Buttons													
– Lists- c	hoices- Scrollbars – Windows – Menus – Dialog Boxes															
		Total Periods	60													
Text Boo	ks															
1.	Herbert Schildt, "Java The complete reference", 11 th Editior	, McGraw Hill Educ	ation, 2018.													
Reference	es															
1	Cay S. Horstmann, Gary cornell, "Core Java Volume -I Funda	nentals", 9th Editior	n, Prentice Hall,													
1.	2013.															
2.	Paul Deitel, Harvey Deitel, "Java SE 8 for programmers", 3rd E	dition, Pearson, 201	5													
3.	Steven Holzner, "Java 2 Black book", Dreamtech press, 2011.															
1	Timothy Budd, "Understanding Object-oriented programmi	ng with Java", Up	odated Edition,													
4.	Pearson Education, 2000.															
E-Resou	·ces															
1.	https://www.geeksforgeeks.org/java-programming-basics/															
2.	https://chortle.ccsu.edu/Java5/Notes/chap55/ch55_8.html															
3.	https://www.javatpoint.com/java-oops-concepts															

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Progra	mme	B.E	•				Progr	amme	Code			Regul	ation	20	019
Depart	ment	CSE,	ECE,B	ME								Sem	ester]	II
Course	-ode		Co	urso Na	ma		Perio	ds Per V	Week	Credi	t	M	aximu	m Marl	KS
Course	Jue		CO		une		L	Т	Р	С		CA	ES	E	Fotal
U19CS	308	Data	Structu	ures La	borato	ry	0	0	4	2		50	50)	100
		The s	tudent	should	be mad	e to,									
		• I	Design and develop simple programs using data structures												
Course		• A	Apply li	inear da	ata struc	ctures f	or vario	ous real	time a	pplicat	tions.				
Objectiv	e	• I	Develop	o progra	ams to i	mplem	ent nor	linear	data st	ructure	es.				
_		• I	Design	shortes	t path a	lgorithi	m for v	arious r	eal life	e applic	cation	is			
		• \	Write p	rogram	s to imp	olement	t for so	rting an	d hash	ing.					
		At the	At the end of the course, the student should be able to Knowledge												
		At the	At the end of the course, the student should be able to, Level												
		CO1	: Desig	n and i	mpleme	ent prog	gram fo	r Linke	d List.					K	3
Course		CO2	: Imple	ment th	ne progi	am for	manip	ulating	Stack.					K3	
Outcom	e	CO3	: Desig	n and I	mpleme	ent prog	grams f	or Bina	ry Sea	rch tre	e and	AVL	tree.	K3,K4	
		CO4	: Imple	ment th	ne short	est path	n algori	thms av	vailable	e in gra	ıph.			K4	
		CO5: Apply appropriate sorting algorithm and hash functions that result in							t in a						
		collision free scenario for data storage and retrieval. K3,K4													
Pre-															
requisite	s	-													
												1			
	(3/2	3/2/1 indicates strength of correlation) 3-Strong. 2 – Medium. 1 – Weak											Man	bing	
Cos	(0/2	1 111010]	Program	me Out	comes (POs)	, 1				PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	РО	РО	РО	PSO	PSO	
CO 1	3	3	3	2	1				1	10	11	12	1	2	├ ───┤
CO 2	3	3	3	2	1				1	2		2	3	2	├───┤

Direct

CO 3

CO 4

CO 5

1.

Prelab and post lab test Execution of Experiments & Viva 2.

3. End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus

LIST OF EXPERIMENTS:

- 1. Represent a polynomial as a linked list and write functions for polynomial addition.
- 2. Implementation of stack and use it to convert infix to postfix expression.
- 3. Implementation of Binary Tree and Traversal Techniques
- 4. Implementation of binary search tree
- 5. Implementation of insertion in AVL trees.
- 6. Implementation of graphs using BFS and DFS.
- 7. Implementation of Djikstra's algorithm.
- 8. Implementation of Prim's algorithm using priority queue to find MST of an undirected graph.
- 9. Implementation of Merge sort using Divide and Conquer method.
- 10. Implementation of Hashing with open addressing

Total Periods	45

	VIV	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205							
Programme	B.E.		Pro	gramm	e Code	101	Regul	ation	2019
Department	Compu	ter Science Engineer	ring				Sem	lester	III
Course Code	(Tourse Name	Perio	ds Per	Week	Credit	Maximun		Marks
	,	course roune	L	Т	Р	С	CA	ESE	Total
U19CS309	Databa System	se Management s Laboratory	0	0	4	2	50	50	100
Course Objective	 Understand data definitions and data manipulation commands Learn the use of nested and join queries Understand functions, procedures and procedural extensions of data bases Familiar with the use of a front end tool Understand design and implementation of typical database applications 								
9	CO1:U relation	Use data definitions nal database	s and a	manipu	llation	comman	ids for desi	igning	level K3
Course Outcome	CO2: Apply theNested and Join Queries for retrieving the data from K3 database								
CO3: Analyze the stored programming concepts using Cursors and triggers K3,							K3,K4		
	CO4:A	analyze the use of se	Tables,	View	s, Func	ctions a	nd Procedu	res in	K3,K4
	CO5: E	Develop simple applic	ation us	sing Fr	ont end	DBMS			K3,K4
Pre-requisites	-								

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak												CO/PSO Mapping			
COs	COs Programme Outcomes (POs)													PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2		
CO 1	1	2	3	3	2			1		2			3	2		
CO 2	1	2	3	3	2			1		2			3	2		
CO 3	1	2	3	3	2			1		2		2	3	2		
CO 4	1	2	3	3	2			1		2		2	3	2		
CO 5	1	2	3	3	2			1	3	2		2	3	2		

Direct

- 1. Prelab and post lab test
- 2. End-Semester examinations

Indirect

1. Course - end survey

LIST OF EXPERIMENTS:

1. Data Definition Commands, Data Manipulation Commands for inserting, deleting, updating and

retrieving Tables and Transaction Control statements

- 2. Database Querying Simple queries, Nested queries, Sub queries and Joins
- 3. Views, Sequences, Synonyms
- 4. Database Programming: Implicit and Explicit Cursors
- 5. Procedures and Functions
- 6. Triggers
- 7. Exception Handling
- 8. Database Design using ER modeling, normalization and Implementation for any application
- 9. Database Connectivity with Front End Tools
- 10. Case Study using real life database applications

	Total Periods 45
E-Resourc	es
1.	https://www.codecademy.com/articles/sql-commands
2.	https://www.w3schools.com/sql/
3.	https://www.dataquest.io/blog/sql-basics/

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Course			Cou	irse N	lame		Pe	riod	s per	week	Cr	edit	M	laximur	n Marks
code	_						L	,	Т	Р	(2	CA	ESE	Total
U19EN302	1 (Commun	icatio	on Sl	kills l	aboratory	7 0		0	2	-	1	100	-	100
		• Ec	quip v	vith e	effecti	ve Soft sk	tills in	Eng	glish.						
Objective	:	• Er	nhanc	e the	m wi	th intraper	sonal	skill	s.						
	_	• Et	fectiv	/e ma	inage	ment of the	me an	d str	ess.						V
	Т	he studer	nts wh	o con	nplete	this course	succe	essfu	lly are	e expec	cted to:				Knowledge Level
	C	CO1: Able	e to co	ommu	nicate	e, present, o	lescrib	e an	d disc	uss flu	ently i	n Engl	ish.		K1
Outcomes	C	C O2: Equ	ipped	for a	n easy	transition	from s	tudy	ing to	o worki	ng atn	nosphe	re.		K1
Outcomes	C	CO3: Acc	ompli	shed	with p	lanning an	d corp	orate	e Man	ageria	skills	•			K2
	C n	'O4: To attain professional correspondence and execute the same in professional K4 k4													
	C	CO5: To employ the professional needs and accomplishments at global standards. K4													
Pre- requisites	N	Nil													
	CO / PO Mapping CO/PSO														
		(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak Mapping													
		COs				Progra	amme (Dutco	omes (POs)	_ D O		D.O.	PSOs	DCC 0
			1 1	2	PO 3	4 5	6 6	PO 7	8	9 9	10	11 PO	PO 12	PS01	PSO 2
		CO 1	-	-	-		2	-	-	3	3	-	3	-	2
		CO 2 CO 3	-	-	-		2	-	-	2	3	-	3	-	2
		CO 4	-	-	-		2	-	-	3	3	-	3	-	2
		CO 5	-	-	-		2	-	-	3	3	-	3	-	3
English La	ngua	age Profi	ciency	: List	tening	Comprehe	ension,	Rea	ding	Compr	ehensi	on, Co	mmon I	Errors ir	n English,
Diction and	l its u	its usage, Framing sentences – Idiomatic Expressions.													
Resume –	Struc	tructuring and Drafting the resume – Cover letter- Writing Professional Letters													
Group Dis		ussion: Introduction – Topic Analysis – Thematic Expressions-Objective and content of discussion – Discussion – Controlling Emotions Presentation of the group Offering support – Use of functional													
Language -	Sum	Summary and conclusion													
Presentatio	ion skills: Making Self Introduction effectively-Elements of effective presentation – Structure of														
presentation	presentation - Presentation tools - Voice Modulation - Audience analysis - Body language - Accents analysis -														
Stylistics.		<u> </u>	~1					~ ^	~		~	<u>.</u> .			
Soft Skills	: Intr	oduction	- Cha	nge 11	n Tod	ay's Work	place:	Soft	Skill	s as a	Comp	etitive	Weapor	n - Anti	quity of Soft
SKIIIS - CI Flexibility	assiii - Per	cation of sonality 7	50II Fraits	skills	s - At Soft S	hillty to w	ork as ture C	a te areei	eam - · Adv	innov ancem	ation, ent-Pe	Creati	ty and s	d Latera Soft Ski	lls for career
growth- Ti	ne m	anagemei	nt.	und c		and for fu		ureer	1101	uncenn		isonun	ity und i	Soft SK	
-		~											Tota	al Perio	ds 45
Lab Manu	als su	uggested:													
1. A	nder	son, P.V,	Tech	nical	Com	municatio	n , Tho	msor	n Wac	lswort	n, Sixt	h Editi	on, New	v Delhi,	2007.
2. J	John Seely, The Oxford Guide to Writing and Speaking, Oxford University Press, New Delhi, 2004.									Oxfor	d Univ				

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									Perio	odsPer	Week	Credit	I	Maxim	umM	arks
C	Course	Code		С	ourse	Name	e			L	Т	Р	С	CA	ESE	Total
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Co bj	ourse(ective)	Ther • •	nain ob deve acco expa	ojectiv elopsk ommo andthe	eofthe cilltor datef eirkno	ecours neettl undai owled	seisto: he con menta lgean	mpetit 1,math dtodev	ive exa ematic elopth	aminatio calaspec eir logic	nsforbet tstoinstil calreason	terjob lconfi ing th	opport dence inking	tunity amon ability	gstudents
			Atth	eendof	thecou	rse,th	estud	entwil	l beabl	eto:						KL
			CO1:	CO1:Develop a proper understanding of the number system K												K3
	Cou	trome CO2:Explain the meaning of ratio, proportion and percentage											K2			
	Oute	onne	CO3:	Solve of	comple	ex pro	blem	s invo	lving s	peed, d	istance a	nd time.				К3
			CO4: factor	CO4: Understand the relationship between compound interest and its influencing											K2	
			CO5:	Solve	surfac	e area	and y	volum	e of re	ctangul	ar-prism	problems	s with	real obj	jects	K3
P	re-rec	quisites	-													
		(3/	2/1ind	icatesst	rengtl	CO n ofco	/PO M rrelati	Mapp i ion)3-	ing Strong	,2– Me	dium,1-V	Veak			CO/F Mapp	PSO ping
	COs			F	rogra	mmeC	Outcon	nes(P	Os)				1	PS	SOs	
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PS	01	PSO2
	CO 1	3	3											2	2	
	CO 2	3	3											2	2	
	CO 3	3	3											2	2	
	CO 4	3	3											2	2	
	CO 5	3	3											2	2	
C	onten	tofthe s	yllab	us	1	<u> </u>	1	<u>I</u>	1	1	<u> </u>		1	<u> </u>	1	
	Unit	–I					NUN	ABEI	RSYS'	ГЕMS				Per	riods	6
N	umber	Propert	ies–H	CF-L	CM-S	quare	eroot-	-Cube	eroot -	-Simpl	ification	Avera	ges.			

Unit	·II	DIRECTPROPORTIONALPROBLEMS	Periods	8						
Percenta	age-Prof	fit&LossRatio &Proportions-Mixture&Allegations-Problemon Age	es							
Unit–	III	INDIRECTPROPORTIONALPROBLEMS	Periods	8						
Time&V Skills.	Vork–P	ipes&Cisterns-Time,Speed&Distance–Boats&Streams–Races&Gam	esof							
Unit-	IV	BANKER'SPROBLEMS	Periods	4						
SimpleI	SimpleInterest – CompoundInterest – Logarithms–Partnership-Discounts.									
Unit-	-V	MISCELLANEOUSPROBLEMS	Periods	4						
Mensura	ation:Ar	ea&perimeter –Volume &SurfaceArea–Geometry-Trigonometry.								
		Т	otalPeriods	30						
TextBo	TextBooks									
1.	Dines	nKhattar-ThePearsonguidetoQuantitativeAptitudeforCompetitiveExa	minations 3 rd							
	edition	1.								
Keferen	ices									
1.	1. R.S.Aggarwal -QuantitativeAptitudeforCompetitiveExaminations									

Semester - IV

			V	IVEKA (A	NAND utonome	HA CO ous Institu Elayam	LLEGE ution, Aff palayam,	E OF EN iliated to Tirucher	MGINEI Anna Ua 1gode – 6	ERING niversity 537 205	FOR ,	WON nai)	IEN		Nive	So Mon 2019 Solution			
Pro	ogramme	B	.Е/В.Т	ECH				Pr	ogramn	ne Cod	e		Regu	lation		2019			
De	partmen	t CS	E/IT/O	CST									Sen	nester		IV			
Cour	rsa Cada			Cour	rso Nor	ma		Peri	ods Per	Week	Cre	dit		Maxii	num M	larks			
Cou				Cou		lic		L	Т	Р	C	l ,	CA	4	ESE	Total			
U19	MA405	ST. MI	ATIST ETHO	FICS A DS	ND NU	UMER	ICAL	3	1	0	4		50	50 50 100					
Cour Obje	-se ctive	The	 This course aims at providing the necessary basic concepts of a few statistical and numerical methods and give procedures for solving numerically different kinds of problems occurring in engineering and technology. To acquaint the knowledge of testing of hypothesis for small and large samples which plays an important role in real life problems. To introduce the basic concepts of solving algebraic and transcendental equations. To introduce the numerical techniques of interpolation in various intervals and numerical techniques of differentiation and integration which plays an important role in engineering and technology disciplines. To introduce the numerical techniques of interpolation in various intervals and numerical techniques of differentiation and integration which plays an important role in engineering and technology disciplines. 																
		At CO real	the end D1: Appl	l of the o ly the co oblems.	course,	the stuc f testing	lent sho	uld be a othesis fo	ble to, or small	and larg	ge sam	ples i	n	K	nowled K1,	ge level K3			
Cour	•Se	CO in t)2: App the fiel	ly the b d of agi	oasic co ricultur	oncepts e.	of class	ificatio	ns of de	esign o	f expe	rime	nts		K2,]	K3			
Outc	ome	CO app pro	CO3:Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.K3,K5																
		CO firs)4: Under t and se	erstand tecond or	the knov der ordi	wledge o nary dif	of variou ferential	s techni equatio	ques and ns.	d metho	ds for	solvir	ng	K2,K5					
		CO bou app	CO5: Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineeringK3,K4applications.K3,K4																
Pre-r	equisites		-																
		CO / PO Mapping CO/PSO (3/2/1 indicates strength of correlation) 3 Strong 2 Madium 1 Weak Manning																	
	COs	(3/2		cates sti	engui 0	Program	nme Out	comes (POs)	iuiii, 1 -	weak			PSOs	ping				
		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	РО	PO	PO	PSO	PSO				
	CO 1	2	2								10	11	12	1	2				
	CO 2	3	3											2					
	CO 3	3	3											2					

Direct	
1.	Continuous Assessment Test I, II & III
2	Assignment

3

3

Assignment End-Semester examinations 2. 3.

Indirect

CO 4

CO 5

3

3

Course Assessment Methods

1. Co	urse - end survey								
Content of	he syllabus	Dorioda	12						
Sampling d	istributions - Estimation of parameters - Statistical hypothesis - Large	sample tests	hased on Normal						
distribution	for single mean and difference of means -Tests based on t. Chi-squa	re and F distr	ibutions for mean						
variance an	l proportion - Contingency table (test for independent) - Goodness of fit.		ioutions for mean,						
Unit - II	DESIGN OF EXPERIMENTS	Periods	12						
One way a	d two way classifications - Completely randomized design – Randomi	zed block des	ign – Latin square						
design -2^2	factorial design.								
Unit – II	SOLUTION OF EQUATIONS AND EIGENVALUE PROBLEMS	Periods	12						
Solution of	algebraic and transcendental equations - Fixed point iteration metho	d – Newton	Raphson method -						
Solution of	linear system of equations - Gauss elimination method - Pivoting - G	Gauss Jordan	method – Iterative						
methods of	Gauss Jacobi and Gauss Seidel - Eigen values of a matrix by Power	method and Ja	acobi's method for						
symmetric	natrices.	1							
Unit - IV	Unit - IV INTERPOLATION, NUMERICAL DIFFERENTIATION AND NUMERICAL INTEGRATION Periods 12								
Lagrange's – Approxim	Lagrange's and Newton's divided difference interpolations – Newton's forward and backward difference interpolation – Approximation of derivates using interpolation polynomials – Numerical single and double integrations using								
Trapezoida	and Simpson's 1/3 rules.								
Unit – V	EQUATIONS	Periods	12						
Single step method for methods for	methods : Taylor's series method - Euler's method - Modified Euler's methods solving first order equations - Multi step methods : Milne's and Adams solving first order equations.	ethod - Fourth s - Bash forth	order Runge-Kutta predictor corrector						
	· · · · · · · · · · · · · · · · · · ·	Total Periods	60						
Text Books									
1.	Grewal. B.S. and Grewal. J.S., "Numerical Methods in Engineering and Publishers, New Delhi, 2015	Science ", 10	th Edition, Khanna						
2.	Johnson, R.A., Miller, I and Freund J., "Miller and Freund's Probabilities Pearson Education, Asia, 8th Edition, 2015.	ity and Statist	ics for Engineers",						
References									
1.	Burden, R.L and Faires, J.D, "Numerical Analysis", 9th Edition, Cengag	e Learning, 20	<u>16.</u>						
2.	Delhi, 8th Edition, 2014.	ences", Cenga	ge Learning, New						
3.	Gerald. C.F. and Wheatley. P.O. "Applied Numerical Analysis" Delhi,2006.	Pearson Educ	ation, Asia, New						
4.	S.C.Gupta & V.K.Kapoor," Fundamentals of Mathematical Statistics", Publishers, Newdelhi, 10 th Edition.	Sultan chand	& sons Education						
5.	William Navidi,"Statistics for Engineers and Scientists", TMH Publishers	s, New Delhi, 1	3 rd Edition, 2013.						
E-Resource	3								
1.	https://www.maths.unsw.edu.au > courses > math2089-numerical-methods.								
2.	www.learnerstv.com/Free-engineering-Video-lectures								
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Programme	B.E.	Р	rogramme	e Code	e 1	01]	Regulation	2	019
Department	COMPU	UTER SCIENCE AND ENG	INEERI	NG				Semester		IV
Course Code		Course Name	Periods	Per W	/eek	Cre	dit	Maxi	mum Ma	arks
		Course runne	L	Т	Р	C	2	CA	ESE	Total
U19CS410	Compu	ter Organization	3	0	0	3		50	50	100
Course Objective	 Und Imp pro Fan Ana Exp 	derstand the basic structure and bart the knowledge on Har ogramming. niliarize the concept of pipelin alyze the various memory syst bose different ways of commun	d operatio rdwired of ing and ha em includ nicating w	ns of contro azards ing Ca ith I/C	digital l; Mi ache m) devie	comp cro p nemor ces an	outer, progr ries a nd sta	ammed co nd virtual n undard I/O i	ntrol an nemory. nterface	nd nano s.
	At the er	nd of the course, the student sh	nould be a	ble to,				K	Inowled	ge Level
	CO1: analyze	Identify the basic structure a the effect of addressing mode	nd functions on the e	onal u xecuti	nits of on tim	faco ne of a	ompu a prog	iter and gram	K	2
Course Outcome	CO2: A the prob	Apply the hardwired and micro blems	o program	med o	control	l units	s for	solving	K	3
	CO3:III	lustrate the process of pipelini	ng and an	alyze	pipelir	ned co	ontro	l units.	K	3
	CO4: S	ummarize the memory organi	zation tec	hnique	es				K3,	K4
	CO5:	Illustrate data transfer betweer	n central c	ompu	er and	l I/O d	devic	es	K3,	K4
Pre-requisites	-									

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak														
COs	Programme Outcomes (POs)														
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
CO 1	3	2	2		-					1		1	3	2	
CO 2	2	3	1	2	-					1			2	2	
CO 3	3	2	1	2	2			2		1			2	2	
CO 4	2	2 2 2 2 1 2													
CO 5	3	2	1		-			1		1		1	3	2	

- Direct
 - 1. Continuous Assessment Test I, II & III
 - 2. Assignment
 - 3. End-Semester examinations

Indirect

1. Course - end survey

Un	nit — I	BASIC STRUCTURE OF COMPUTERS	Periods	9
Functio	onal units -	- Basic operational concepts – Bus structures – Performance	and metrics	- Instructions and
instruct	tion sequen	cing – Hardware – Software Interface –Instruction set architectur	e – Addressi	ng modes – RISC –
CISC.	1	0		0
Un	it - II	BASIC PROCESSING UNIT	Periods	9
Fundan	nental conc	epts – Execution of a complete instruction – Multiple bus organiza	ation– Hardw	rired control – Micro
program	nmed contr	ol – Nano programming.		
Uni	it – III	PIPELINING	Periods	9
Basic o	concepts -	Data hazards - Instruction hazards - Influence on instruction	on sets –Dat	a path and control
conside	erations – Pe	erformance considerations – Exception handling.		
Un	it - IV	MEMORY SYSTEM	Periods	9
Basic c	concepts -	Semiconductor RAM - ROM - Speed - Size and cost - Cach	ne memories	- Improving cache
perform	nance – Vii	tual memory - Memory management requirements - Associative	e memories ·	- Secondary storage
devices				
Un	it – V	I/O ORGANIZATION	Periods	9
Access	ing I/O dev	ices - Programmed Input/output -Interrupts - Direct Memory Acc	ess – Buses -	 Interface circuits –
Standar	d I/O Interf	aces (PCI, SCSI, USB)		
			Total Perio	ods 45
Text B	ooks		Total Perio	ods 45
Text B	ooks Carl Ham	acher, ZvonkoVranesic and SafwatZaky, "Computer Organization	Total Perio on", Fifth Ed	ods 45 ition, Tata McGraw
Text B	ooks Carl Ham Hill, 2014	acher, ZvonkoVranesic and SafwatZaky, "Computer Organizatio	Total Perio	ods 45 ition, Tata McGraw
Text B	ooks Carl Ham Hill, 2014 nces	acher, ZvonkoVranesic and SafwatZaky, "Computer Organizatio	Total Perio	ods 45 ition, Tata McGraw
Text Bo	ooks Carl Ham Hill, 2014 nces David A.	Patterson and John L. Hennessy, "Computer Organization and	Total Perio on", Fifth Ed Design: The	ods 45 ition, Tata McGraw Hardware/Software
Text B 1. Referen	ooks Carl Ham Hill, 2014 nces David A. interface"	acher, ZvonkoVranesic and SafwatZaky, "Computer Organization. Patterson and John L. Hennessy, "Computer Organization and Fifth Edition, Elsevier, 2013.	Total Perio on", Fifth Ed Design: The	ods 45 ition, Tata McGraw Hardware/Software
Text B 1. Referen 1. 2.	ooks Carl Ham Hill, 2014 nces David A. interface" William S Pearson E	acher, ZvonkoVranesic and SafwatZaky, "Computer Organization." Patterson and John L. Hennessy, "Computer Organization and Fifth Edition, Elsevier, 2013. Stallings, "Computer Organization and Architecture – Designing for ducation, 2006.	Total Perio on", Fifth Ed Design: The or Performan	ods 45 ition, Tata McGraw Hardware/Software ce", Eighth Edition,
Text B 1. Referent 1. 2. 3.	ooks Carl Ham Hill, 2014 nces David A. interface" William S Pearson E V.P. Heu Education	Patterson and John L. Hennessy, "Computer Organization Patterson and John L. Hennessy, "Computer Organization and Fifth Edition, Elsevier, 2013. Stallings, "Computer Organization and Architecture – Designing for ducation, 2006. rring, H.F. Jordan, "Computer Systems Design and Architecture 2004.	Total Perio on", Fifth Ed Design: The or Performan ture", Secon	ods 45 ition, Tata McGraw Hardware/Software ce", Eighth Edition, d Edition, Pearson
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Pro	gramme	e B.]	Е.		-		Progra	umme (Code	101		Regula	ation	20)19
Dep	partmen	t CO	MPUI	FER SO	CIENC	E AND	ENG	INEEF	RING			Seme	ester	I	V
Course	e Code		C	lourse l	Name		Perio	ods Per	Week	Cred	it	Ma	aximu	ım Mar	ks
					(unite		L	Т	Р	C		CA		ESE	Total
U190	CS411	Des Alg	ign an orithn	d Anal 15	ysis of		3	0	0	3		50		50	100
Course		The •	e stude Analy Apply	nt shou yze the y the co	ld be m asympt oncept c	ade to, otic per of Divide	forman e and c	ce of a onquer	lgorith and gr	ms. œedy al	gori	thms			
 Objective Demonstrate a familiarity of Dynamic Programming. Apply important concept of Backtracking. Synthesize efficient algorithms for NP Problems At the end of the course, the student should be able to, 															
Synthesize efficient algorithms for NP Problems At the end of the course, the student should be able to,													Knowledge Level		
Course At the end of the course, the student should be able to, CO1: Analysis algorithm techniques and analyze asymptotic runtim complexity of algorithms.												untime	e K2		
Outcom	ne	CC usi)2: Ap	ply the	algorit conque	thms and er and G	d desig reedy a	n techi algorith	niques im.	to solve	e pro	oblems		K3	
		CC)3: Un	derstan	d and d	lesign al	lgorithr	ns usin	g dyna	mic pro	ograi	mming		K3	
		CC)4: Ap	ply con	cepts o	f Back t	tracking	2						K4	
		CC)5: Sy	nthesiz	ze effici	ient algo	orithms	for NF	proble	ems				K3,K	4
Pre-req	uisites	-													
	(3/2	/1 indic	ates str	ength of	CO / Po f correla	O Mapp tion) 3-S	ing Strong, 2	2 – Med	ium, 1 ·	– Weak			CO/I Map	PSO ping	
COs					Progran	nme Out	comes (POs)					PSOs	5	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	1	3	3	2									1	2	
CO 2	2	2	2	3									2	2	
CO 3	2	2	3	2									3	2	
CO 4	2	3	2	3									2	3	
CO 5	2	3	2	3									3	3	
Course	Assessn	nent M	ethods	1											
Direct	13505511		cinous	,											
1.	Continu	ious As	ssessme	ent Test	I, II &	III									
2. 3	Assigni End-Se	nent mester	examir	nations											
Indire	ct	mester	CAUIIII	lations											
1.	Course	e - end	survey												
Content	t of the s	syllabu	S												

Unit	t – I	ALGORITHM ANALYSIS AND RECURRENCE EQUATION	Periods	9
Model	s of co	mputation- algorithm analysis- time and space complexity- average and	d worst case ar	nalysis-
lower b	oounds-	Recurrence Equations-Solving recurrence equations – Analysis of linear	search.	-
Unit	- II	DIVIDE AND CONQUER & GREEDY ALGORITHMS	Periods	9
Divide	And C	onquer: General Method - Binary Search - Finding Maximum and Mir	nimum – Merge	e Sort
Quick	sort. Gr	eedy Algorithms: General Method – Container Loading – Knapsack Prob	lem – Huffman	trees
Unit	– III	DYNAMIC PROGRAMMING	Periods	9
Genera	al Meth	od - Multistage Graphs - All-Pair shortest paths: The Floyd-Warsha	ll algorithm. C	Optimal
binary	search	trees – 0/1 Knapsack – Traveling salesperson problem.		
Unit	- IV	BACKTRACKING & BRANCH AND BOUND	Periods	9
Genera	al Me	thod – 8 Queens's problem – sum of subsets –	graph colori	ng –
Hamilt	onian p	problem - knapsack problem. Branch and Bound: LIFO and FIFO	search – assi	gnment
problem	m,			-
Unit	$-\mathbf{V}$	PROBLEM CLASSES	Periods	9
NP-Co	mpleter	ness: Polynomial Time, Polynomial-time verification, NP Completeness a	and reducibility	, NP -
G 1				
Compl	eteness	Proofs, NP Complete Problems.		
Compl	eteness	Proofs, NP Complete Problems. Total P	Periods 4	45
Text B	eteness Books	Proofs, NP Complete Problems. Total P	Periods 4	45
Text B	eteness Books T.H.C	Proofs, NP Complete Problems. Total P Formen, C.E.Leiserson, R.L.Rivest, C.Stein, "Introduction to Algorithms"	Periods 4	45 rentice-
Text B	ooks T.H.C Hall I	Proofs, NP Complete Problems. Total P Formen, C.E.Leiserson, R.L.Rivest, C.Stein, "Introduction to Algorithms" ndia, 2009.	Periods 4	45 rentice-
Text B	ooks T.H.C Hall II Anany	Proofs, NP Complete Problems. Total P Formen, C.E.Leiserson, R.L.Rivest, C.Stein, "Introduction to Algorithms" ndia, 2009. / Levitin, "Introduction to the Design and Analysis of Algorithms",	Periods 4	45 rentice- Pearson
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Programme	B.E.		Program	me Co	ode	101	Regulation	20	19
Department	COMP	UTER SCIENCE AND	ENGIN	EERI	NG		Semester	Γ	V
Course Code		Course Name	Period	s Per V	Week	Credit	Maxim	um Mar	`ks
Course Coue		Course Maine	L	Т	Р	С	CA	ESE	Total
U19CS412	Open S	Source Software	2	0	2	3	50	50	100
Course Objective	The stu Pro Un Ma Un Exp se	dent should be made to, omoting the use of OSS in derstand the PHP concept ike the student to develop derstand the open source ploring the use of the C rve dynamic content.	l learning ts and bu website scripting	g, teac ilding s using g langu Gatev	hing a block PHP ages l way li	nd admir s and Mys Perl nterface	nistrative IT in sql (CGI) scriptin	ıfrastruc ng langı	ture. Jage to
	At the e	nd of the course, the stud	ent shou	ld be a	$\frac{1}{1-cL^2}$,		Knov Le	vledge evel
Course	COI: (Jutline the benefits of OS	S and es	sentia	l of Li	nux		K	.2
Course	CO2:	Implement simple PHP p	rograms	for va	rious a	applicatio	ons	K	3
Outcome	CO3: information	Design & implement a sn ation storage & retrieval s	nall to m system u	edium sing P	i size v HP &	veb enab MYSQL	led	K	3
	CO4: E	chumerate the syntax and	style of I	PERL	scripti	ing.		K3	,K4
	CO5:	Implement Perl programs	s with \mathbf{D}	atabas	e Con	nectivity		K3	,K4
Pre-requisites	-								

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak														CO/PSO Mapping		
COs	Os Programme Outcomes (POs)														PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2			
CO 1	3	3	3	2	2						2	2	2	2			
CO 2	3	3	3	2	2				2		2	2	2	2			
CO 3	3	3	3	3	2				2		2	2	2	3			
CO 4	3 3 3 2 2 2 2 2 2													3			
CO 5	3	3	3	3	2				2		2	2	2	3			

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment/Seminar/Mini Project
- 3. End-Semester examinations

Indirect

1. Course - end survey

Introduction to Open sources -Need of Open Sources -Advantages of Open Sources-Application of Open Sources -FOSS Licenses -FOSS Examples. Linux Overview: Linux system structure -Kernel and User mode Operations -Process-User Management in Linux. Case Study: Ubuntu -Cent OS - Redhat. Illustrative Programs: Practicing basic Linux commands. Unit - II INTRODUCTION TO PIP Periods 12 Introduction to PHP - The Building blocks of PHP: Variables, Data Types, Operators. Flow Control Functions in PHP: Conditional statements, Switching Flow, Loops-Strings and Arrays-random numbers- functions. Reading data from web pages - PHP Browser Handling Power. Illustrative Programs:	Unit	- I INTRODUCTION TO OPEN SOURCES	Periods	12
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Text Books 1. Remy Card, Eric Dumas and Frank Mevel, "The Linux KernelBook", WileyPublications, 2003 Reference: 1. Steven Holzner, "PHP: The Complete Reference", McGraw Hill Education,2017 2. Steve Suchring, "MySQL Bible", John Wiley, 2002 3. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw - Hill Publishing Company Limited, Indian Reprint 2009. E-Resources 1. https://tavaana.org/sites/default/files/introduction to opensource.pdf 2. https://www.w3schools.com/php/php_intro.asp 3. https://www.tutorialspoint.com/perl/perl_introduction.htm			Total Periods 60)
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References 1. Steven Holzner, "PHP: The Complete Reference", McGraw Hill Education,2017 2. Steve Suchring, "MySQL Bible", John Wiley, 2002 3. Martin C. Brown, "Perl: The Complete Reference", 2nd Edition, Tata McGraw - Hill Publishing Company Limited, Indian Reprint 2009. E-Resources 1. https://tavaana.org/sites/default/files/introduction to opensource.pdf 2. https://tavaana.org/sites/default/files/introduction.to opensource.pdf 3. https://www.w3schools.com/php/php_intro.asp 3. https://www.tutorialspoint.com/perl/perl_introduction.htm	1.	Remy Card. Eric Dumas and Frank Meyel. "The Linux KernelBook" WileyPu	ublications, 2003	
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	VI	VEKANANDHA COLLEC (Autonomous Institution, A Elayampalayar	GE OF E	NGIN o Anna ngode -	EERIN Univers - 637 20	NG FOR V sity ,Chenna)5	VOMEN ai)	Tiveshind	Angement 19901 Alam O Mari 2015 Alam O Mari 2015 Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam Alam
Programme	B.E.		Program	me Co	ode	101	Regulation	20)19
Department	COMP	UTER SCIENCE AND	ENGIN	EERI	NG		Semester]	V
Course Code		Course Name	Period	s Per V	Neek	Credit	Maximu	ım Mar	ks
Course Coue		Course Maine	L	Т	Р	С	CA	ESE	Total
U19CS413	Operat	ing Systems	3	0	0	3	50	50	100
Course Objective	The stu Bu Fai Fai Fai Un At the e	dent should be made to, ild an understanding of th miliarize with the basic pr miliarize with the storage miliarize the file system in derstand the disk manage and of the course, the stude	e fundar ocess sc managen nterface ment and ent shou	nental heduli ment and in <u>d disk</u> ld be a	conce ng and pleme storag ible to	ept of ope d CPU scl entation ee	rating system heduling	Knov	wledge
	COl·	Outline various operating	revetam	struct	uro on	dprocess	scheduling		evel
Course	$\frac{\text{CO1.}}{\text{CO2.}}$	Compare the performant	system	rious		schedulin	g algorithms	r	12
Outcome	and sy	nchronization.		nous	CIU	seneuunn	ig argorithms	ŀ	K3
	CO3: .	Analyze the performance	of variou	is stor	age m	anagemei	nt schemes.	ŀ	K3
	CO4:]	Evaluate the performance	of vario	us dise	c schee	duling alg	gorithm.	K3	3,K4
	CO5 :	Interpret the mechanism	adopted	for fil	e syste	em impler	nentation.	K3	3,K4
Pre-requisites	-								

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak												CO/PSO Mapping		
COs	Programme Outcomes (POs)														
	PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 PO 10 PO 11 12													PSO 2	
CO 1	3	3	2	2								2	2	2	
CO 2	3	3	2	2								2	2	2	
CO 3	3	3	2	3								2	2	3	
CO 4	3	3	2	2								2	2	3	
CO 5	3	3	2	3								2	2	3	
Course	Assessr	nent M	lethods												
Direct															
1.	Conti	nuous A	Assessm	ent Tes	t I, II &	Ш									
2	Assim	nment/	Seminar	•											

- 2. Assignment/Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Conten	nt of the	e syllabus			
Unit	t – I	INTRODUCTION	Periods	9	
Introdu	iction 1	o operating systems - Operating-System Operations - Resource Ma	nagement. Op	erating	
system	struc	tures: System calls - System Services - Linkers and Loader. Process	es: Process con	ncept –	
Process	s sched	uling – Operations on processes – Interprocess communication.	I	-	
Unit	- II	CPU SCHEDULING AND PROCESS SYNCHRONIZATION	Periods	9	
CPU	Schedu	lling: Scheduling criteria – Scheduling algorithms – Real time	scheduling. I	Process	
Synchi	ronizat	ion: The critical-section problem – Hardware Support for Synchroniza	ation – Semapl	nores –	
Classic	proble	ms of synchronization – Monitors.	D 1	0	
Unit	- 111	DEADLOCK AND STORAGE MANAGEMENT	Periods	9	
Deadlo	ock: Sy	ystem model – Deadlock characterization – Methods for handling d	leadlocks – De	eadlock	
prevent	tion – I	Deadlock avoidance – Deadlock detection – Recovery from deadlock. M	lemory Manag	ement:	
Dackgr		Contiguous memory anocation – Paging – Segmentation – Swapping.	Darioda	0	
Viertee e	- 1 V	MEMORI AND I/O SISIEMIS	Alleration of	9	
Virtua	l Mem	ory: Background – Demand paging – Copy on write – Page replacement	- Allocation of	Trames	
	ning. T Stora	as attachment I/O Systems: I/O Hardware Application I/O interface	-space manage	ment –	
stream	– Stora s – perf	ormance	kerner 1/O subsy	ystem –	
Stream	s pen				
Unit	– Ý	FILE SYSTEMS	Periods	9	
Unit File-Sy	– V vstem 1	FILE SYSTEMS Interface: File concept – Access methods – Directory structure – Pt	Periods	9 System	
Unit File-Sy Impler	− V ystem ∃ nentati	FILE SYSTEMS Interface: File concept – Access methods – Directory structure – Prion: File-System Structure – File System Operations - Directory imple	Periods otection. File -s mentation –All	9 System	
Unit File-Sy Impler method	– V ystem 1 nentati 1s – Fre	FILE SYSTEMS Interface: File concept – Access methods – Directory structure – Prion: File-System Structure – File System Operations - Directory imple e-space management – efficiency and performance – recovery.	Periods otection. File -3 mentation –All	9 System ocation	
Unit File-Sy Impler method	− V ystem 1 mentati 1s – Fre	FILE SYSTEMS Interface: File concept – Access methods – Directory structure – Prion: File-System Structure – File System Operations - Directory imple e-space management – efficiency and performance – recovery. Total F	Periods rotection. File - mentation –All	9 System ocation 45	
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Unit File-Sy Impler method Text B	- V ystem I nentati ds - Fre Gooks	FILE SYSTEMS Interface: File concept – Access methods – Directory structure – Prion: File-System Structure – File System Operations - Directory imple e-space management – efficiency and performance – recovery. Total H rschatz, Galvin, and Gagne, "Operating System Concepts", Tenth Edition	Periods rotection. File - mentation –All Periods	9 System ocation 45 Pvt Ltd,	
Unit File-Sy Impler method Text B	- V ystem 1 nentati ds – Fre cooks Silber 2018	FILE SYSTEMS Interface: File concept – Access methods – Directory structure – Prion: File-System Structure – File System Operations - Directory imple e-space management – efficiency and performance – recovery. Total H rschatz, Galvin, and Gagne, "Operating System Concepts", Tenth Edition	Periods rotection. File -3 mentation –All Periods 4 h, Wiley India F	9 System ocation 45 Pvt Ltd,	
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	*	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205 Image: Chennai of the second seco														
Program	mme	B.E	•			1 2	Progra	mme C	Code	101		Regul	ation	20)19	
Depart	ment	COM	PUTER	R SCIE	NCE A	ND E	NGINH	EERIN	G			Sem	ester	Ι	V	
Course	Code		Co	urse Na	ame		Perio	ods Per	Week	Cred	it	М	aximu	m Mar	ks	
Course	couc		0		une		L	Т	Р	C		CA	1	ESE	Total	
U19CS	414	Web 7	[echno]	logy			3	0	0	3		50		50	100	
Course Objecti [,]	ve	The st	Udent s Descr Creat Desig Under	ribe the e web p gn dynar stand tl	e made various bages us mic and ne conc	to, s steps i sing htm l interac epts of	n desig nl, Java ctive we HTML	ning a Script, eb page and X	creative CSS ar es by en ML, D0	e and d nd appl nbeddi DM	ynan et co ng Ja	nic we des. va Scr	bsite. ript co	de in H	TML.	
	-	At the end of the course, the student should be able to,Knowledge LevelCO1: Develop a dynamic webpage by the use of HTML & XHTML.K2														
	-	CO1:	CO1: Develop a dynamic webpage by the use of HTML & XHTML. K2													
Course	_	CO2	CO2: Design a well formed web page using CSS and JavaScript. K3													
Outcom	ne	CO3:	Impler	nent a s	server s	ide app	lication	using	Servlet	s.				K3		
		CO4:	Devel	op JSP	applic	ation fo	or impl	ementi	ng sess	sion m	anag	ement		К3		
	-	and da	atabase	connec	tivity.					1	1.1	1		110		
		securi	Desig	in rich	client	present	tation	using A	AJAX	and va	alidai	te the		K3,K	4	
Pre-													•			
requisit	es															
	(3/	2/1 indic	cates str	ength of	CO / PC) Mapp tion) 3-S	ing Strong, 2	– Med	ium, 1 –	Weak			CO/I Map	PSO ping		
Cos]	Program	nme Outo	comes (I	POs)					PSOs	5		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	РО 11	PO 12	PSO 1	PSO 2		
CO 1	3	2	3		3							2	3	2		
CO 2	3		3	2	3							2	3	2		
CO 3	3		3		3							2	2	3		
CO 4	3		3	2	3							2	2	3		
CO 5	3		3		2							2	3	3		
Course Direct	Assess	ment M	lethods													

- 1. Continuous Assessment Test I, II & III
- 2. Assignment/ Seminar/Mini Project
- **3.** End-Semester examinations

Indirect

1. Course - end survey

Unit	t – I	HTML & XHTML	Periods	9
The In	ternet-E	Basic Internet Protocols -The World Wide Web-HTTP request message-r	esponse messag	ge-Web
Clients	Web	Servers. Markup Languages: XHTML- An Introduction to HTML H	listory-Version	s-Basic
XHTM	IL Synt	ax and Semantics- Fundamental HTML Elements-Relative URLs-Lists	-tables-Frames-	Forms-
Creatin	ng HTM	IL Documents.		
Unit	: - II	CSS & JAVA SCRIPT	Periods	9
Style S	Sheets:	CSS-Introduction to Cascading Style Sheets-Features-Core Syntax-Sty	le Sheets and	HTML
Style R	Rules Ca	ascading and Inheritance-Text Properties-Box Model. Client-Side Program	nming: The Jav	aScript
Langua	age-His	tory and Versions -Syntax-Variables and Data Types-Statements-Operato	rs- Literals-Fun	ctions-
Object	s-Array	s-Built-in Objects.		-
Unit	– III	DOM &JAVA SERVLET	Periods	9
Host C	Objects	: Browsers and the DOM-Introduction to the Document Object Mod	el DOM Histo	ory and
Levels	-Intrins	ic Event Handling-Modifying Element Style-The Document Tree-Do	OM Event Ha	ndling.
Server	-Side P	rogramming: Java Servlets- Architecture -Overview-A Servelet-Generati	ing Dynamic C	ontent-
Life Cy	ycle-Pai	rameter Data-Sessions-Cookies- URL Rewriting.	D 1	0
Unit	- IV	XML & JSP	Periods	9
Repres	senting	Web Data: XML-Documents and Vocabularies-Versions and Declara	tion - Event-o	oriented
Parsing	g: SA	X-Transforming XML Documents-Selecting XML Data: XPAT	H- Template	based
Transfo	ormatio	ns: XSLT-Displaying -XML Documents in Browsers. JSP: JSP Techno	ology Introducti	on-JSP
and Se	rviets-k	tunning JSP Applications – JDBC in JSP	Daniada	0
Unit	- V	Periods	9	
HTML	25: Intr	oduction - Web Forms 2.0 - Web Storage – Canvas – Audio & Video Pla	ayer -Geolocati	on-QR
Code.		L' Introduction- Ajax Client Server Architecture-Introduction to XM	L- AJAX Keq	uest &
Respon	186-12	JSON – JSON Objects – JSON Allay – JQuery Selector – JQuery CSS – JC	Query DOM.	15
Torrt D		101411	erious -	13
Text B	DOOKS		D1	0011
1.	Jeffre	y C. Jackson, "Web TechnologiesA Computer Science Perspective", Pea	arson Education	, 2011.
Refere	ences			
1.	Deitel Editio	and Deitel and Nieto, "Internet and World Wide Web - How to Progra n, 2011.	m", Prentice H	all, 5th
2.	Herbe	rt Schildt, "Java-The Complete Reference", 8th Edition, McGraw Hill Pro	fessional, 2011	
3.	Gopal	an N.P. and Akilandeswari J., "Web Technology", Prentice Hall of India,	2011.	
4.	Chris 2009.	Bates, Web Programming - Building Intranet Applications, 3rd Edition	n, Wiley Public	cations,
E-Reso	ources			
1	https:/	//www.seu1.org/files/level6/IT230/Book/(web.tech%201st%20book)%20	Web%20Techn	ologies
1.	%20-9	%20A%20Computer%20Science%20Perspective.pdf		
2.	https:/	//www.tutorialspoint.com/ajax/ajax_security.htm		
	https:/	//www.pearson.com/us/higher-education/product/Deitel-Associates-Power	r-Points-for-Inte	ernet-
3.	and-W	Vorld-Wide-Web-How-To-Program-5th-Edition/9780132151016.html?tab	-downloadable	<u></u>
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	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205															
Programme	B.E.		Progr	amme	Code	101	Regulat	ion	2019							
Department	COMPUT	TER SCIENCE AND ENG	INEER	RING		•	Semes	ster	IV							
Course Code		Course Name	Period	ls Per V	Veek	Credit	Max	imum	Marks							
Course Code		Course Maine	L	Т	Р	C	CA	ESE	Total							
U19CS415	Operatin	g Systems Laboratory	0	0	4	2	50	50	100							
	The stud	The student should be made to,														
Course	• Lea	• Learn the basic commands of UNIX and shell programming commands.														
Objective	• Gen	 Generate the programs for system calls. 														
Objective	• Sho	 Show the programs using scheduling and semaphores. 														
	• Wor	 Work on memory management algorithms. 														
	At the er		Knowledge													
			Level													
	CO1: Ir	nplement Unix comma	nds an	d shell	prog	ramming	5.		K3							
	CO2: In	nplement C program f	or proc	cess an	d file	system	manageme	ent	K3							
Course	using sy	stem calls.							KJ							
Outcome	CO3:	Implement various	CPU	schee	luling	g algori	ithms usi	ng	W2 W4							
	C- prog	camming.							К3,К4							
	CO4: D	evelop an algorithm fo	r dead	lock de	etectio	on, avoid	lance and f	ïle	** 4							
	allocatio	on strategies.							K4							
	CO5: D	evelop the memory ma	anagen	nent sc	heme	s and pe	rformance	of								
	various	nage replacement algor	rithms			5 m 10 P 5		01	K3,K4							
Pre-	, and a	ruge replacement uiger														
requisites	-															

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak														
Cos			PSOs												
	PO 1	PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 PO PO PO PO PO II II II III IIII IIII IIII IIII IIII IIII IIII IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII												PSO 2	
CO 1	3	3	3	2								2	3	2	
CO 2	3	3	3	2								2	3	2	
CO 3	3	3	3	2								2	3	3	
CO 4	3	3 3 3 2 2													
CO 5	3	3 3 3 2													

Direct

- Prelab and post lab test
 End-Semester examinations

Indirect

1. Course - end survey

LIST OF EXPERIMENTS:

- 1. Shell programming (Using looping, control constructs etc.,)
- 2. Write programs using the following system calls of UNIX operating system: fork, exec, getpid, exit, wait, close, stat, opendir, readdir
- 3. Write programs using the I/O system calls of UNIX operating system (open, read, write, etc)
- 4. Write C programs to simulate UNIX commands like ls, grep, etc.
- 5. Implementation of CPU scheduling algorithms: FCFS, SJF, Round Robin & Priority Scheduling.
- 6. Implement the Producer Consumer problem using semaphores.
- 7. Implementation of Banker's algorithm.
- 8. Implement some memory management schemes (First fit, Best fit & Worst fit)
- 9. Implement some page replacement algorithms (FIFO & LRU).

Total Periods45

	VIV	EKANANDHA COLLEG (Autonomous Institution, A Elayampalayar	GE OF I Affiliated n, Tiruch	ENGINI to Anna engode -	E ERIN Univers - 637 20	NG FOR V sity ,Chenn	WOMEN ai)		Arragement System BORSheller Strengent Strenge							
Programme	B.E.		Progr	amme (Code	101	Regulati	on	2019							
Department	COMPUT	ER SCIENCE AND ENG	INEER	RING			Semes	ter	IV							
Course Code		Course Nome	Period	ls Per V	Veek	Credit	Max	imum	Marks							
Course Coue		Course manne	L	Т	Р	С	CA	ESE	Total							
U19CS416	Web Tec	hnology Laboratory	0	0	4	2	50	50	100							
	The stude	The student should be made to,														
Course Objective	 Understand the web technologies to create adaptive web pages for web application. Use CSS to implement a variety of presentation effects to the web application. Gain the skills and project-based experience needed for entry into web application and development careers. Explore different web extensions and web services standards. Acquire knowledge and skills for creation of web site considering both client and server side programming 															
	At the end	l of the course, the stude	nt shou	ld be at	ole to,				Knowledge Level							
	CO1: Cr	eate web pages using XH	ITML a	and Cas	cadin	g Style Sl	heets		K3							
Course	CO2: De	evelop a dynamic webpag	ge by th	e use o	f java	script an	d DHTML.		K3							
Outcome	CO3: W sent from	rite a server side java ap client, process it and sto	pplicati ore it or	on calle 1 databa	ed Ser ise	vlet to ca	atch form da	ata	K3							
	CO4: W from clie	rite a server side java ap nt and store it on databas	plicatio se	on calle	d JSP	to catch	form data se	ent	K4							
	CO5: De	velop a dynamic webpag	ge using	g java b	ean ar	nd store it	t on database	e	K3,K4							
Pre- requisites	-															

	CO / PO Mapping														
	(3/2	Mapping													
Cos]	Program	nme Out	comes ((POs)					PSOs		
	PO 1	1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 PO PO PO PSO PSO PSO PSO 2													
CO 1	3 3 3 2 1 2											2	3	2	
CO 2	3	3	3	2					2			2	3	2	
CO 3	3	3	3	2	1				2			2	3	3	
CO 4	3	3	3	2	2				2			2	3	2	
CO 5	CO 5 3 3 2 2 2 2 3													2	
Course A	ourse Assessment Methods														

Direct

- 1. Prelab and post lab test
- 2. End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus

LIST OF EXPERIMENTS:

1. The catalogue page should contain the details of all the books available in the web. The details should contain the following: 1. Snap shot of Cover Page. 2. Author Name. 3. Publisher. 4. Price. 5. Add to cart

button.

Create a "registration form "with the following fields 1) Name (Text field) 2) Password (password field)
 3) E-mail id (text field) 4) Phone number (text field) 5) Sex (radio button) 6) Date of birth (3 select boxes) 7) Languages known (check boxes – English, Telugu, Hindi, Tamil) 8) Address (text area)

3. HTML5 and JavaScript :

- a) position in the string of the left-most vowel
- b) number with its digits in the reverse order

c) Write an HTML page including any required JavaScript that takes a number from one text field in the range of 0 to 999 and shows it in another text field in words. If the number is out of range, it should show "out of range" and if it is not a number, it should show "not a number" message in the result box.

HTML and CSS:

- 4. Write an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (color, bold and font size).
- 5. Design a web page using CSS (Cascading Style Sheets) which includes the following: A. Use different font, styles: In the style definition you define how each selector should work (font, color etc.). Then, in the body of your pages, you refer to these selectors to activate the styles.
- 6. To convert the static web pages online library into dynamic web pages using servlets and cookies.
- 7. a) Assume four users user1, user2, user3 and user4 having the passwords pwd1,pwd2,pwd3 and pwd4 respectively. Write a PHP for doing the following. 1. Create a Cookie and add these four user ID"s and passwords to this Cookie. 2. Read the user id and passwords entered in the Login form (week1) and authenticate with the values (user id and passwords) available in the cookies. If he is a valid user (i.e., user-name and password match) you should welcome him by name (user-name) else you should display "You are not an authenticated user"
- 8. Write an XML file which will display the Book information which includes the following: 1) Title of the book 2) Author Name 3) ISBN number 4) Publisher name 5) Edition 6) Price Write a Document Type Definition (DTD) to validate the above XML file.
- 9. Write a java program/servlet/JSP to connect to that database and extract data from the tables and display them. Experiment with various SQL queries. Insert the details of the users who register with the web site, whenever a new user clicks the submit button in the registration page.
- 10. Write a JSP which does the following job Insert the details of the 3 or 4 users who register with the web site by using registration form. Authenticate the user when he submits the login form using the user name and password from the database.
- 11. A user validation web application, where the user submits the login name and password to the server. The name and password are checked against the data already available in Database and if the data matches, a successful login page is returned. Otherwise a failure message is shown to the user. Modify the above program using AJAX to show the result on the same page below the submit button.
- 12. To write a program using AJAX for displaying cricket players profile

Total Periods

4	VIVEKANANDHACOLLEGEOFENGINEERINGFORWOMEN (AutonomousInstitution,AffiliatedtoAnnaUniversity,Chennai)Elay ampalayam,Tiruchengode-637 205														TÜVRheinis	Management System ISO 8001:2015	
	Program	nme	B.E./F	B.Tec	h.			Pi	ogram	meCo	de			Regulat	ion	2019	
	Departr	nent	CSE,E	EE, I	ECE,I	(T,B]	г,ВМ	E,CS]	Γ					Semes	ster	-	
C	ourseCo	de		С	oursel	Name			Perio	odsPer	Week	Cred	it N	laximur	nMar	ks	
U	19MCS	Y4	VERB	ALA	BILI	ГҮ			L 2				<u> </u>	ESE		<u>'otal</u> 100	
Cou bje	urseO ctive		Thema •	in ob To he for ef To pr skills	jectiv lp the fectiv ovide basic	veoftl e stud e use a hos comj	necou ent ur st of v	rseist ndersta varied ats, nar	o: and the opport nely, C	impo: unities Gramn	rtance of s for the nar, Voo	f havin studen	g his lang t to hone l y, Spelling	uage ski nis acqui g and Co	lls ke ired la	pt ready anguage hension.	
		Attheendofthecourse,thestudentwill beableto,KLCO1:, Identify the verb and tense in a sentence by circling and labelingK1urseCO2:State the definition of an articleK1															
	Course		CO2:State the definition of an article														
Outcome CO3:Develop their awareness of correct usage of English grammar in writing and speaking .															K3		
CO4: Tests a vocabulary power and skill to follow the logic of sentences																K4	
CO5:Discuss how word root based extends vocabulary																K2	
Pre	-requisi	tes															
		(3/2	2/1indica	tessti	ength	CO ofco	/ PO I rrelat	Mappi ion)3-	i ng Strong	,2– M	edium, 1	-Weak		C M	O/PS appi	O ng	
	COs		1	T	Prog	gramr	neOu	tcome	s(POs)	I				PSOs	5		
		PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	F	PSO2	
	CO 1						2			3	3		3			2	
	CO 2						2			3	3		3			2	
	CO 3						2			3	3		3			2	
	CO 4						2			3	3		3			2	
	CO 5						2			3	3		3			2	
Cor	ntentofth	nesyll	abus														
	Unit– I		TENSE	S										Perio	ods	6	
Pur ,fut wit	Purposeandrulesoftensesanditskeywords(focusshouldbegiventopresentcontinuous,futurecontinuous,presentperfect,futureperfect,presentperfectcontinuous,pastperfectcontinuous,futureperfectcontinuous withmoreexamples) -Direct andIndirect Speech –Voices.																
1	Unit-II		ARTIC	LES										Perio	ods	6	

Purpose of Articles: Indefinite Article: If you want to say about ANY item, you should use the articles A /An.**A**:AEuropean,AOneEyedbeggar,AUniversity,AUsefulWebsite.Nameofprofessions,Expressionof quantity, To make a Proper noun a Common noun, With certain numbers, used before the word 'Half' when tfollows a whole number. **Exceptions: Choosing A or An** There are a few exceptions to the general rule of using a before words that start with consonants and an before words that begin with vowels. The first letter of the word honor, for example, is a consonant, but it's unpronounced. In spite of its spelling, the word honorbeginswith a vowelsound.Therefore, we use an.**Example.**

TheDefiniteArticle:

Where to use the Definite Article -A specific item, a particular person or thing, Before superlative forms,Before double comparatives, Before musical instruments, Before rank or title, Before name of the politicalparties, armed forces, physical positions, Before a Proper noun when used as a Common noun, Before someadjectives to make them nouns, Before Ordinal numbers, Before the names of Oceans, Seas, Rivers, Canals,Deserts, Groups of Mountains and Groups of Islands, Before the names of the Things, which are unique innature, Before the names of Planets and Satellites, Before Holy Books, Before the names of News Papers,Beforethenamesofsomecountries,measuringexpressions beginningwithby.**Omission ofarticles**:

Before Plural countable noun, Before proper noun, Before languages, a single item of uncountable noun,Before name of the meals except adjective usage, Double expressions – with wife and fork, with hat and folk,from top to bottom, With the names of meals such as Breakfast, Before predicative nouns denoting a uniqueposition, After type of / kind of / sort of / post of / title of / rank of / articles are not used. Ex. He is not that sortof man, Articles are not used with material nouns, After di-transitive verb articles should not be used exceptwhen it is used as mono transitive verb, Before the names of meals no article should be used in a general wayexcept in particularcauses.

Repetitionofthearticles

1. When two or more adjectives qualify the same noun, the article is used before the first adjectiveonly; but when they qualify different nouns, expressed or understood, the article is used beforeeachadjective.

PREPOSITIONS

- a. PrepositionsOfTime-On,In,At,Since,For,Ago,During,Before,After,Until,Till,To/Past,From/To,By
- $b.\ Prepositions Of Place-In, At, On, Off, By, Beside, Under, Over, Below, Above, Up And Down, Agove, Control and Control an$
- c. PrepositionsOfDirections/MovementsAcross,Through,To,Into,OutOf,Onto,Towards,From
- d. OtherPrepositions-Of,By, About,For,With
- e. PrepositionsUsagewithItsContext

Unit – III	SENTENCECORRECTION	Periods	6

SENTENCECORRECTION

a) In each of the following sentences, four options are given. You are required to identify the best way of writing the sentence in the context of the correct usage of standard written English. While doing so, you have to ensure the message being conveyed remains the same in all the cases.

b) For each of the following questions, a part or the whole of the original sentence has been underlined. Youhaveto find he bestwayof writing the underlined part of the sentence.

c) In the following questions, you have to identify the correct sentence/s. For each of the following questions, find these ntence/s that are correct.

d) In each of the following questions, one or more of the sentences is/are incorrect. You have to identify theincorrectsentence/s.

SENTENCEIMPROVEMENT

a. Subject-VerbAgreement

- b. Parallelism
- c. Redundancy: Theerrorofrepeating the samething.
- d. Modifier

e. Comparisons

RULE:(a) Whencomparative degree is used with than, makes use that we exclude the thing compared from the restofclass ofthings by using the

f. Confusingwords

i) Fewand Less

ii) FewandA few

iii) LittleandALittle

	tact).Layand Lie Lay, laid	D 1 1	
Unit-IV	SENTENCECOMPLETION	Periods	6
SENTENCEC	OMPLETION: Purpose and usage of proper words. SPOTTINGERRORS:		
a.	Errorsonconjunctions		
b.	Errorson,, if 'clauses		
с.	Errors onadverbs		
d.	Errorsonadjectives		
e.	Errorsonprepositions		
f.	Errorsondeterminers		
g.	Errorson verbs		
h.	Errors onnouns		
i.	Errorsonmodifiers		
j.	Errors ondegreesofcomparison		
k.	Errorsonsubject-verbagreement		
1.	Errorsoninfinitives		
m.	Errors onpronouns		
n.	Errors ontenses		
0.	Redundancyerrors		
p.	Errorsonarticles		
q.	Erroroncomplexsentences		
Unit– V	VOCABULARY	Periods	6
Synonyms: Roo	ot BasedWord,Suffix BasedWord.Antonyms-ContextualVocabulary-Verbal	Analogy	
	Т	otalPeriods	30

Text Boo	bks
1.	ObjectiveGeneral EnglishbySPBakshi–Arihant Publication
Reference	Ces
1.	AmodernApproachto verbal andnon-verbalreasoningbyR.S. Agarwal
2.	Wordpowermade easybyNorman Lewis

Semester - V

	2		VIVI	EKANA (Autor	NDHA nomous In Ela	COLL nstitution yampalay	EGE Ol n, Affiliat yam, Tiru	F ENGI ed to An chengod	NEER na Univ e – 637	ING ersit <u>y</u> 205	FOF y ,Che	R W nnaij	OMEN)	N	Tivrheidard CERTFED	Nangenet Soan SO NOT 201 Presson D Treasa	
Pro	gramme	B.	Е.				Progra	imme C	Code		101		Reg	ulation	1 2	019	
Dep	artmen	t CO	MPUT	TER SO	CIENC	E AND	ENG	INEER	ING				Se	mester	•	V	
Course	e Code			Course	Name		Pe	riods P	er Wee Γ Ι	ek >	Cred C	lit	$\frac{N}{C}$	/laxim A	um Ma ESE	rks Total	
U19C	CS519	Art	ificial	Intellig	gence			3 () ()	3		5	0	50	100	
Course Objecti	ve	The • S • I • I	e studer Study th Learn th ntroduc	nt shou ne conc ne meth ce the c	ld be m repts of nods of concepts	ade to, Artifici solving s of Exp	ial Intel problem pert Sys	ligence ms usin stems an	1g Arti nd mac	ficia chin	ıl Inte e lear	ellig ming	gence.				
		At t	he end	of the	course,	the stud	dent sho	ould be	able to),					Knov Le	vledge evel	
G		C	01: Aj	pply the	e variou	is meth	ods for	probler	n solv	ing ı	using	AI.			K2,K3		
Course		С	CO2: Analyze the knowledge representation using prediction logic. CO3: Infer the knowledge based systems using various algorithms and													3	
Outcom		C th	CO3: Infer the knowledge based systems using various algorithms and theories													3	
CO4: Identify the knowledge systems by applying appropriate learning techniques.														K3			
CO5: Analyze the different types of expert systems.														K	4		
Pre-requisites basic mathematics concepts, Programming language																	
	(3/2	2/1 indic	cates str	ength of	CO / PO f correla	O Mapp tion) 3-5	oing Strong, 2	2 – Med	ium, 1	- We	eak			CO/F Map	PSO ping		
COs					Program	nme Out	comes (POs)						PSOs			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P 1(0]) :	PO 11	PO 12	PSO 1	PSO 2		
CO 1	3	2	1	2	3			1	2		2		2	1	1		
CO 2	2	1	2	3	2			2	3		2		3	2	2		
CO 3	3	2	3	2	2			3	2		2		2	3	3		
CO 4	2	1	1	3	3			2	1	_	3		2	1	2		
CO 5	3	3	2	2	3			3	2		3		3	3	3		
Course Direct	Assessn	nent M	ethods														
<u> </u>	Contir	nuous A	ssessm	ent Tes	st I, II &	III											
2.	Assign	nment /	Semina	ar/Quiz													
3.	3. End-Semester examinations																
Indire	Indirect																
Indifie																	

Conte	ent of the sy	llabus		
U	nit – I	INTRODUCTION TO AI AND PRODUCTION SYSTEMS	Periods	9
Introd	luction to A	I-Problem formulation, Problem Definition -Production systems,	Control strat	egies, Search
strateg	gies. Probl	em characteristics, Production system characteristics -Specia	lized produc	tion system-
Proble	em solving	methods - Problem graphs, Matching, Indexing and Heuristic f	unctions -H	ill Climbing-
analys	sis of search	algorithms.	asure of peri	formance and
Ur	nit — II	REPRESENTATION OF KNOWLEDGE	Periods	9
Game	e playing	- Knowledge representation, Knowledge representation	using Pred	licate logic,
Introd	luction to p	predicate calculus, Resolution, Use of predicate calculus, Knowl	edge represe	ntation using
other	logic-Struct	ured representation of knowledge.		
Un	nit - III	KNOWLEDGE INFERENCE	Periods	9
Know	ledge repre	sentation -Production based system, Frame based system. Inferer	nce - Backw	ard chaining,
Forwa	ard chainin	ng, Rule value approach, Fuzzy reasoning - Certainty fa	actors, Baye	sian Theory-
Bayes	sian Networ	k-Dempster - Shafer theory.		-
Un	nit – IV	PLANNING AND LEARNING	Periods	9
Basic	plan gen	eration systems - Strips -Advanced plan generation system	ıs – K strij	ps -Strategic
explai	nations -Wh	y, Why not and how explanations. Learning-Statistical learning -	Reinforcemen	nt learning.
U	nit - V	EXPERT SYSTEMS	Periods	9
Exper	t systems -	Architecture of expert systems, Roles of expert systems - Know	wledge Acqui	isition –Meta
know	ledge, Heur	istics. Typical expert systems - MYCIN, DART, XCON, Expert sy	/stems shells	45
Tort	Doolea	10	stal Periods	45
1 1	Deenak K	hemani "Artificial Intelligence" Tata Mc Graw Hill Education 20	13	
1.	Kevin Nie	whit and Elaine Rich Nair B "Artificial Intelligence (SIE)" Mc	Graw Hill _ '	2010 (Units_
2.	LILVI &	V)		2010. (Onits-
Refer	rences	.,		
1.	Stuart Rus	ssel and Peter Norvig "AI – A Modern Approach", 3rd Edition, Pet	arson Educati	on 2015.
2.	Dan W. P	atterson, "Introduction to AI and ES", Pearson Education, 2007.(U	nit-III)	
3.	Peter Jack	son, "Introduction to Expert Systems", 3 rd Edition, Pearson Educa	tion, 2007.	
E-Res	sources			
1.	http://www	w.sciencedirect.com/bookseries/foundations-of-artificial-intelligen	<u>ce</u>	
2.	https://ww	w.javatpoint.com/knowledge-representation-in-ai		
3.	https://the	gradient.pub/when-ai-plans-ahead/		
4.	https://en.	wikipedia.org/wiki/Expert_system		
5.	http://www	w-formal.stanford.edu/jmc/whatisai/		

		VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205 B E Programma Coda 101 Programma Coda 200															
Programm	le	B.E	•				Progra	amme C	Code	101		Regu	lation	2	019		
Departmen	nt	COM	PUTEI	R SCIE	INCE A	ND E	NGINI	EERIN	G			Ser	nester		V		
Course Cod	le		Co	urse Na	ame		Peri	ods Per	Week	Cred	it	М	aximu	m Mar	ks		
							L	T	P	C		CA		ESE	Total		
U19CS520)	Comp	uter N	etwork	S		3	0	0	3		50)	50	100		
Course Objective		 I he sti I I I I I I I 	Describe Recogni Jndersta Know fl	e the bas ze the di and the d ow cont and the i	made to sics and ifferent concepts rol and o role of a	, function internety of Rout congestic pplicatio	s of OS vorking ing and on conti on proto	I layers devices Address rol algor cols in n	and the sing ithms. etworki	ir funct	ions.						
		At the	end of	the cou	irse, the	studen	t shoul	d be abl	e to,					Kno	wledge		
		CO1: Demor	Identify	y the di the Lay	ifferent ered Aı	compo chitectu	nents, o ure.	categori	es of C	omput	ter N	etworl	ks and		K2		
Course Outcome		CO2: protoco	O2: Describe the design issues of data link layer, media access control cotocols & internetworking protocols. K3 O3: Apply appropriate routing algorithms and multicast routing techniques. K3														
		CO3: Apply appropriate routing algorithms and multicast routing techniques. K3															
	CO4: Illustrate the functions and protocols of the transport layer, congestion control techniques and Quality of Service requirements for a network K3														K3		
		control techniques and Quality of Service requirements for a network CO5: Analyze the features and operations of various application layer protocols such as HTTP, DNS, and SMTP K3															
Pre- requisites		-															
	(3/2	2/1 indic	cates str	ength of	CO / PO f correla	D Mapp tion) 3-S	ing Strong, 2	2 – Medi	ium, 1 –	Weak			CO/F Map	PSO ping			
Cos					Program	me Out	comes (POs)					PSOs				
PO)1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO	PO	РО	PSO	PSO			
										10	11	12	1	2			
CO 1	3	2	3	2	2					2		3	1	2			
CO 2	3	3	2	2	3	2				2		2	2	2			
CO 3	3	3	3	3	2					2		2	3	2			
CO 4	3	2	3	2	3					2		1	2	3			
	2	3	2	2	1					3		2	2	3			
Course Asso Direct 1. Con 2. Ass 3. Enc Indirect	Course Assessment Methods Direct 1. Continuous Assessment Test I, II & III 2. Assignment/Seminar 3. End-Semester examinations Indirect																

Content	nt of the syllabus			
Unit	- I FUNDAMENTALS & LIN	K LAYER	Periods	9
Building Perform	ng a network – Requirements - Layering and protoc nance ; Link layer Services - Framing - Error Detecti	ols - Internet Architecture – N on - Flow control.	Network soft	ware –
Unit -	- II MEDIA ACCESS & INTERNE	CTWORKING	Periods	9
Media a Basic Ir	access control - Ethernet (802.3) - Wireless LANs nternetworking (IP, CIDR, ARP, DHCP,ICMP)	– 802.11 – Bluetooth - Switch	ing and brid	ging –
Unit –	- III ROUTING		Periods	9
Routing multicas	g (RIP, OSPF, metrics) – Switch basics – Global Inte ast routing (DVMRP, PIM)	rnet (Areas, BGP, IPv6), Multi	cast –address	ses –
Unit -	- IV TRANSPORT LAY	ER	Periods	9
Overvie Retrans requirer	ew of Transport layer - UDP - Reliable byte stream (smission – TCP Congestion control - Congestion avo ements	ГСР) - Connection managemen idance (DECbit, RED) – QoS –	nt – Flow con -Application	ntrol -
Unit -	- V APPLICATION LAY	/ER	Periods	9
Traditio - SNMF	onal applications -Electronic Mail (SMTP, POP3, IM P	AP, MIME) – HTTP – Web Se	ervices – DN	S
		Total Per	riods 4	15
Text Bo	ooks	Total Per	riods 4	45
Text Bo	ooks Larry L. Peterson, Bruce S. Davie, "Computer Netw Morgan Kaufmann Publishers, 2021.	Total Per vorks: A Systems Approach", S	riods 4	<u>45</u>
Text Bo	ooks Larry L. Peterson, Bruce S. Davie, "Computer Netw Morgan Kaufmann Publishers, 2021. nces	Total Per vorks: A Systems Approach", S	riods 4	45 ,
Text Bo	Tooks Larry L. Peterson, Bruce S. Davie, "Computer Netw Morgan Kaufmann Publishers, 2021. Inces James F. Kurose, Keith W. Ross, "Computer Net Internet", Eight Edition, Pearson Education, 2021.	Total Per vorks: A Systems Approach", S working - A Top-Down Appr	riods 4 Sixth Edition, roach Featuri	ng the
Text Bo 1. Referen 1. 2.	cooksLarry L. Peterson, Bruce S. Davie, "Computer Netw Morgan Kaufmann Publishers, 2021.IncesJames F. Kurose, Keith W. Ross, "Computer Net Internet", Eight Edition, Pearson Education, 2021.Nader. F. Mir, "Computer and Communication Netwo	Total Per vorks: A Systems Approach", S working - A Top-Down Appr rks", Pearson Prentice Hall Publ	riods 4 Sixth Edition, roach Featuri ishers, 2010.	ng the
Text Bo 1. Referen 1. 2. 3.	ooks Larry L. Peterson, Bruce S. Davie, "Computer Netw Morgan Kaufmann Publishers, 2021. nces James F. Kurose, Keith W. Ross, "Computer Net Internet", Eight Edition, Pearson Education, 2021. Nader. F. Mir, "Computer and Communication Netwo Ying-Dar Lin, Ren-Hung Hwang, Fred Baker, "Com Graw Hill Publisher, 2011.	Total Per vorks: A Systems Approach", S working - A Top-Down Appr rks", Pearson Prentice Hall Publ puter Networks: An Open Sou	riods 4 Sixth Edition, roach Featuri Lishers, 2010. urce Approacl	ng the
Text Bo 1. Referen 1. 2. 3. 4.	cooksLarry L. Peterson, Bruce S. Davie, "Computer Netw Morgan Kaufmann Publishers, 2021.IncesJames F. Kurose, Keith W. Ross, "Computer Net Internet", Eight Edition, Pearson Education, 2021.Nader. F. Mir, "Computer and Communication Netwo Ying-Dar Lin, Ren-Hung Hwang, Fred Baker, "Com Graw Hill Publisher, 2011.Behrouz A. Forouzan, "Data communication and Network"	Total Per vorks: A Systems Approach", S working - A Top-Down Appr rks", Pearson Prentice Hall Publ uputer Networks: An Open Sou vorking", Fourth Edition, TMH,	riods 4 Sixth Edition, roach Featuri ishers, 2010. urce Approach 2011.	ng the h", Mc
Text Bo 1. Referen 1. 2. 3. 4. 5.	ooks Larry L. Peterson, Bruce S. Davie, "Computer Netw Morgan Kaufmann Publishers, 2021. Inces James F. Kurose, Keith W. Ross, "Computer Net Internet", Eight Edition, Pearson Education, 2021. Nader. F. Mir, "Computer and Communication Netwo Ying-Dar Lin, Ren-Hung Hwang, Fred Baker, "Com Graw Hill Publisher, 2011. Behrouz A. Forouzan, "Data communication and Netw Andrew S. Tanenbaum, David Wetherall, Computer N	Total Per vorks: A Systems Approach", S working - A Top-Down Appr rks", Pearson Prentice Hall Publ nputer Networks: An Open Sou vorking", Fourth Edition, TMH, fetworks,Pearson, 2011	riods 4 Sixth Edition, roach Featuri lishers, 2010. urce Approach 2011.	ng the
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		VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205												To/Nexteded			
Progr	amme	ne B.E. Programme Code 101 Regulation									on	2019					
Depar	tment	COMPUTER SCIENCE AND ENGINEERING Semester									ter	V					
Course	Code	Course Name			Name		Period	Neek	Cre	dit	M	axim	um Ma	rks			
	3521	L T P C CA 21 Microprocessor and Interfacing 3 0 0 3 50									<u>CA</u> 50		<u>ESE</u> 50	Total			
Course Objecti	ve	The s	Microprocessor and Interfacing30035050100The student should be made to,• Study the Architecture of 8085 microprocessor.• Learn the design aspects of I/O and Memory Interfacing circuits.• Study the addressing modes and instruction set of 8085 and 8086.• Study the Architecture of 8086 microprocessor.• Develop skill in simple program writing for 8085 and 8086 applications.														
Course		At the CO1 instru	e end of Expla: ection s	f the co in the set of 8	ourse, th archite 085.	te student	should b	e able	to, , addı	ressin	ıg m	odes &		Level K2			
Outcom	ne	CO2	:Use of	f Interr	upt stru	cture 808	5 and pro	ogrami	ning.					Kź	2		
		CO3	: Interp	oret and	l execu	te progran	ns based	on 808	36 mic	ropro	ocess	or.		К3			
		CO4: Interpret 8086 signals and bus operations.												К3			
		C05	:Interf	ace I/C) units	with 808	36 proce	ssor						Kź	2		
Pre-requ	isites	-															
	(3/2	CO / PO Mapping 2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak											CO/I Map	CO/PSO Japping			
COs		Programme Outcomes (POs) PSC											PSO	5			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6 F	PO 7 PO	98 P	09	PO 10	PO 11	PO 12	PSO 1	PSO 2			
CO 1	PO 1 3	PO 2 2	РО 3	PO 4	PO 5	PO 6 F	PO 7 PC	98 P	09	PO 10	PO 11	PO 12	PSO 1 2	PSO 2	2		
CO 1 CO 2	PO 1 3 3	PO 2 2 2 2	PO 3 1 1	PO 4 1 1	PO 5	PO 6 F	PO 7 PC	98 P	09	PO 10	PO 11	PO 12	PSO 1 2 2	PSO 2	2		
CO 1 CO 2 CO 3	PO 1 3 3 3 3	PO 2 2 2 2 2 2	PO 3 1 1 1 1	PO 4 1 1 1 1	PO 5	PO 6 F	PO 7 PC	98 P	09	PO 10	PO 11	PO 12	PSO 1 2 2 2	PSO 2	2 2 2		
CO 1 CO 2 CO 3 CO 4	PO 1 3 3 3 3 3	PO 2 2 2 2 2 2 2 2	PO 3 1 1 1 1 1 1	PO 4 1 1 1 1 1 1	PO 5	PO 6 F	207 PC	98 P	09	PO 10	PO 11	PO 12	PSO 1 2 2 2 2 2	PSO 2	2 2 2 2 2		
CO 1 CO 2 CO 3 CO 4 CO 5	PO 1 3 3 3 3 3 3	PO 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	PO 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	PO 4 1 1 1 1 1 1 1 1 1	PO 5	PO 6 F	PO 7 PC	98 P	09	PO 10	PO 11	PO 12	PSO 1 2 2 2 2 2 2 2 2	PSO 2	2 2 2 2 2 2 2		
CO 1 CO 2 CO 3 CO 4 CO 5 Course . Direct 1. 2. 3.	PO 1 3 3 3 3 3 Assessr Contin Assign End-S	PO 2 2 2 2 2 2 2 2 2 2 1 2 1 2 1 2 2 2 2 2	PO 3 1 1 1 1 1 1 1 Sethods Commandation	PO 4 1 1 1 1 1 1 1 vent Tess r/Quiz nations	PO 5	PO 6 F	PO 7 PC	98 P		PO 10	PO 11	PO 12	PSO 1 2 2 2 2 2 2	PSO 2	2 2 2 2 2		

Conte	ent of the	syllabus										
Un	it – I	INTRODUCTION TO 8-BIT MICROPROCESSOR	Periods	9								
General 8-bit microprocessor and its architecture - 8085 functional block diagram - Pin configurations -												
Memo	Memory organization - I/O ports - Timing Diagram.											
Un	it – II	- II INSTRUCTION SETS AND ASSEMBLY LANGUAGE										
T .	· • •	PROGRAMMING OF 8085 PROCESSOR	1 D 1	0, 1								
Interr	and Machine control group of instruction set - Assembly Language Programming											
and N	lachine co	ontrol group of instruction set - Assembly Language Programming.	D 1 1									
Uni	it - 111	THE 8086 MICROPROCESSOR	Periods	9								
Introd	luction to	8086 microprocessors, Architecture, Register and Memory Organization, A	Addressing	Modes,								
Instru	ction Set,	Assembly Language Programming.		-								
Uni	t - IV	8086 SYSTEM BUS STRUCTURE	Periods	9								
8086	Architect	ure- Pin configuration - Minimum Mode and Maximum Mode - System	n Bus Stru	cture -								
Introd	luction to	Multiprogramming - System Bus Structure										
Un	it - V	GENERAL PURPOSE INTERFACING DEVICES (8086)	Periods	9								
82514	A Serial (Communication Interface - 8255A Programmable Peripheral Interface - 82	53 Program	nmable								
Interv	al Timer	- 8259A Programmable Interrupt Controller - 8279 Programmable Keyboard	d And Disp	lay I/O								
interi	ace.	Total Pario		5								
Tovt	Rooks		15 T	5								
ТСАС	RS Ga	onkar Microprocessor Architecture Programming and Application" with 80	85 Wiley	Fastern								
1.	Ltd., Ne	w Delhi, 2013.	ios, whey i									
2.	Doughla	as V.Hall, - Microprocessors and Interfacing, Programming and Hardwarell, T	ГМН, 2012.									
Refer	ences											
1.	Yu-Cher Program	ng Liu, Glenn A. Gibson, - Microcomputer Systems: The 8086 / 8088 Fam ming and Design ^I , 2nd Edition, Prentice Hall of India, 2014.	ily – Archi	tecture,								
2.	2. Krishna Kant, - Microprocessor and Microcontroller Architecture, programming and system design using 8085, 8086, 8051 and 8096 ^(*) , PHI, 2007, 7th Reprint, 2015.											
3.	3. Barry B. Brey, "Intel Microprocessors", Architecture, Programming, and Interfacing, 8th Edition, Pearson Education, 2009.											
Л	Mohamed Ali Mazidi, Janice Gillispie Mazidi, Rolin McKinlay, —The 8051 Microcontroller and											
^{4.} Embedded Systems: Using Assembly and Cl, 2nd Edition, Pearson Education, 2011.												
E-Res	sources											
1.	https://d	lscrib.com/download/advanced-microprocessors-and-periperals-by-a-k-ray-a ndi 586a24736454a7214a35c120 ndf	<u>ind-k-m-</u>									
	https://w	www.researchgate.net/publication/344729598 Microprocessors and Microco	ontrollers A	Archite								
2.	cture_Pr	ogramming Interfacing using 8085 8086 and 8051 by SK Mandal z-lil	oorg									
3	https://w	www.worldcat.org/title/microprocessors-and-interfacing-programming-and-										
5.	hardwar	e/oclc/611374608										
4.	https://p	dfcoffee.com/ak-ray-and-km-bhurchandi-advanced-microprocessors-and-per	ripherals-3e	<u>-tata-</u>								
	mcgraw	-h1ll-2012pdf-pdf-free.html										

)	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205											Wagners TWPsholing CCTEED Washing Precision			
Program	mme	B.E.Programme Code101Regulation										ation	2019			
Depart	ment	COMPUTER SCIENCE AND ENGINEERING Semester										ester	r V			
Course (Code			Perio	Periods Per Week		Cred	lit	Maxin		num Marks					
	500	LTPCCATheory of Computation200250											1	ESE	Total	
01905	522	The student should be made to,														
Course Objectiv	ve	 Construct finite state machines and the equivalent regular expressions. Prove the equivalence of languages described by finite state machines and regular expressions Construct CNF and GNF and the equivalent context free grammars. Prove the equivalence of languages described by pushdown automata and context free grammars. Construct Turing machines to prove the equivalence of languages described by Turing 														
	-	At the end of the course, the student should be able to,												Knowledge Level		
Course	e -	 CO1: Analyze and design finite automata CO2: Design finite state automata, regular grammar, regular expression and Myhill- Nerode relation representations for regular languages 												K3 K2		
Outcom		CO3:	Classif	y forma	l languag	ges into r	egular, c	context-f	ree and	Simplif	ficatio	on of CI	FG	K3		
		CO4:	Descri	be the	Pushdo	wn Au	tomata	and pu	mping	lemm	a for	·CFL		K3		
	ľ	CO5: Understand the notions of decidability and un-decidability of problems, Halting problem and Design of Turing machine												К3		
Pre- requisit	es	-														
CO / PO MappingCO(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – WeakMa										CO/I Map	D/PSO apping					
Cos					Program	me Out	comes (POs)					PSOs	S		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2		
CO 1	3	3	2	2	1	0	0	1	1	3	0	2	2	3		
CO 2	2	3	3	1	1	0	0	3	1	1	0	3	2	3		
CO 3	3	2	3	2	2	0	0	1	2	2	0	2	3	2		
CO 4	2	3	3	1	1	0	0	2	1	1	0	3	3	2	<u> </u>	
2	3	3 2 1 2 0 0 1 2 2 0 3 3 2														
Course	e Assessment Methods															
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Direc	t															
1.	Continuous Assessment Test I, II & III															
2. 3.	End-Semester examinations															
Indir	ect															
1	. Course - end survey															
Conter	nt of the syllabus															
Unit	t – I FINITE AUTOMATA	Periods	9													
Introdu	action- Basic Mathematical Notation and techniques- Finite State systems – Bas	ic Definitions -	- Finite													
Unit	- II REGULAR LANGUAGES	Periods	9													
Regula	r Languages- Regular Expression – Equivalence of NFA and DFA – Equivalence	e of NDFA's w	vith and													
withou	t \in -moves – Equivalence of finite Automaton and regular expressions –M	linimization of	DFA-													
Pumpi	ng Lemma for Regular sets – Problems based on Pumping Lemma.															
Unit	- III GRAMMARS	Periods	9													
Gramn	nar Introduction- Types of Grammar - Context Free Grammars and Langua	iges– Derivatio	ns and													
Langua	ages – Ambiguity- Relationship between derivation and derivation trees – Sir	nplification of	CFG –													
normal	form – Problems related to CNF and GNF	ormai iormi –Ci	ionisky													
Unit	- IV PUSHDOWN AUTOMATA	Periods	9													
Pushdo	own Automata- Definitions –Moves–Instantaneous descriptions–Deterministic	pushdown aut	omata–													
Equiva	lence of Pushdown automata and CFL-pumping lemma for CFL- problems base	d on pumping L	emma.													
Unit	- V TURING MACHINES	Periods	9													
Definit	ions of Turing machines - Models - Computable languages and functions -	Techniques for	Turing													
machin	ne construction – Multi head and Multi tape Turing Machines - The Halti	ng problem –	Partial													
Solvad	nity – Problems about 1 uring machine.	Deriods /	15													
Text B	aoks		13													
ICAT D																
1.	Hopcroft J.E., Motwani R. and Ullman J.D, "Introduction to Automata The Computations" Second Edition Program Education 2008	heory, Languag	es and													
D 6	Computations, Second Edition, I carson Education, 2008.															
Refere	nces															
1.	John C Martin, "Introduction to Languages and the Theory of Computation", Third Hill Publishing Company, New Delhi, 2007.	l Edition, Tata N	1cGraw													
2.	"Introduction to Theory of Computation", Michael Sipser, Third Edition, Technology, 2006.	Published by	Course													
3.	Mishra K L P and Chandrasekaran N, "Theory of Computer Science - Aut Computation", Third Edition, Prentice Hall of India, 2016.	omata, Languag	ges and													
4.	RajendraKumar, Theory of Automata Language & Computation, Tata McGraw Hill, J	New Delhi,2010														
5.	Kamala Krithivasan and R. Rama, Introduction to Formal Languages, Automata Th Pearson Education, Delhi, 2009.	neory and Comp	utation,													
E-Reso	burces															
1.	https://www.gatevidyalay.com/theory-of-automata-computation/															
2.	https://www.tutorialspoint.com/automata_theory/index.htm															
3.	https://academyera.com/theory-of-computation-gate-questions															
4.	https://www.geeksforgeeks.org/lmn-toc/															

	VIV (Auto	EKANANDHA COLLEG nomous Institution, Affiliated Tirue	E OF I to Anna chengode	ENGINI Universi e – 637 2	E ERIN ty ,Che 05	N G FOR N nnai) Elaya	VOMEN mpalayam,		TÜVRheetad Cettinget
Programme	B.E.		Progr	amme (Code	101	Regulati	on	2019
Department	COMPUT	ER SCIENCE AND ENG	INEER	RING			Semes	ter	V
Course Code		Course Name	Period	ls Per V	Veek	Credit	Max	imum	Marks
			L	Т	Р	С	CA	ESE	Total
U19CS523	Compute	r Networks	0	0	4	2	50	50	100
	Laborato	ry	Ŭ	Ŭ	•	-	20	20	100
Course Objective Course	The stud • Rela • Have and S • Worl • Com • Show At the en Sliding wi	ent should be made to, te the theoretical and pra e hands on experience or SNMP. k on Network simulator t pare the performance of v the router configuration d of the course, the stu	ctical b n variou to imple various n using dent sl	ase in c us netw ement c routing packet hould b	compu orking onges g proto tracer be able cols s	ter netwo g protoco tion contri ocols. e to, uch as st	orks issues. Is like TCP rol algorithr	, UDP, n nd	, FTP, DNS Knowledge Level K3
Outcome	CO2:.Cor	figure Network related of	commai	nds (PII	NG an	d TRACI	EROUTE)		K3
	CO3: De	velop simple application	s using	TCP ar	nd UD	P.			K3,K4
	CO4:. De NS2 simu	emonstrate the routing a lator for real time application	and Co ations.	ngestio	n Cor	itrol algo	rithm usi	ng	K4
	CO5: Imp	element router configurat	ion usi	ing CIS	CO pa	acket trac	er		K3,K4
Pre-	_								
requisites									

	(3/2	2/1 indic	cates stre	ength of	CO / PO) Mapp tion) 3-S	o <mark>ing</mark> Strong, 2	2 – Med	ium, 1 –	Weak			CO/I Map	PSO ping	
Cos]	Program	me Out	comes (POs)					PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	PSO 3
CO 1	3	2	3	2	2			2	2	3		2	2	2	
CO 2	3	2	3	2	3			2	2	3		2	2	2	
CO 3	3	2	3	3	3			3	3	3		2	2	3	
CO 4	3	3	3	3	3			3	3	3		2	3	2	
CO 5	3	3	3	2	3			2	3	3		2	3	3	

Direct

- 1. Prelab and post lab test
- 2. End-Semester examinations

Indirect

1. Course - end survey

LIST OF EXPERIMENTS:

- 1. Implementation of Stop and Wait Protocol and Sliding Window Protocol.
- 2. Write a code simulating PING and TRACEROUTE commands
- 3. Applications using TCP Sockets like
 - a. Echo client and echo server
 - b. Chat
 - c. File Transfer
- 4. Applications using TCP and UDP Sockets like
 - a. DNS
 - b. SNMP
- 5. Simulation of Congestion Control Algorithms using Network Simulator (NS)
- 6. Perform a case study about the different routing algorithms to select the network path with its optimum and economical during data transfer using NS2 Simulator.
 - a. Link State routing
 - b. Flooding
 - c. Distance vector
- 7. Introduction to packet tracer
- 8. Router Configuration (Creating Passwords, Configuring Interfaces)

Total Periods

	VIV	EKANANDHA COLLEO (Autonomous Institution, A Elayampalaya	GE OF Affiliated	ENGIN l to Anna nengode	EERI Univer – 637 2	NG FOR sity ,Chenr 05	WOMEN nai)		Musagement System 50 501 2015 CENTRAD CENTRAD Ver Machine 9 17060505
Programme	B.E.		Progr	amme	Code	101	Regula	tion	2019
Department	COMPUT	ER SCIENCE AND ENG	SINEER	RING			Seme	ester	V
Course Code		Course Name	Period	ds Per V	Week	Credit	Max	imum	Marks
Course Coue			L	Т	Р	С	CA	ESE	Total
U19CS524	Hardwar	e Laboratory	0	0	4	2	50	50	100
Course Objective	The stud • Intro- • Write • Diffe • Inter • Dete	ent should be made to, duce ALP concepts, feat e ALP for arithmetic and erentiate the Serial and P face different I/Os with ermine the operation of M	ures and logical Parallel Microp	d Codir l operat Interfac rocessor	ng met ions ir ce. ors. rs, Ard	hods 1 8086 an uino and	d 8051. PIC.		
Comment	At the en	d of the course, the stu	ident sl	nould b	be able	e to,			Knowledg e Level
Course	CO2:Imp	lement a program for Co	de con	version	s.	iutions			K2 K3
Outcome	CO3: Im	plement a program for S	orting a	and sear	rching				K4
	CO4:Eval with Micr	luate the data transfer i oprocessors.	informa	tion th	rough	serial &	z parallel p	orts	K3
	CO5:Imp	lement the program for 8	8279, 82	259, an	d 8253	3 using In	terfaces.		K4
Pre- requisites	-								

	(3/2	2/1 indic	cates stre	ength of	CO / PO) Mapp tion) 3-S	ing Strong, 2	2 – Med	ium, 1 –	- Weak			CO/PSO Mappir	D ng
Cos]	Program	me Out	comes (POs)					PSOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2
CO 1	3	3	3						2	2			2	2
CO 2	3	3	3						2	2			2	2
CO 3	3	3	3						2	2			2	3
CO 4	3	3	3		3				2	2		2	2	2
CO 5	3	3	3		3				2	2		2	2	2

Direct

- Prelab and post lab test
 End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus

LIST OF EXPERIMENTS:

8085 programs

- 1. Simple arithmetic operations using 8085:
 - a. addition
 - b. subtraction
 - c. multiplication
 - d. division.
- 2. Programming with control instructions:
 - a. Sorting and searching of numbers.
 - b. Counting of odd and even numbers in a block of data.
 - c. Counting of positive and negative numbers in a block of data
- 3. Programs for Code conversions.

8086 programs

- 1. Programs for 16 bit Arithmetic operations.
- 2. Programs for Sorting and Searching.
- 3. Serial communication interfacing with 8086.
- 4. Parallel Communication between two MP Kits using Mode 1 and Mode 2 of 8255.
- 5. Interfacing and Programming 8279.
- 6. Interfacing and Programming 8259.
- 7. Interfacing and Programming 8253.

Total Periods

	VIVEKAN	NANDHA COLLEG	E OF EN	GINI	EERIN	G FOR	WOMEN		Management System ISO 9001:2015
	(Autonomous Institution, A Elavampalavan	Affiliated to A	Anna U ode – 6	niversity 537 205	,Chennai)			TÜVFheinland CERTIFIED D 1708/S209
		j <u>F</u> j	.,						
Programme	B.E./B.Tech.	Pr	ogramme	Cod	e		Reg	ulation	2019
Department	CSE,EEE,ECE	,BT,BME,CST					Se	mester	-
Course Code	Cours	e Name	Periods	Per V	Week	Credit	M	aximum	n Marks
	Cours	e i tuine	L	Т	Р	C	CA	ESE	Total
U19MCTY5	Logical Reason	ing	2	0	0	-	100	-	100
Content of the sy	llabus								
Unit – I		VERBAL R	EASONI	NG				Perio	ds 6
Coding – Decod	ling(Letter Coding	g, Direct Letter Co	ding, Nu	mber	/Symb	ol Codii	ng, Decij	ohering	Message –
Word coding a	nd Numeral codi	ing, Substitution	Coding,	Cryp	t codi	ing – c	rypt add	lition, s	subtraction,
Information Arra	ingement Coding)	, Analogy (Direc	t and Sin	nple.	Analog	gy, Com	pleting t	he Anal	ogues pair,
Choosing the L	Analogues pair,	Choosing the sir	nilar wo	ora,	Numb	er Anal	logy, Al	ipnabet	Analogy),
Chassification(C	d number and od	d pair of numbers)	ne odd p Alphał	oar o oot T	DI WOI Cost(Ar	us, Choo	osing ine	ding to	dictionary
Alpha-Numeric	sequence. Letter y	word problems Ri	ile detect	ion)	Wor	d Form	ation (Us	sing left	ers from a
given word. By 1	inscrambling word	ls)	ine detect	.1011)	,	u i onna			015 110111 u
Unit - II	SITT	ING ARRANGEN	AENT &	SEN	NSE T	EST		Perio	ds 6
Sitting Arrange	ement (Arrangem	ent in a line, Ar	rangemen	nt are	ound	of a cir	cle, squ	are and	rectangle,
Arrangement ar	ound pentagonal	and hexagonal,	Direction	n Se	nse T	est[(Ma	in, Card	inal an	d Shortest
Direction)Final I	Detection, Displac	ement, Direction a	nd Displa	acem	ent], N	Number.	Rankin	g, Tim	e sequence
Test (Number T	est, Ranking Test,	Time Sequence To	est), Puzz	zles (Based	on class	ification	, Based	on placing
and comparison,	Family Based pro	blems)	,,	```				,	1 0
Unit – III		NUMBER AND I	LETTER	SEF	RIES			Perio	ds 6
Number and Le	tter Series[(Nun	nber Series: To fin	d a missi	ng te	erm. Fi	nd the n	umber th	nat does	not follow
the pattern, Misc	cellaneous pattern	of the series (Bas	sed on ad	lditio	n / sul	otraction	of cons	ecutive	odd / even
no's, Based on	addition / subtract	tion of prime num	bers, Mu	ltipli	cation	and Div	vision, B	ased or	addition /
subtraction of so	quares of natural	numbers, Based or	n addition	n / su	ibtract	ion of c	ubes of	natural	numbers),
Letter Series (A	lphabet Series, Co	ontinuous pattern of	f series)],	Inse	rting	the miss	sing chai	racter, A	Age, Blood
(Jumbled up dese	criptions, Relation	puzzles, Coded Re	elations),	Cloc	k and	calenda	r (Mathe	ematical	operations
and Notations- P	roblem of solving	by substitution, Int	erchangi	ng sig	gns and	1 numbe	rs, Deriv	ing the	appropriate
conclusions), Lo	gical order of w	ords, Clerical apt	titude (Q	uesti	on bas	sed on a	ddress,	Questio	n based on
1ssues)									1 6
Unit – IV	LOGI	ICAL AND ANAL	YTICAL		ASON	ING		Perio	ds 6
Logical venn o	liagrams (Univer	rsal positive, Univ	versal No	egati	ve, U	niversal	Affirma	tive or	Negative,
Miscellaneous,	Geometrical Figu	res on venn Diag	grams), I	Engi	Dility	test, Sy Statem	nt and	s, State	ement and
Assumptions, S Verification of 7	ruth of the State	ment Data Suffic	iency	rgui	nemts,	Statem	ent and	Course	of Action,
Unit – V	DATA	INTERPRETAT	ION & F	TLO	W CH	ART		Perio	is 6
Input Output	(Shifting Arrange	ing) Doto Internre	totion (T	Table	chart	Bar cha	rt Dia ch	art Mi	
abort Mixed abo	(Shifting, Arrange	ing), Data Interpre	ubo outti	able	uba) T	Dai Cila Flore obs	$\frac{11}{2}$	nait, IVII	flow abort
Value and define f				ing c	ube), I		art (Des		
value updating f	low chart), Quant	itative reasoning,	Logical	ieau	ction,	Deducti	ve reaso	ning, B	inary logic
Toyt Doole							- L'At		
I CAL DOUKS							100	al Perio	Das 30
1 II. (o ovo ola T (- f D	and Trillin		1-:	har		-hliast'		Das 30
1. How to	o crack Test of Re	asoning - Jai kishar	n and Prei	m kis	han -a	rihant pı	ublication	n	Das 30
1.How toReferences	o crack Test of Re	asoning - Jai kishar	n and Prei	m kis	han -a	rihant pu	ublication	n	

Semester - VI

	VIVI	EKANANDHA COLLEGE OF (Autonomous Institution, Affiliate Elayampalayam, Tiruo	ENGINE ed to Anna chengode –	ERIN Univer 637 20	N G FO sity ,Che)5	R WOME ennai)	2 N	TÜVInet	Bangwere Som Other 200 Weinere Company
Programme	B.E.	Prog	gramme (Code	101	R	egulation	1 2	2019
Department	Computer S	cience and Engineering					Semester	•	VI
Course		Course Nome	Periods	Per	Week	Credit	Maxi	imum N	Marks
Code		Course Name	L	Т	Р	С	CA	ESE	Total
U19CS625	Cloud Com	puting	3	0	0	3	50	50	100
Course Objective	The Studen Insig Cloud Unde Empl Interj Unde	t should be made to, ht into the basics of cloud cor d erstand the concept of Virtuali nasizes on how to build cloud pret the Scheduling, Storage s erstand the need for security a	nputing a zation Architec systems a nd cloud	nd tra ture nd Ai applic	ditiona mazons cations	al networl s AWS in	k infrastr stances	ucture	to a
	At the end o	f the course, the student shou	ld be able	e to,				Knov Le	wledge evel
	CO1: Sum	marize the fundamental princi	iples of C	loud	compu	ting]	K2
Course Outcome	CO2: Exar development	nine the importance of virtua nt of Cloud Computing.	lization a	nd ho	ow this	has enab	oled the]	K3
	CO3: Desc	ribes the knowledge about clo	oud Archi	itectu	re]	K3
	CO4: Desi	gn and develop deployable A	mazons A	WS i	nstanc	es]	X4
	CO5:Reco	gnize the concept of Cloud Se	curity an	d clou	ıd appl	ications]	K2
Pre- requisites									
	(3/2/1 indicat)	CO / PO Mapping es strength of correlation) 3-Stro	ng. 2 – Me	edium.	. 1 - We	eak		CO/PS Mappir	0 19

					\mathbf{co}	1 0 1/1a	pping							30	
	(3/2/1 ir	ndicates	strength	of corr	elation)	3-Stron	g, 2 – M	ledium,	1 - Wea	ık		Mapp	Mapping	
Cos					Progr	amme (Outcome	s (POs)					PSOs		
	PO	PO	PO	PO	PO	PO	PO	PO	PO	PO	РО	PO	PSO	PSO	
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	
CO 1	2	2	3	2	2	0	0	3	2	2	0	2	2	2	
CO 2	2	3	3	2	2	0	0	3	2	3	0	3	2	3	
CO 3	3	2	3	3	3	0	0	2	2	3	0	2	3	3	
CO 4	3	3	3	2	2	0	0	3	2	2	0	3	3	2	
CO 5	2	2	3	3	3	0	0	2	2	3	0	2	2	3	

Direct	
1.	Continuous Assessment Test I, II & III

- Assignment/Quiz/Seminar
 End-Semester examinations

Indirect

1.

Course - end survey

Content of	the syllabus		-
Unit – I	CLOUD COMPUTING BASICS	Periods	9
System M	odels for Distributed and Cloud Computing - NIST Cloud Computing	Reference Arch	itecture.
Cloud Mod	lels:-Characteristics - Cloud Services - Cloud models (IaaS, PaaS, SaaS)-	Public vs Private	Cloud-
Cloud Solu	tions-Cloud ecosystem–Service management– Computing on demand.		
Unit - II	VIRTUALIZATION	Periods	9
Basics of V	Virtualization - Types of Virtualization - Implementation Levels of Virtualization	alization - Virtua	alization
Structures	- Virtualization of CPU, Memory, I/O Devices - Virtual Private Cloud(V)	PC)-Virtual Clus	sters and
Resource n	nanagement – Virtualization for Data-center Automation	D 1 1	
Unit – III	CLOUD ARCHITECTURE	Periods	8
Architectu	ral Design of Compute and Storage Clouds – Layered Cloud Architecture	e Development -	- Design
Challenges	s - Inter Cloud Resource Management – Resource Provisioning and Platfor	m Deployment -	- Global
Unit IV	SCHEDULING AND STODAGE SYSTEMS	Periods	10
Cale duline	Algorithms for Computing Clouds Demoused Virtual Time Cloud	Cabaduling Su	10
Deadlines	s Algorithms for Computing Clouds- Borrowed virtual filme- Cloud Scheduling ManPaduce Applications Subject to Deadlines. Storage System	Scheduling Su	bject to
Anache Ha	adoon- Big Table Megastore Amazon Simple Storage Service (S3)- HDF	S Hive Java A	WS DK
S3 API M	icrosoft Azure - SimpleDB Service, NoSOL Databases - Create and manu	oulate Amazon i	nstances
in Amazon	s AWS.		listanees
Unit – V	SECURITY AND APPLICATIONS OF CLOUD	Periods	9
Security O	verview–Cloud Security Challenges and Risks–Security Governance– Ris	k Management–	Security
Monitoring	z-Virtual Machine Security-Identity Management and Access Control	Applications: S	cientific
Application	ns – Healthcare –Biology – Geo science – Business and Consumer Applica	tions.	
	Total	Periods	45
Text Book	S		
1	RajkumarBuyya, Christian Vecchiola and ThamaraiSelvi S, "Mastering	Cloud Computin	g", Tata
1.	McGraw Hill Education Private Limited, New Delhi, 2013.		
2.	Distributed and Cloud Computing, Kaittwang Geoffrey C.Fox and Jack J	Dongrra, Elsevi	ier India
			2012
<u> </u>	Distributed and Cloud Computing, Kai Hwang, Jack Dongarra, Geoffrey	C. Fox, O'Reilly	, 2013
Reference	S Cloud Computing: Implementation Management and Security John	W Dittinghouse	Iamaa
1.	F Ransome CRC Press RP 2012	w.Kittinghouse	, James
	Dan C. MarinescuCloud Computing: Theory and Practice. Morgan kauft	nann publishers	Second
2.	edition 2017.Elsevier	num puonsnens,	beeona
2	Cloud Computing, A Practical Approach, Anthony T Velte, Toby J V	elte, Robert Els	senpeter,
3.	TMH,2017		1
E-Resour	ces		
1.	https://onlinecourses.nptel.ac.in/noc20_cs20/preview		
2.	https://www.elsevier.com/books/cloud-computing/marinescu/978-0-12-8	12810-7	
2	https://www.jigsawacademy.com/blogs/cloud-computing/implementation	-levels-of-virtua	lization-
3.	in-cloud-computing/		
4.	https://electricalfundablog.com/cloud-storage-architecture-types/		
5	https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/EC2_GetStarte	d.html	

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Program	nme	B.E.	/ B.Te	ch.			Prog	gramme	Code		R	legul	ation	2	2019
Departn	nent	CSE &	IT									Sem	ester		VI
Cours	se		(Nomo			Perio	ds Per	Week	Cre	edit	Ma	ximum	Marks
Code	e		,	Jourse	Name			L	Т	Р	(CA	ESE	Total
U19CS	626	Comp	iler D	esign				3	0	0	3	3	50	50	100
Cours Object	se ive	The stu	dent sh Enrich Defind Exten Const Enrich use of	nould be n the kr e the ro d the kr ruct dyn n the kr symbo	e made nowledg le of le nowled namic r nowledg l table.	to, ge in va xical ai ge of pa run-tim ge in co	arious p nalyzer arser b e stack ode opt	bhases of , use of y parsing imizatio	f comp regulai g LL pa n techr	iler • expres arser an iiques, 1	sion a d LR nachi	nd tr parse ne co	ansitio er. ode ge	on diag	grams
		At the o	end of	the cour	rse, the	studen	t shoul	d be abl	e to,					Kno L	wledge .evel
		CO1 :	Demor	strate t	he role	of com	pilers	and desc	cribe th	e phase	s of c	ompi	ler		K2
Cours	se	CO2: improv	CO1: Demonstrate the role of compilers and describe the phases of compiler K2 CO2: Apply automata theory and knowledge on formal languages and mprove the Minimization of DFA K3												
Outcor	me	CO3: parsing	Catego g techn	rize an iques.	d illust	rate the	e differ	ent top-	down	parsing	and t	otto	m-up		K3
		CO4: genera	Design tion pr	n synta ocess a	ax dire	cted tr	anslati e use c	on sche of runtim	emes a le envii	nd inte	rmed	iate	code		K4
		CO5: a prog	Apply ram.	the coc	le optir	nizatio	n techr	niques to	o impro	ve the	perfor	man	ce of		K4
Pre- requisit	es	progran	nming l	anguag	e										
					CO /J	PO Mai	pping						C	O/PSO	
	((3/2/1 ind	licates s	trength	of corre	lation)	3-Strong	g, 2 – Me	dium, 1	- Weak			Μ	apping	5
Cos				T	Progra	imme O	utcome	s (POs)	1				PS	SOs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS	01	PSO 2
CO 1	2	3	3	2					2	1		2		2	2
CO_2	3	3	3	3	2		2		2	1	1	2		3	3
CO 4	3	3	3	2	2		1		2	2	1	2		2	2
CO 5	3	3	3	2	2		2		2	3		3		3	3
Course 1 Direct	Asses Conti Assig	sment M nuous A nment/Q	lethods ssessm	s ent Test minar/C	t I, II & Case Stu	III dy									
3. Indired	End-S et	Semester	examin	nations											
	1	Course	and an	ruou											
ـ	1.	Course -	end su	ivey											

Content of	the syllabus		
Unit – I	INTRODUCTION TO COMPILERS	Periods	8
Translators Encountere Language b	-Compilation and Interpretation-Language processors -The Phase d in Different Phases-The Grouping of Phases-Compiler Construction basics	es of Compile n Tools - Progra	r-Errors amming
Unit - II	LEXICAL ANALYSIS	Periods	9
Need and I	Role of Lexical Analyzer-Lexical Errors-Expressing Tokens by Regular	Expressions-Cor	nverting
Regular Ex	pression to DFA- Minimization of DFA-Language for Specifying Lexical	Analyzers-LEX.	
Unit – III	SYNTAX ANALYSIS	Periods	10
Need and Descent Pa SLR Parsin	Role of the Parser-Context Free Grammars -Top Down Parsing -Gene rser Predictive Parser-LL(1) Parser-Shift Reduce Parser-LR Parser-LR g Table -Introduction to LALR Parser - Error Handling and Recovery in S	eral Strategies-Re (0)Item-Construc yntax Analyzer-Y	ecursive ction of YACC.
Unit - IV	ENVIRONMENT	Periods	9
Intermediat S-Attribute Storage All	e Languages -Syntax directed Definitions-Construction of Syntax Tree-I Definitions. RUN-TIME ENVIRONMENT: Source Language Issue ocation-Parameter Passing-Symbol Tables-Dynamic Storage Allocation.	Bottom-up Evalua s-Storage Organ	ation of ization-
Unit – V	CODE OPTIMIZATION AND CODE GENERATION	Periods	9
Principle S Data Flow	ources of Optimization-DAG- Optimization of Basic Blocks-Global Data Algorithms-Issues in Design of a Code Generator - A Simple Code Genera	Flow Analysis-E tor Algorithm.	Efficient
	Tota	l Periods 4	45
Text Books	Tota S	l Periods	45
Text Books	Tota s Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014.	I Periods 4 "Compilers: Pri	45 nciples,
Text Books 1. References	Tota s Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014.	I Periods 4 "Compilers: Pri	45 nciples,
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Text Books1.References1.2.	Tota S Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014. O.G. Kakde, "Compiler Design", 5th Edition, An Imprint of Laxmi Public V Raghavan, "Principles Of Compiler Design", Tata Mcgraw Hill Publis	I Periods 4 "Compilers: Price 4 cations Pvt. Ltd., 4 hing Co Ltd, 201 4	45 nciples, 2015. 6.
Text Books 1. References 1. 2. 3.	Tota S Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014. O.G. Kakde, "Compiler Design", 5th Edition, An Imprint of Laxmi Public V Raghavan, "Principles Of Compiler Design", Tata Mcgraw Hill Publis Randy Allen, Ken Kennedy,—Optimizing Compilers for Modern Archit based Approachl, Morgan Kaufmann Publishers, 2009	I Periods 4 "Compilers: Price 4 cations Pvt. Ltd., 4 hing Co Ltd, 201 4 tectures: A Dependent 4	45 nciples, 2015. 6. ndence-
Text Books 1. References 1. 2. 3. 4.	Tota S Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014. O.G. Kakde, "Compiler Design", 5th Edition, An Imprint of Laxmi Public V Raghavan , "Principles Of Compiler Design", Tata Mcgraw Hill Publis Randy Allen, Ken Kennedy,—Optimizing Compilers for Modern Archit based Approachl, Morgan Kaufmann Publishers, 2009 Steven S. Muchnick, —Advanced Compiler Design and Implementatio Publishers - Elsevier Science, India, Indian Reprint 2007	I Periods 4 "Compilers: Price 6 cations Pvt. Ltd., 6 hing Co Ltd, 201 6 tectures: A Dependent 7 n, —Morgan Ka 7	45 nciples, 2015. 6. ndence- ufmann
Text Books 1. References 1. 2. 3. 4. 5.	Tota S Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014. O.G. Kakde, "Compiler Design", 5th Edition, An Imprint of Laxmi Public V Raghavan , "Principles Of Compiler Design", Tata Mcgraw Hill Publis Randy Allen, Ken Kennedy,—Optimizing Compilers for Modern Archite based Approachl, Morgan Kaufmann Publishers, 2009 Steven S. Muchnick, —Advanced Compiler Design and Implementatio Publishers - Elsevier Science, India, Indian Reprint 2007 Charles N. Fischer, Richard. J. LeBlanc —Crafting a Compiler with Cl, P	I Periods 4 "Compilers: Price 6 "cations Pvt. Ltd., 6 hing Co Ltd, 201 6 tectures: A Dependent 7 n, —Morgan Ka 7 Pearson Education 7	45 nciples, 2015. 6. ndence- ufmann n, 2008
Text Books 1. References 1. 2. 3. 4. 5. E-Resource	Tota S Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014. O.G. Kakde, "Compiler Design", 5th Edition, An Imprint of Laxmi Public V Raghavan , "Principles Of Compiler Design", Tata Mcgraw Hill Publis Randy Allen, Ken Kennedy,—Optimizing Compilers for Modern Archit based Approachl, Morgan Kaufmann Publishers, 2009 Steven S. Muchnick, —Advanced Compiler Design and Implementatio Publishers - Elsevier Science, India, Indian Reprint 2007 Charles N. Fischer, Richard. J. LeBlanc —Crafting a Compiler with Cl, P	I Periods 4 "Compilers: Price 6 "cations Pvt. Ltd., 6 hing Co Ltd, 201 6 tectures: A Dependent 7 n, —Morgan Ka 7 Pearson Education 7	45 nciples, 2015. 6. ndence- ufmann n, 2008
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Text Books 1. References 1. 2. 3. 4. 5. E-Resource 1. 2.	Tota S Alfred V Aho, Monica S Lam, Ravi Sethi &Jeffrey D. Ullman, Techniques and Tools", 2nd Edition, Pearson Education, India, 2014. O.G. Kakde, "Compiler Design", 5th Edition, An Imprint of Laxmi Public V Raghavan , "Principles Of Compiler Design", Tata Mcgraw Hill Publis Randy Allen, Ken Kennedy,—Optimizing Compilers for Modern Archit based Approachl, Morgan Kaufmann Publishers, 2009 Steven S. Muchnick, —Advanced Compiler Design and Implementatio Publishers - Elsevier Science, India, Indian Reprint 2007 Charles N. Fischer, Richard. J. LeBlanc —Crafting a Compiler with Cl, P ces https://nptel.ac.in/courses/106/105/106105190/ https://www.geeksforgeeks.org/compiler-design-tutorials/	I Periods 4 "Compilers: Pri 4 cations Pvt. Ltd., 4 hing Co Ltd, 201 4 tectures: A Dependent 4 n, —Morgan Ka 4 Pearson Education 4	45 nciples, 2015. 6. ndence- ufmann h, 2008
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	VIVEKANA (Autono	NDHA COLLE omous Institution, Elayampalaya	GE OF Affiliated im, Tiruc	ENGIN d to Ann hengode	NEERIN a Univers – 637 20	I G FOR W sity ,Chenna)5	V OMEN ii)		Tive	Mongement States 50 Work 2019 West control of montants		
Programme	B.E.		Prog	gramme	e Code	101	Regula	tion		2019		
Department	Computer Science	and Engineer	ring				Seme	ster		VI		
Course	Course N		Perio	ds Per	Week	Credit	Ma	ximur	n Ma	ırks		
Code	Course IN	ame	L	Т	Р	С	CA	ES	ESE Tot			
U19CS627	Internet of Things	5	3	0	0	3	50	5(0	100		
Course Objective	 The Main Objective Learn about Learn about Know the vertice Know how Understance 	e of the course at the component at IOT Architect various protoco to build an IO at the real world	is to nts of Ir ture. ls in IC T Appli design	nternet OT ications	of Thin s using aints of	gs and characteristics Raspberry IOT.	aracteristic	xs	Know	ledge		
	At the end of the co	urse, the student	t should	be able	e to,			1	evel			
Course	COI: Explain the c	uilding blocks	of Inter	rnet of	Things					K2		
Outcome	CO2: Discuss the v	arious models	of IOT	referen	ice Arcl	intecture.				K2		
	CO3: Identify the p	protocols for IO	$\frac{1}{1}$	D	1 D	•				<u>K2</u>		
	CO4:Construct the	101 componer	its usin	g Rasp	berry P	l.		-+		<u>K3</u>		
	CO5:Examine the	various constrai	ints wit	hIOT	working	g environr	nent			K4		
Pre- requisites	-											
		CO / PO M	anning						O/PS(0		

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak														
COs		Programme Outcomes (POs)													
	PO 1	PO 1 PO 2 PO 3 PO 4 PO 5 PO 6 PO 7 PO 8 PO 9 PO 10 PO 11 PO 12													
CO 1	3	2	3										3	2	
CO 2	3	2	2									2	3	3	
CO 3	3	2	3									2	2	3	
CO 4	3	3	3	3	3				2	2		2	3	3	
CO 5	3	3	3	3					2	2		2	3	3	

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment / Seminar /Quiz
- 3. End-Semester examinations

Indirect

1. Course - end survey

Content	of the syllabus		
Unit –	I INTRODUCTION TO INTERNET OF THINGS	Periods	9
Internet	of Things - Physical Design- Logical Design- IoT Enabling	Technologies -	IoT Levels &
Deploym	ent Templates - Domain Specific IoTs - IoT and M2M - IoT Syster	n Management w	vith NETCONF-
YANG.		D 1	0
Unit -	I IOT ARCHITECTURE	Periods	9
M2M high	gh-level ETSI architecture - IETF architecture for IoT - OGC arch model - information model - functional model - communication model	ntecture - IoT re lel - IoT referenci	eterence model -
Unit – I	II IOT PROTOCOLS	Periods	9
Protocol	Standardization for IoT – Efforts – M2M and WSN Protocols –	SCADA and R	FID Protocols –
Unified 1	Data Standards – Protocols – IEEE 802.15.4 – BACNet Protocol –	Modbus- Zigbe	e Architecture:
Network	layer – Security. Adaptation layer: 6Lowpan- COAP.		
Unit - I	V BUILDING IoT WITH RASPBERRY PI	Periods	9
Python I	Packages of Interest for IoT, IoT Physical Devices & Endpoints:	Building blocks	– Raspberry Pi
Board – I	Linux on Raspberry Pi – Raspberry Pi Interfaces – Programming Ras	spberry Pi with P	ython –
Case stud	ly: Parcel Delivery Detector, Curtain Automation	Dariada	0
Unit –	ion Technical Design constraints Data representation and visual	Perious	y on and remate
Control	Internet of Things Privacy Security and Governance – Case Studies	: Smart Grid – E	lon and remote lectrical Vehicle
Charging	:		leethear veniere
		Total Periods	45
Text boo	ks:		I
1.	Honbo Zhou ,"The Internet of Things in the Cloud: A Middleware F	Perspective",CRC	C Press, 2012
	Jan Ho"ller, Vlasios Tsiatsis, Catherine Mulligan, Stamatis Karnous	kos, Stefan Aves	and, David
2.	Boyle," From Machine-to-Machine to the Internet of Things Introdu	ction to a New A	Age of
	Intelligence", Academic print of Elsevier, 2014.	an A mma a ah) ² , 1	st T didi are
3.	Vijay Madisetti and ArsndeepBanga, Internet of Things (A Hands- Orient Blackswap Private Limited 2015	onApproach), I	Edition,
Referen	ces:		
1	Sudip Misra, Anandarup Mukherjee, Arijit Roy, "Introduction to IoT"	', Cambridge Uni	iversity Press,
1.	2021.	_	
2.	Olivier Hersent, Omar Elloumi and David Boswarthick," The Intern	net of Things: Ke	ey applications
2	and Protocols", Wiley, 2012.	" De alte Dubliabie	ng 2015
5.	Andrew K. Dennis, Raspberry PI Home Automation with Arduno	, Packt Publishi	ng, 2015. "IoT
4.	Fundamentals: Networking Technologies Protocols and Use Cases	for the Internet of	of Things"
	Ciscopress, 2017.		, , , , , , , , , , , , , , , , , , ,
5	Olivier Hersent, Omar Elloumi and David Boswarthick ,"The Intern	et of Things: Ap	plications to the
5.	Smart Grid and Building Automation", Wiley, 2012		
6.	Ovidiu Vermesan, Peter Friess, "Internet of Things: Converging Tec	chnologies for Sr	nart
	Environments and Integrated Ecosystems", River Publishers, 2013.		
E-Resou	rces		
1.	https://www.edureka.co/blog/iot-tutorial/		
2.	https://www.geeksforgeeks.org/architecture-of-internet-of-things-iot/		
3.	https://www.techtarget.com/iotagenda/		
4.	https://docs.arduino.cc/cloud/iot-cloud/tutorials/iot-cloud-getting-start	ted	
5.	https://www.tutorialspoint.com/raspberry_pi/index.htm		

\odot	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai)											New State	
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Department	D.E/D. Iech.				Flog	annne	Coue			Keg	magta	1 r	2019 VI
Department	CSE & II				Dania	da Dan	Waala	Credi					VI
Course Conta	Cou	rse Na	me		Perio	us Per	week	Credi	L	Ma		i Ma	rks
Course Code					L	Т	Р	С	0	CA	ES E	,	Total
U19IT620	Software En	gineer	ing		3	0	0	3		50	50		100
 Course Objective The student should be made to, Defined as a simplified representation of a software process. Ear represents a process from a specific perspective Explain the students the importance of Requirements Engineering. Know about the role of UML and Testing in Software Development. Know about the essentials design of software architectural design and design. Explain about the fundamentals of software testing. 											Each	n model	
	At the end of	the co	urse, th	e stude	ent sho	uld be	able to	,				Kn]	owledge Level
Course	CO1: Identif	y vario	us soft	ware d	evelop	ment n	nodels.						K3
Outcome	CO2: Apply a given scena	the req rio.	uireme	nt engi	ineerin	g tasks	to ider	ntify the	require	ements	for	K3	
	CO3: Impler	nent the	e desig	ned pro	oblem i	in UM	I Mode	ling					K3
	CO4: Predict	the de	sign co	oncepts	and m	odels							K3
	CO5: Descr	ibe diff	erent ty	ypes of	softwa	are test	ing in t	the softw	vare pr	oduct.		K3	
Pre-requisites	Nil												
			CO/1	PO Ma	pping				_		CO	/PSC)
(:	3/2/1 indicates st	rength o	of corre	lation)	3-Stron	g, 2 - N	Aedium,	1 - Wea	k			pping	g
PO 1	PO 2 PO 3	PO 4	PO5					PO 10	PO 11	PO 12	PSO	1	PSO 2
CO 1K3 3	3 2	1	105	100	107	100	103	1010	1011	1012	3	1	3
CO 2K3 3	2 1	1									3		3
CO 3K3 3	2 1	1									3		3
CO 4K3 3	2 1	1									3		3
CO 5K3 3	2 1	1									3		3
Course Assessn	nent Methods												_
Direct 1. Continuous Assessment Test I, II & III 2. Assignment 3. End-Semester examinations Indirect 1. 1. Course - end survey													
Content of the s	Course - end survey												

Unit	– I	PROCESS MODELS	Periods	9							
Softw	vare proce	ess structure – Process models - Waterfall model, Incremen	tal process	models,							
Evolu	utionarypro	cess models, Specialized process models – Unified Process - Agile devel	opment: Agıl	e process							
- LAU	$-\mathbf{II}$	REQUIREMENT GATHERING AND ANALYSIS	Periods	9							
Dagu	inomonto or	Algoritationa magninements Developing use sesses Duilding	the enclusio	modal							
Nego	tiating requ	irements – Requirements monitoring – Validating requirements – Require	ements analysis	is.							
Unit	– III	UML MODELING	Periods	9							
Introduction – Unified Modeling Language – Static model – Dynamic model – UML diagrams– UML class diagram– Use case diagram – UML dynamic modeling – UML interaction diagrams –UML state chart diagram – UML activity diagram – Implementation Diagrams –Component diagram – Deployment diagram.											
Unit	– IV	SOFTWARE DESIGN	Periods	9							
Desig desig User patter	gn concepts n – Compo interface de rns.	and model – Architectural design: Software architecture, Architectural onent level design: Designing class-based components, Conducting com esign: User interface analysis and design – Interface analysis –Interface	styles – Arc ponent level design steps	hitectural design – – Design							
Unit	$-\mathbf{V}$	SOFTWARE TESTING FUNDAMENTALS	Periods	9							
Softw softw Basis repos	vare testing vare –Valida s path testin sitory – SCM	strategies: Strategic approach – Issues – Test strategies for conventiona ation and System testing – Debugging – Testing conventional application g – Control structure testing – Black box testing – Software configuratio A process.	al and Object as: White box n managemer	Oriented testing – nt – SCM							
		Total Periods		45							
CAS	E STUDY:	Total Periods		45							
CAS Only	E STUDY: for Assign	Total Periods ment not for end sem examination.		45							
CAS Only 1. Sir	E STUDY: for Assign nple Chat In 25 Based Au	Total Periods ment not for end sem examination. Instant Messaging System		45							
CAS Only 1. Sir 2. GP	E STUDY: for Assign nple Chat In PS Based Au aste Manage	Total Periods ment not for end sem examination. Instant Messaging System Intomobile Navigation System ement Inspection Tracking System (WMITS)		45							
CASI Only 1. Sir 2. GF 3. Wa 4. Ge	E STUDY: for Assign nple Chat In PS Based Au aste Manage cographical	Total Periods ment not for end sem examination. Instant Messaging System atomobile Navigation System ement Inspection Tracking System (WMITS) Information System		45							
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)	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205												Triventaria COZEFE
Progra	mme	B.E.					Prog	amme	Code	101		Regu	lation	2019
Depart	ment	COMP	UTER	SCIEN	ICE AN	D ENG	SINEEF	RING				Ser	nester	VI
Course	Toda		Co	urao Na	mo		Perio	ds Per V	Week	Credi	t	M	aximun	n Marks
Course	Joue		Co	uise na	line		L	Т	Р	С		CA	ESE	E Total
U19CS	628	Comp	iler De	esign L	aborat	ory	0	0	4	1		50	50	100
Course Objectiv	e	 The student should be made to, Implement Lexical Analyzer using Lex tool Implement Syntax Analyzer or parser using YACC Tool Implement of a type checker. Implement front end of the compiler by means of generating Intermediate codes. Implement code optimization techniques 												
		At the	end o	of the c	ourse,	the stu	ident s	hould t	be able	e to,				Knowledge Level
		CO1:	imple	ment th	ne progr	am for	symbo	l table	creatio	n				K3
		CO2: .	Apply	the kr	nowled	ge of I	Lex an	d Yacc	tools	to dev	elop	progr	ams	K3
Course		CO3:	imple	ment	the dat	aflow	and c	ontrol	flow	analys	is a	nd sto	rage	
Outcom	e	allocat	tion st	rategie	es					5			U	K4
		CO4: instruc	imple tion a	ement and add	the pr dressin	ogram g mod	for E es	DAG a	nd ge	enerate	the	asser	nbly	K3
		CO5: perfor	Identi mance	ify the	code oj rogram	otimiza in term	tion teons of sp	chnique eed and	es and I space	appliec	l to i	mprov	e the	K4
Pre-														
requisite	s	-												
					CO/PC) Марр	oing						C	O/PSO
G	(3/2	2/1 indica	ates stre	ength of	correlat	$\frac{1}{2}$	Strong, 2	2 - Med	ium, 1	– Weak			Μ	lapping
Cos	DO 1	Programme Outcomes (POs)										DCO1	PSUs	
	PO 1	PO 2	PO 3	PO 4	PO 5	PU 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PS01	PSO 2
CO 1	3	3	<u>3</u> <u>2</u> <u>2</u> <u>3</u>		3	2								
CO 2	3	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$					2							
CO_3	3	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$								2	2			
CO 5	3	3	2		2					2		2	3	2

Course A	Course Assessment Methods									
Direct										
1.	Prelab and post lab test									
2.	End-Semester examinations									
Indirec	t									
1.	Course - end survey									

Content of the syllabus

LIST OF EXPERIMENTS:

- 1. Implementation of Symbol Table
- 2. Develop a lexical analyzer to recognize a few patterns in C. (Ex. identifiers, constants, comments, operators etc.)
- 3. Implementation of Lexical Analyzer using Lex Tool
- 4. Implementation of Calculator using LEX and YACC
- 5. Implement control flow analysis and Data flow Analysis
- 6. Implement any one storage allocation strategies(Heap ,Stack, Static)
- 7. Construction of DAG
- 8. Implement the back end of the compiler which takes the three address code and produces the 8086 assembly language instructions that can be assembled and run using a 8086 assembler. The target assembly instructions can be simple move, add, sub, jump. Also simple addressing modes are used.
- 9. Implementation of Simple Code Optimization Techniques (Constant Folding. etc.)

Total Periods

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Progra	mme	B.E.					Prog	ramme	Code	101		Regu	lation		2019
Depart	ment	COMP	UTER	SCIEN	NCE AN	ID ENG	INEEF	RING				Ser	nester		VI
Course	⁷ oda		Co	urso No	mo		Perio	ds Per V	Week	Credi	t	Μ	aximu	m Maı	:ks
Course	Joue		Cu		une		L	Т	Р	С		CA	ES	E	Total
U19CS	629	Cloud	and I	oT Lal	orator	·у	0	0	4	2		50	50	C	100
Course Objectiv	re	The s • L • U • D • D • U	he student should be made to, Learn to use of tools in Arduino Understand to use of tools in Raspberry PI Design application using NODEMCU for interfacing and control Design and deploy a web application in AWS Cloud. Upload data on cloud for further analysis and visualization												
		At the	end c	of the c	ourse	the stu	ident s	hould l	be able	e to				Kno	owledge
		int the			ourse,	the stu	acine 5.	liouiu		<i>c</i> 10,				I	Level
Course		CO1 :	Use o	f tools	in Arc	luino a	nd Ras	spberry	PI ir	n IoT					K4
Outcom	a	CO2 :	Utiliz	ation o	of mic	roconti	oller b	ased e	mbeda	ded pla	atforr	ns in	IoT		K4
Outcom	L	CO3 :	Appli	cation	s of De	evices,	Gatew	ays an	d Data	a Mana	agem	ent in	IoT		K3
		CO4 :	Use w	vireless	s peripl	herals	for exc	hange	of dat	ta					K3
		CO5 :	Make	use o	f Clou	d platf	form to	o uploa	ad and	d analy	yze a	iny se	ensor		K3
		data													<u> </u>
Pre-		_													
requisite	es														
					CO/PO) Mapp	ing						CO/I	PSO	
	(3/2	2/1 indica	ates stre	ength of	correla	tion) 3-S	Strong, 2	2 - Med	ium, 1	– Weak			Мар	ping	
Cos		I I			Program	nme Out	comes (POs)	1	-	1	1	PSOs	3	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
CO 1	3	3	3		2							2	2	2	
CO 2	3	3	3		2							2	2	2	
CO 3	3	3												<u> </u>	
CO 4	3	3	3		$\frac{2}{2}$							$\frac{2}{2}$	2	2	+
0.05	5														
Course A	SCACCT	nent Ma	thode												
Direct	1996991		mous												

- Prelab and post lab test
 End-Semester examinations

Indirect

1. Course - end survey

LIST OF EXPERIMENTS:

- 1. Introduction to Arduino platform and programming
- 2. Design a system to find the obstacle distance using Arduino
- 3. Design a project to count the number of visitors using Arduino
- 4. Interfacing Arduino to GSM Module
- 5. Interface a gas sensor and find the gas level using NODEMCU
- 6. Control an LED via a webpage with the help of NODEMCU
- 7. Introduction to Raspberry PI platform and python programming
- 8. Interfacing sensors to Raspberry PI
- 9. Create an application using Amazon AWS.
- 10. Create Log Data using Raspberry PI and upload to the cloud platform

	V	VIVEKANANDHA COLLEGE (Autonomous Institution, Aff Elayampalayam, '	OF EN iliated to Tiruchen	I GINE Anna U gode –	ERINO Jniversi 637 205	G F(ty ,C	DR W hennai	OMEN)		Torna	And Annual and Annual A		
Programme	B.E.	Prog	gramme	Code	10	1		Reg	ulation		2019		
Department	COMP	UTER SCIENCE AND EN	GINEE	CRINO	J			Se	emester		-		
Course Code		Course Name	Period	ds Per	Week	C	redit	N	Maximum		arks		
Course Coue		Course maine	L	Т	Р	С		CA	ESE	J	Total		
U19MCTY6	PERSONALITY EVELOPMENT 200-100								-		100		
		Content of the syllabus											
Unit – I		NUMERICAL ABILITY Period											
Number Propertie	es – Tim	e & Work – Pipes & Cisterns	s - Tim	e, Spe	ed & I	Dist	ance	– Ratio	os & Pro	opor	tions –		
Mixtures & Allig	ations –	Averages – Percentages – Pro	fit & L	oss – S	Simple	&	Comp	ound I	nterest -	- Pro	oblems		
on Ages – Partne	rship – M	Iensuration – Geometry – Mis	cellane	ous									
Unit - II		LOGICAL RE	ASON	ING					Period	ls	6		
Coding Decoding	g – Bloc	d Relations - Direction Sen	se Tes	t – Se	eating	Arr	anger	nent –	Numbe	er S	eries –		
Syllogisms – Ver	nn Diagra	ams – Statements – Data Inter	rpretatio	on – E	Data Si	ıffic	iency	– Clo	cks & C	Calei	ndars –		
Miscellaneous													
Unit – III		SOFT SKILLS & VE	ERBAL	ABI	LITY				Period	ls	6		
Resume Preparat	ion – Mo	ck GD – Interview Etiquette	- Mocl	c Inter	view -	- Re	ading	g Comp	rehensi	on –	- Essay		
Writing													
Unit - IV		TECHNICAL	SKIL	LS I					Period	ls	6		
Recap of C – Va	ariables &	k Datatypes – Console IO O	peration	ns – C	perato	rs &	k Exp	oressio	ns – Co	ntro	l Flow		
Statements – Wo	rking wit	h Functions – Working with A	Arrays										
Unit – V		TECHNICAL	SKILI	LS II					Period	ls	6		
Pointers – String	Pointers - String Handling - Structures & Unions - File Handling - Pre Processor Directives - Command										nmand		
Line Arguments	Line Arguments & Variables – Searching & Sorting – Stack – Queue – Linked List – Trees												
								Tot	al Perio	ds	30		

Semester -VII

			VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN												Annual System	
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	Program	me	B.E.				P	rogramn	ne cod	le	1	01	R	egulatio	on	2019
]	Departm	ent	Compu	ter Sci	ence ar	nd Eng	ineeri	ng						Semest	er	VII
Co	ourse Co	de			Cours	e nam	ne		Per	riods	s per	week	Credit	Max	ximum	Marks
τ	19CS73	0	Machi	ne Le	arnin	g			L 3	3	T 0	P 0	C 3	CA 50	ESE 50	Total 100
 Course Objective The student should be made to, Acquire theoretical knowledge on setting hypothesis for pattern recognition Analyze the importance of supervised and unsupervised machine learning algorith Apply suitable machine learning techniques for data handling and to knowledge from it Evaluate the performance of algorithms and to provide solution for vario world applications. 												n hms to gain ous real-				
			At the end of the course, the student should be able to,												KL	
			CO1: Ic	lentify	the pe	erspect	ives o	f machin	e learn	ning	and f	ormulat	ing hypotl	nesis		K2
	Course		CO2:A	pply r	egressi	ion an	d class	sification	algori	thms	s for 1	real wor	rld probler	ns		K2
	Jutcome	e	CO3:D	esign	a clust	ering a	and as	sociation	algori	thms	$\frac{1}{1}$	solving	a given pr	oblem	<u></u>	K3
			making	reate	Reini	forcen	nent	& Insta	nce E	Jase	a Le	earning	g models	for decision K2		K2
			CO5: S	Solve o	ptimiz	ation	proble	m using	the Ge	enetic	c Alg	orithms	& Learni	ng Sets	of Rule	K3
Pre-																
r	equisite	s	-													
r	equisite	s	- (3/2/1 in	ndicate	s streng	C gth of o	CO / Po	O Mappi tion) 3-S	ng trong, 2	2 – N	/Iediu	m, 1 – V	Weak	CO/PS	SO Maj	oping
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Conten	t of the syllabus			
Unit –	[Introduction	Periods	9
Learnin	g Problems – Designing a L	earning System - Perspectives and Issues in	Machine Lea	rning –
Concep	t Learning – task – search – fir	nding maximally specific Hypotheses – version	n spaces and ca	indidate
elimina	<u>tion algorithm – inductive bias</u>			
Unit –	Π	Supervised Learning	Periods	9
Linear	Regression – Non Linear Reg	gression - Decision Tree Learning: Decision	Tree Represent	tation –
Problem	ns – basic decision tree learn	ing algorithms -hypotheses search - Issues	- Bayesian Le	earning:
Bayes 7	Theorem – Maximum Likeliho	od and Least-Squared Error Hypothesis – Bay	es Optimal Cla	ssifier -
Naïve E	Bayes Classifier –. Random for	est.		_
Unit –	II i	Unsupervised Learning	Periods	9
k-Neare	est Neighbour Learning – KMe	eans – K Medoids – Principle Component Ana	alysis-Artificial	Neural
Networ	ks: Introduction – Representa	ations – Problems – Perceptrons – Multilaye	er networks an	d Back
Propaga	ation Algorithm – example.			
Unit –	IV Reinforcer	nent & Instance Based Learning	Periods	9
Reinfor	cement Learning: Introduction	n – Markov Decision Processes - Values- S	ARSA vs Q-L	earning
Instance	e Based Learning: Introduction	n –Locally Weighted Regression – Radial Ba	sis Functions -	– Case-
Based H	Reasoning.			
Unit –	V Genetic .	Algorithms & Learning Sets of Rules	Periods	; 9
Genetic	Algorithms: Introduction – E	xample – Hypothesis Space Search – Genetic	Programming-	Models
of Evo	lution and Learning – Paralle	elizing Genetic AlgorithmsLearning sets of	rules: Introdu	ction –
sequent	al covering algorithms – Firs	st order rules – FOIL – Induction as Inverted	deduction – ir	iverting
Tesoluti	011.		Fotal Periods	45
Textbo	oks			
1.	Tom M. Mitchell, "Machine Lea	arning", 1st Edition, McGraw-Hill Education, India	ı, 2017.	
2	Stephen Marsland, "Machine	Learning – An Algorithmic Perspective", 2nd	Edition, Chapn	nan and
۷.	Hall/CRC Machine Learning an	d Pattern Recognition Series, 2014.		
Referen	ces			
1.	Jiawei Han &MichelineKamber	, "Data Mining Concepts and Techniques", 3rd Edi	tion, Elsevier, 20	012.
2.	Kevin P. Murphy, "Machine Le	arning: A Probabilistic Perspective", MIT Press, 20)12	
E-Resou	irces			
1.	https://en.wikipedia.org/wiki/U	Insupervised_learning		
2.	https://blog.statsbot.co/probabi	listic-graphical-models-tutorial-and-solutions-e4f1	d72af189	
3.	https://www.geeksforgeeks.org	/what-is-reinforcement-learning/		
4.	https://ml2.inf.ethz.ch/courses/a	aml/		
5.	https://www.javatpoint.com/ma	achine-learning		

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	Cour	se	CO	2:Illus	trate th	ne func	tional	ities of mo	bile IP &	trans	ports la	yer.			K2
	Outco	me	CO	3: Utili	ze the	conce	pts and	l features	of GSM,	GPRS	and UI	MTS.			K3
			CO	4:Dem	onstra	te the	Adhoc	network	concepts	and its	routin	g protocols	S		K2
			CO	5: Mal	ke use	of mol	oile OS	S in develo	ping mol	oile ap	plicatio	ons.			K3
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Charact	eristics of Mobile computing–Structure of Mobile Computing Application	i. MAC Pro	otocols-
Wireles	s MAC Issues-Fixed Assignment Schemes-Random Assignment Schemes -	Reservation	1 Based
Scheme	S		
Unit –	II MOBILE INTERNET PROTOCOL AND TRANSPORT LAYER	Periods	9
Overvie	w of Mobile IP-Features of Mobile IP-Key Mechanism in Mobile IP-	route Optim	ization.
Overvie	w of TCP/IP-Architecture of TCP/IP-Adaptation of TCP Window-Imp	provement i	n TCP
Perform	ance.		
Unit –	III MOBILE TELECOMMUNICATION SYSTEM	Periods	9
Global	System for Mobile Communication (GSM)-General Packet Radio Service	(GPRS)–U	niversal
Mobile	Telecommunication System (UMTS).		
Unit –	IV MOBILE AD-HOC NETWORKS	Periods	9
Ad-Hoo	Basic Concepts-Characteristics-Applications-Design Issues-Routing-Esser	ntial of Tra	ditional
Routing	Protocols-Popular Routing Protocols-Vehicular Ad Hoc networks (VA	NET)–MAN	ET Vs
VANE	Γ – Security.		
Unit –	W MOBILE PLATFORMS AND APPLICATIONS	Periods	; 9
Mobile	Device Operating Systems - Special Constrains & Requirements - Commercia	al Mobile Or	perating
System	s – Software Development Kit: iOS, Android.		
	То	tal Periods	45
Textbo	oks		
1.	Prasant Kumar Pattnaik, Rajib Mall, "Fundamentals of Mobile Computing", PHI Learning 2018	Pvt. Ltd, New	/ Delhi –
2.	Jochen H. Schller, "Mobile Communications", Second Edition, Pearson Education, New Delh	i, 2008.	
Referen	ces	<u></u>	
1.	Dharma PrakashAgarval, Qing and An Zeng, "Introduction to Wireless and Mobile systems",	Thomson Asia	ı Pvt Ltd,
	2005. UwaHansmann, LotherMark, Martin S. Nicklons and Thomas Stoher, "Principles of Mobile	Computing"	Springer
2.	2003.	Computing ,	Springer,
3.	William.C.Y.Lee, "Mobile Cellular Telecommunications-Analog and Digital Systems", Secon Hill Edition ,2006.	nd Edition,Tata	McGraw
4.	C.K.Toh, "AdHoc Mobile Wireless Networks", First Edition, Pearson Education, 2002.		
E-Resou	irces		
1	https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxp	odDY2MDFtb	o2JpbG
1.	Vjb21wdXRpbmd8Z3g6N2ZhN2M4ZmMyZDk4ODdmNg		
2.	https://www.javatpoint.com/mobile-computing		
3.	Android Developers:http://developer.android.com/index.html		
4.	Windows PhoneDevCenter:http://developer.windowsphone.com		
5.	BlackberryDevelopers:http://developer.blackberry.com		
6.	Apple Developer:https://developer.apple.com/		

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		CO3: <i>A</i>	Apply	approp	oriate d	ata set	s to th	e Macl	nine L	earning	g alg	orithn	ns.	K4
		CO4:	build	an	Artific	cial N	Jeural	Netv	vork	by ir	nple	menti	ng th	e K4
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Content	of th	e syllab	ous											

LIST OF EXPERIMENTS:

- 1. Implement and demonstrate the FIND-S algorithm for finding the most specific hypothesis based on a given set of training data samples. Read the training data from a .CSV file.
- 2. Implement and demonstrate the Candidate-Elimination algorithm for a given set of training data stored in a .csv file.
- 3. Write a program to demonstrate the working of the decision tree based ID3 algorithm. Use an appropriate data set for building the decision tree and apply this knowledge to classify a new sample.
- 4. Build an Artificial Neural Network by implementing the Backpropagation algorithm and test the same using appropriate data sets.
- 5. Write a program to implement the Naïve Bayes classifier for a sample training data set stored as a .CSV file. Compute the accuracy of the classifier, considering few test data sets.
- 6. Assuming a set of documents that need to be classified, use the naïve Bayesian Classifier model to perform this task. Built-in API can be used to write the program. Calculate the accuracy, precision, and recall for your data set.
- 7. Write a program to construct a Bayesian network considering medical data. Use this model to demonstrate the diagnosis of heart patients using standard Heart Disease Data Set. You can use Python ML library classes/API.
- 8. Cluster a set of data stored in a .CSV fileusing the same data set for clustering using k-Means algorithm and EM algorithm. Compare the results of these two algorithms and comment on the quality of clustering. You can add Python ML library classes/API in the program.
- 9. Write a program to implement k-Nearest Neighbour algorithm to classify the iris data set. Print both correct and wrong predictions. Python ML library classes can be used for this problem.
- 10. Implement the non-parametric Locally Weighted Regression algorithm in order to fit data points. Select appropriate data set for your experiment and draw graphs.

Total Periods

Professional Electives

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		CO)5: Exp	olore A	ngular f	features	s, create	com	pone	nt ba	sed we	eb pa	ges		K3	
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Conte	ent of the sy	llabus		
U	nit – I	CORE JAVA EE	Periods	9
Java F	EE 5 Platfor	rm Overview - Java EE Platform – Distributed Multi-tiered Applic	ations - Web a	and Business
Comp	onents - Ja	va EE Containers - services & types - Application Assembly and	d Deployment	– Packaging
Appli	cations -G	etting Started with Web Applications – Application Deplo	yment –Web	application
develo	opment and $\frac{1}{2}$	deployment Steps - Configuring Web application – Web application	tion deployme	nt descriptor
Ur	nit – II	Structing & Deproying Apprications- web & Business Components STRUTS	Periods	9
Struts	Framewor	k: Basics & Architecture – Request Handling Life Cycle - 1	Building a si	mple_struts_
Confi	guration, A	ctions, Interceptors, Results, Value Stack/OGNL Struts2 Tag Lik	orariesStruts2	XML Based
Valida	ations - Dat	abase Access.		
Un	it - III	HIBERNATE	Periods	9
Introd	uction to	Hibernate, ORM Overview, Hibernate Environment - Hiber	mate Archited	cture &API,
Hiber	nate Confi	guration, Hibernate Sessions, Persistent Class & Mapping Fi	les - Buildin	g Hibernate
applic	ation, Hib	ernate Query Language (HQL) - Hibernate O/R Mappings -	Collection &	Association
Mapp	ings-Hiberr	hate Annotations Eclipse - overview.	I	
Un	it – IV	INTRODUCTION TO SERVER-SIDE JS FRAMEWORK	Periods	9
		– NODE.JS		
Introd	uction - W	hat is Node JS – Architecture – Feature of Node JS - Installation	and setup - C	Creating web
server	s with HT	ΓP (Request & Response) – Event Handling - GET & POST im	plementation	- Connect to
NoSQ	L Database	e using Node JS – Implementation of CRUD operations.	1	
ТЪ	nit - V	INTRODUCTION TO CLIENT-SIDE JS FRAMEWORK	Periods	9
0		- BASICS OF ANGULAR 4.0	i chiodis	,
Introd	uction to A	Angular 4.0 - Needs & Evolution – Features – Setup and Configu	uration – Com	ponents and
Modu	les – Temp	blates – Change Detection – Directives – Data Binding - Pipes	- Nested Co	mponents -
Temp	late Driven	Forms - Model Driven Forms or Reactive Forms.		
		Tot	al Periods	45
Text	Books			
1.	Jim Keog	h, "The Complete Reference J2EE", Tata McGraw –Hill Edition 2	011	
Refer	ences			
1.	James Ho	lmes, "The Complete References Struts", 2ndEdition, Tata McGra	w, 2007	
2.	Jusin Cou	ch, Daniel H. Steinberg, "J2EE Bible" Wily India (P) Ltd, New De	elhi 2002.	
3.	Nathan R	ozentals, "Mastering TypeScript", April 2015		.
4.	Nate Mur Angular 4	rray, Felipe Coury, Ari Lerner and Carlos Taborda, "ng-book, "September 2016	The Comple	ete Book on
E-Res	ources			
1.	https://doo	cs.oracle.com/javaee/5/tutorial/doc/docinfo.html		
2.	http://ww	w.tutorialspoint.com/eclipse/index.htm		
3.	www.allit	ebooks.in/mastering-typescript		

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Course		CO2	: Explo	ore the	security	y attacks	s and m	nanag	eme	ent rol	es.					K3
Outcome		CO3	: Apply	the cy	ber sec	urity po	licies a	nd pi	oce	dures	for a	n orga	anizatio	ons		K3
		CO4	Practi	ce the s	security	tools a	nd hard	lenin	g teo	chniqu	es					K4
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Course As Direct	ssessm Contin	nent Me	ethods	ent Test	I, II &	III										

- 2. Assignment
- 3. End-Semester examinations

Indirect

1. Course - end survey

Ur	nit — I	INTRODUCTION TO CYBER SECURITY	Periods	9
Introc	luction to	Cyber Security, Need for security, Concept of Cyber Space, Cyber	er Crimes and	Cyber-attack.
Funda	amental se	ecurity principles - threats, attacks and vulnerability. Key Secu	rity triad – C	onfidentiality,
Integr	rity and	Availability. Key components of cyber security network a	rchitecture. A	uthentication,
Autho	prization, A	Access control, Identification and Accounting.		
Un	it – II	SECURITY ATTACKS, PRINCIPLESAND MANAGEMENT	Periods	9
Introc	luction to	different classes of security attacks - active and passive. Impact o	f attacks on ar	n organization
and in	ndividuals	. Principles of Cyber security - Apply cyber security architectury	e principles. C	Cyber security
mode	ls (the CIA	A triad, the star model, the Parkerian hexad). Techniques used by Ha	ackers - The Re	econnaissance
Phase	e: Active a	nd Passive Scanning Techniques. Risk Management – Principles,	Types and Str	rategies - The
K1SK	Managem	ent Framework (RMF). Cyber security Management concepts	- Security Go	vernance and
Mana	gement ro	SECULITY DI ANS DOLICIES AND PROCEDUDES	Domin da	0
Dofin	$\mathbf{n} - \mathbf{m}$	wher Security policy Conoral security expectations roles a	renous nd responsibi	9 litics in the
organ	izotion	stekeholders. Cyber security standards and controls. Cortification	on and accredit	(C & A)
nroce	se Audit	goals - Updating and auditing cyber security procedures - (Compare the	organization's
cyber	security r	olicy to actual practices	compare the	organizations
Un	it – IV	OVERVIEW OF SECURITY COUNTERMEASURE TOOLS	Periods	9
Introd	luction to	key security tools including firewalls, anti-virus and cryptography	– Identify secu	rity tools and
harde	ning tech	niques – Prevention of cyber-attacks. Security Countermeasu	re tools and	techniques -
Encry	ption stan	dards - Modern Methods - Legitimate versus Fraudulent Encryptior	Methods. Sec	urity threats –
Threa	t and Ris	k exposure - Determine the organization's exposure to internal th	reats - Evalua	te the risk of
	1 .			
extern	hal security	y threats.		
extern	nal securit	y threats. CYBER SECURITY TESTING, DIGITAL FORENSICS	Periods	Q
Ur	nal security	y threats. CYBER SECURITY TESTING, DIGITAL FORENSICS AND NEXT GENERATION SECURITY	Periods	9
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		CO war	3: Derehouse	escribe	the dat	a minii	ng basi	cs a	nd ho	ow to	integ	rate	with c	lata	ł	K3
		CO	4: Imp	lement	various	s associ	ation a	nd cl	assifi	catio	n techi	nique	S		ł	K4
		CO	5: Exa	mine th	e vario	us clust	tering a	lgori	thms	for d	ata mi	ning.			I	K3
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	(3/2/	1 indic	ates stro	ength of	CO / PO	D Mapp tion) 3 -	oing Strong,	2 - N	/lediu	m, 1 -	Weak			CO/ Map	PSO oping	
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	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	РО	8 1	<u>PO 9</u>	PO 10	PO 11	PO 12	PSO1	PSO) 2
CO 1	2				2			1					3	3		2
CO 2	2	2		3	2								2	3		2
CO 3	2	2	2	3	2								3	3		2
CO 4	2	2	2	3	2								3	3		2
CO 5	2	2	2	3	3								2	3		2
Course A	ssessme	ent Me	ethods													

- Direct
 - 1. Continuous Assessment Test I, II & III
 - 2. Assignment/Seminar
 - **3.** End-Semester examinations

Indirect

1.Course - end survey

U	nit – I	DATA WAREHOUSING	Periods	9
Data Multi Trans	warehousin processor A formation T	ng Components –Building a Data warehouse – Mapping th Architecture – DBMS Schemas for Decision Support – Data Tools –Metadata.	e Data Ware Extraction, C	house to a leanup, and
U	nit — II	BUSINESS ANALYSIS	Periods	9
Repo	rting and Q	uery tools and Applications-Tool Categories-The Need for Applic	ations-Cognos	s Impromptu
– On	line Analyt	ical Processing (OLAP) - Need - Multidimensional Data Mod	lel – OLAP (Guidelines –
Multi	dimensiona	l versus Multirelational OLAP – Categories of Tools – OLAP Tools	s and the Intern	iet.
Ur	nit - III	DATA MINING	Periods	9
Introd Classi with a	luction – 1 ification of a Data Ware	Data – Types of Data – Data Mining Functionalities – Inte Data Mining Systems – Data Mining Task Primitives – Integration shouse – Issues – Data Preprocessing.	restingness of n of a Data Mi	Patterns – ning System
Ur	nit – IV	ASSOCIATION RULE MINING AND CLASSIFICATION	Periods	9
Minir	ng Frequent	t Patterns, Associations and Correlations - Mining Methods -	Mining vario	us Kinds of
Assoc	ciation Rul	es - Correlation Analysis - Constraint Based Association Mi	ning – Classi	fication and
Predic	ction - Basi	c Concepts - Decision Tree Induction - Bayesian Classification - H	Rule Based Cla	ssification –
Class	ification by	Back propagation – Support Vector Machines – Associative Class	ification – Laz	y Learners –
Other	Classificat	ion Methods – Prediction.	1	Γ
U	nit - V	CLUSTERING AND TRENDS IN DATA MINING	Periods	9
Cluste Hiera Cluste Appli	er Analysis- rchical Me ering High cations.	Types of Data–Categorization of Major Clustering Methods–K-me sthods-Density-Based Methods–Grid Based Methods–Model-Ba Dimensional Data-Constraint–Based Cluster Analysis–Outlie	eans–Partitionii sed Clustering er Analysis–D	ng Methods– g Methods– Pata Mining
		Tot	al Periods	45
Text	Books			
1.	Alex Be McGraw	rson and Stephen J.Smith, "Data Warehousing, Data Mi – Hill Edition, Thirteenth Reprint 2008.	ning and OI	AP", Tata
2.	Jiawei H 2012.	an & Michelin Kamber, Data Mining Concepts & Techniqu	es, 3 rd Editio	n, Elsevier,
Refe	rences			
1.	Pang-Nir Educatio	ng Tan, Michael Steinbach, Vipin Kumar, Introduction ton, 2007.	o Data Mini	ng, Person
2.	K.P. Sor Eastern H	nan, Shyam Diwakar and V. Aja, "Insight into Data Minin Economy Edition, Prentice Hall of India, 2006.	g Theory and	1 Practice",
3.	G.K.Gup	ta, Introduction to Data Mining with Case Studies, EEE, PHI,	India, 2006.	
E-Res	sources			
1.	https://ww	vw.tutorialspoint.com/dwh/index.htm		
2.	https://en.	wikipedia.org/wiki/Data_warehouse		
3.	https://do	cs.oracle.com/cd/B10500 01/server.920/a96520/concept.htm		

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Course		CO	1: Illu	strate t	he vario	ous threa	ats and	desig	n prin	nciple	es in s	ecur	ity.		K	2
Outcom	ne	CO	2: Dis	cuss on	n variou	s types	of atta	cks and	1 thei	ir cha	aracte	ristic	S		K.	3
		CO	3: App	ply syn	nmetric	encrypt	ion alg	gorithn	ns for	. prov	viding	seci	urity		K.	3
		CO	4: Imp	plement	t asymn	netric ei	ncrypti	on tecl	nniqu	les.					K	4
		CO	5: Des	sign a s	ecure C	DS.									K.	3
Pre-requ	uisites	-														
	(3/2	/1 indica	ates str	ength of	CO / P f correla	O Mapp tion) 3-S	ing Strong,	2 – Mee	lium,	1 – V	Weak			CO/I Map	PSO ping	
Cos					Progran	nme Out	comes	(POs)						PSO	S	
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CO 1	1	2	2	2	3	2								2		2
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	1. U	Juise - C	nu sur	vey												

Conte	ent of the sy	llabus														
U	Init – I	SECURITY DESIGN PRINCIPLES	Periods	9												
Secur	rity Goals –	Secure System Design – Understanding Threats – Designing-In S	ecurity – Conv	venience and												
Secur	rity – Securi	ty in Software Requirements – Security by Obscurity – Secure De	esign Principle	es – Defense												
in De	pth – Diver	sity in Defense – Securing the Weakest Link – Fail-Safe Stance.														
U	nit – II	SECURE PROGRAMMING TECHNIQUES	Periods	9												
Worn	ns and Othe	er Malware – Buffer Overflows – Client State Manipulation – S	SQL Injection	– Password												
Secur	Tity – Cross	Domain Security in Web Applications – Attack Patterns – Preve	enting XSRF -	- Preventing												
7991	- Preventin	g ASS. SVMMETRIC CIDHERS & INTRODUCTION TO														
Uı	nit - III	NUMBER THEORY	Periods	9												
Overv	view - Clas	sical Encryption Techniques - Block Ciphers and the Data End	cryption Stand	ard – Basic												
Conce	epts in Nun	ber Theory and Finite Fields - Advanced Encryption Standard -	Block Cipher	Operation -												
Ferm	at's and Eul	er's Theory – CRT – Discrete Logarithms.														
Ur	nit – IV	PUBLIC-KEY ENCRYPTION AND HASH FUNCTIONS	Periods	9												
Publi	c Key Cry	otography and RSA – Diffie-Hellman Key Exchange – Elgama	l Cryptograph	ic System –												
Ellipt	ic Curve C	ryptography – Cryptographic Hash Functions – Message Auth	entication Co	de - Digital												
Signa	iture - Certi	ICATES.	Dariada	0												
Corre	iiter in Onen	SECURITY APPLICATIONS	renous	9												
Wirol	loss Notwork	ating Systems - Security in the Design of OS – Rootkit- Open w	eb Applicatio	n Security –												
		(Nechriny = Introduction to Nuonie Nechriny)														
····irei	less networ	x Security – introduction to Mobile Security.	al Periods	45												
Text	Books	Tot:	al Periods	45												
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Objecti	ve		• D	esign ba	asic cire	cuit buil	lding bl	locks.								
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		CC reo	D1: A	nalyze ent and	the s	ensors	availal ethods	ole ii	n Io	T ba	ised	on	applic	ation	H	K2
Course Outcom	ne	CC	D2: A	nalyze ent and	the s	ensors sing me	availal ethods	ole ii	n Io	T ba	ised	on	applic	ation	H	K3
		CC	J2: Analyze the sensors available in 101 based on application quirement and the Sensing methods J3: Interfacing different types of Sensors with MCU													K3
		CC)4: Inf	er Wire	eless Se	nsing, R	RF Sens	sing a	nd R	F ME	MS				ŀ	Χ4
		CC mit)5: De	sign a : n	real-tin	ne appli	cation	for la	ndsli	ide m	onito	ring	and ha	azard	ŀ	K3
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CO 3	1	3	2	2							2			2		2
CO 4	3	2	2	2							3			2		2
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Indire	ct															
	1. C	ourse -	end sur	rvey												
Content	af 41. a															

Uı	nit – I	BASICS OF SENSORS	Periods	9
Introd	uction- Se	ensor Vs Transducer, Nature of Sensors, Sensor Output	Characteristic	s, Sensing
Techn	ologies, Di	gital Output Sensors.		
Un	nit – II	APPLICATION SPECIFIC SENSORS	Periods	9
Occup	bancy and	motion detectors: ultrasonic - microwave - capacitive detectors	- optical prese	nce sensor,
Light	Detectors:	Photo diodes – photo transistor – photo resistor- CCD and	d CMOS ima	ge sensors,
Tempe	erature Sen	sors: thermos-resistive sensors – thermoelectric contact sensor		2
Un	it - 111	SENSOR WITH MICROCONTROLLER	Periods	9
Introd	uctions,	Amplification and Signal Conditioning, Integrated Signa	Conditionin	g, Digital
Conve	ersion, MC	U Control, MCUs for Sensor Interface, Techniques and System	ns Consideration	ons, Sensor
Integra	ation		Devie 1	0
Un	$\frac{\mathbf{I}\mathbf{U} - \mathbf{I}\mathbf{V}}{\mathbf{D}\mathbf{v}}$	WIRELESS SENSING	Periods	9 National 1
Wirele	ess Data a	nd Communications, whereas Sensing Networks, industrial w	ireless Sensing	g Networks,
кг зе	insing, Tele	SMADT ADDI ICATIONS AND SYSTEM		
Un	nit – V	SMART AFFLICATIONS AND STSTEM REGULERMENTS	Periods	9
Auton	notive An	plications Industrial (Robotic) Applications Consumer Applica	tions Future	Sensor Plus
Semic	conductor C	apabilities. Future System Requirements.	lions, i uture	
		Tota	al Periods	45
Text I	Books			
	Frank, R	andy, "Understanding smart sensors", Artech House integrat	ed microsyste	ems series,
1.	3rd Editi	on, 2013.		
Refer	ences			
1	Jacob Fra	den, "Handbook of Modern Sensors: Physics, Designs, and Ap	plications", 5t	h Edition,
1.	Springer,	2016		
2	Vlasios T	statsis, Stamatis Karnouskos, Jan Holler, David Boyle, Catheri loophing and Applications for a New Acc of Intelligence"	ne Mulligan,	'Internet of
۷.	2018	echnologies and Applications for a New Age of Interligence,	Academic Pres	ss, 10-mov-
2	Henry Le	ung, Subhas Chandra Mukhopadhyay, "Intelligent Environmenta	al Sensing", St	oringer, 22-
5.	Jan-2015.		6 / 1	e ,
E-Res	ources			
1.	https://w	ww.techbriefs.com/component/content/article/tb/pub/features/artic	les/33212	
2.	https://w	www.ozosonsors.com/orticle.conv24rticleID_1280		
	<u>mups.//w</u>	ww.azosensors.com/article.aspx?ArticleID=1269		

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U19C	SE06	Adv	anced	Datab	ase Sys	tems	3	; ()	0	3		50	5	0 100	
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		At t	he end	of the c	course,	the stuc	lent sho	ould be	able	to,				ŀ	Knowledge Level	
C		CO	1: Ou op	utline the	he feat	ures of	Query	proce	essin	g an	d rela	ation	al algebi	ra	K2	
Outcom	ie	CO	2: Ap dat	al	K3											
		CO	3: Ex Da	kplain t Itabase '	he con Techno	cepts of logies	f Objec	t Oriei	nted	and	Exten	ded	Relation	al	K2	
		CO	4: Ar	nalyze &	& tune t	he Data	abase se	ecurity							K4	
		CO	5: Ap	oply the	princip	oles & t	echniqu	ues of A	Adva	inced	l Data	bases	8.		K3	
Pre-requ	isites	-														
	(3/	/2/1 ind	icates s	trength o	CO / I	PO Map ation) 3	ping -Strong,	2 – Me	edium	n, 1 - [°]	Weak			CO/P Mapp	'SO Ding	
Cos					Progra	mme Ou	itcomes	(POs)						PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	РО	9	PO 10	РО 11	PO 12	PSO1	PSO 2	
CO 1	2	3	3	3	2								2	2	3	
CO 2	1	3	3	2	2								3	2	2	
CO 3	2	2	3	3	2								2	2	3	
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Conte	ent of the sy	llabus		
U	nit – I	QUERY PROCESSING	Periods	9
Basic	concepts	of query processing - converting SQL queries into Rela	ational Algeb	ora - Basic
Algo	rithms for	executing query operations - Query tree and query graph - H	Ieuristic optim	mization of
query	v tree.			
Ur	nit – II	INDEXING, HASHING AND CURRENT ISSUES	Periods	9
Orde	red indice	s - B tree index files - B+ Tree index files - Multiple b	key access -	Static and
Dyna	mic Hash	ing – Bitmap indices- Active Database Concepts – Intr	roduction to	Deductive
Datal	pases – C	lausal Form and Horn Clauses – Interpretation of Rule	s – Use of	Relational
Oper	ations – M	ultimedia Databases		
Un	it - III	OBJECT ORIENTED AND EXTENDED RELATIONAL DATABASE TECHNOLOGIES	Periods	9
Over	view of Ol	pject oriented database - OO Concepts - Encapsulation of Op	perations and	methods -
Inher	itance - (Object Model - Object definition language - Object Que	ery Language	e - Object
Relat	ional Cond	cepts.		
Un	it – IV	DATABASE SECURITY	Periods	9
Intro	duction to	Database Security Issues- Discretionary Access Control	Based on Gr	anting and
Revo	king Privi	leges- Mandatory Access Control and Role-Based Access	Control for	Multilevel
Secu	rity- Introc	luction to Statistical Database Security- Encryption and Pub	olic Key Infra	astructures-
Chall	enges to N	faintaining Database Security- Oracle Label-Based Security		0
U	nit - V	ADVANCED DATABASE TECHNIQUES	Periods	9
NoSC	QL (Not C	nly SQL)) - Introduction to MongoDB – Term Used in RI	DBMS and M	IongoDB –
Data	Types in I	MongoDB – MongoDB Query Language- MongoDB Atlas –	- Introduction	to Apache
Cassa	andra – CQ	L Data Types – CQLSH – CRUD operations –Collections –	Using a cour	nter – Time
to Li	ve – Alter	Commands – Import and Export – Querying System Tables.	Donioda	45
T 4	Deelee	100	al Periods	45
Text	BOOKS			
<u> </u>	Elmasri &	Navathe Fundamentals of Database Systems, Pearson Education,	7th Edition,20	
2.	Rini Cha Dreamtec	krabarti , Shilbhadra Dasgupta Advanced Database Managen h press,2014	ient System	(MISL-DT),
3.	Silberscha McGraw	atz Abraham, Korth Henry F. and Sudarshan S., —Database Syste Hill, New York, 2019.	em Concepts∥,	7th Edition,
Refer	ences			
1.	Database	Illuminated, Catherine Ricarso, Second Edition, Jones & Bartleft L	earning.2013	
2.	Database	Management System, S K Sinha, Second Edition, Pearson Publica	tion 2011	
3.	Data Base	Management System, Leon & Leon, Vikas Publications ,2010		
4.	Introducti	on to Database Systems, Bipin C Desai, Galgotia, 2012		
E-Re	sources			
1	https://wv	vw.tutorialspoint.com/distributed dbms/distributed dbms relations	al algebra que	ery optimiz
	ation.htm			
2.	https://pho	penixnap.com/kb/object-oriented-database		
3	https://wv	w.analyticsvidhya.com/blog/2020/09/different-nosql-databases-ev	very-data-scien	tist-must-
5.	know/			

	VIVEKA (Au	NANDHA COLLEGE OF tonomous Institution, Affiliated Elayampalayam, Tirucl	ENGINE l to Anna U hengode – 6	E RIN niversi 537 205	G FOR ity ,Chen	WOMEN nai)		TUVEreitard CONFECTOR	
Programme	B.E. / B.Tech	Prog	gramme (Code		Regul	ation	2	019
Department	CSE & IT					Sem	lester		-
Course	Ca	www.Nowe	Period	s Per	Week	Credit	Ma	ximum	Marks
Code	Co	urse mame	L	Т	Р	С	CA	ESE	Total
U19CSE07	Cryptography	and Network Security	3	0	0	3	50	50	100
Course Objective	The student should be underst vulneral vulneral be underst vulneral vulnerat vulnera	ould be made to and the fundamentals of r pilities arious cryptographic algo and necessary Approache secure computer network	networks s rithms. s and Tec cs.	securi	ty, secu ies to b	urity archite	ecture,	threats echanis	and ms in
	At the end of the CO1: Classify	e course, the student shou the Encryption techniques	ld be able	e to,				Knov le	wledge evel K2
Course Outcome	CO2: Apply the cryptographic a	ne different cryptographic Ilgorithms.	c operatio	ons of	symm	etric and p	ublic]	K3
	CO3: Evaluate	the authentication and ha	sh algorit	hms.]	K3
	CO4: Different	ate Computer security a ote user authentication	and netw	ork s	ecurity	and devel	op a]	K3
	CO5: Identify	how to secure their system	ns]	K4
Pre- requisites								I	
		CO / PO Mapping						CO/PSC	

					CO /	PO Ma	pping						CO/PSO		
	(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak														
Cos Programme Outcomes (POs)															
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO	РО	PSO1	PSO 2	
											11	12			
CO 1	3	2	2	2	2			2					2	3	
CO 2	3	3	2	2	2			2					2	2	
CO 3	2	3	3	2	2			2					3	2	
CO 4	2	3	2	3	2			2					2	3	
CO 5	3	3	2	2	2			2					2	2	

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment: Simulation using tool
- 3. End-Semester examinations

Indirect

1. Course - end survey

Unit – I	COMPUTER SECURITY BASICS	Periods	9
Computer	Security Concepts, OSI Security Architecture, Security Attacks, Security	urity Services, S	Security
Mechanisn	ns, Model for Network Security, Classical Encryption techniques- Substi-	tution and Trans	position
methods, B	lock Cipher Principles		
Unit - II	ENCRYPTION STANDARDS	Periods	9
Data Encr	yption Standard- DES Encryption- Key Generation- DES Decryption	, Advanced End	cryption
Standard (A	AES)- AES Transformation Functions, Multiple Encryption and Triple DE	S- Triple DES w	ith Two
Keys- Trip	le DES with Three Keys.		-
Unit – III	AUTHENTICATION AND HASH FUNCTION	Periods	9
Authentica	tion requirement – Authentication function – MAC – Hash function – S	ecurity of hash f	function
and MAC	- SHA -Digital signature and authentication protocols - Entity Aut	hentication: Bio	metrics,
Passwords,	Challenge Response protocols- Authentication applications – Kerberos, X	509	•
Unit - IV	NETWORK SECURITY	Periods	9
Symmetric	Key Distribution Using Symmetric Encryption, Symmetric Key Distrib	ution using Asyr	nmetric
Encryption	, Public Key Distribution , Public Announcement of Public Keys , Public	cly available Dir	ectory,
Public-Key	Authority, Public-Key Certificates, Remote User Authentication p	rinciples- Remo	ote user
Authentica	tion Using Symmetric Encryption, Kerberos, Remote user Authentica	ation using Asyi	mmetric
Encryption		D 1	•
Unit - V	SYSTEM SECURITY	Periods	9
Secure So	cket Layer and Transport Layer Security, Secure Electronic Transacti	ion, Intruders, In	ntrusion
Detection,	Password Management, Malicious Software, Firewalls, Trusted Systems.		
	Tota	l Periods	45
Text Book	Tota s	l Periods	45
Text Book	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016.	, McGraw Hill	45
Text Book 1. 2.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023.	I Periods	45 ck" –
Text Book 1. 2. Reference:	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023.	I Periods	45 ck" –
Text Book1.2.Reference:1.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019	I Periods	45 ck" –
Text Book 1. 2. Reference: 1. 2.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley &	I Periods , McGraw Hill Practice Paperbac Sons Inc, 2007.	45 ck" –
Text Book 1. 2. Reference: 1. 2. 3.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, "	I Periods , McGraw Hill Practice Paperbac Sons Inc, 2007. 2003	45 ck" –
Text Book 1. 2. References 1. 2. 3. 4.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", T Education, 2003	I Periods , McGraw Hill Practice Paperbac Sons Inc, 2007. 2003 Third Edition, Pe	45 ck" – arson
Text Book 1. 2. References 1. 2. 3. 4. E-Resourt	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", T Education, 2003. ces	I Periods , McGraw Hill Practice Paperbac Sons Inc, 2007. 2003 Third Edition, Pe	45 ck" – arson
Text Book 1. 2. Reference: 1. 2. 3. 4. E-Resour 1.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", " Education, 2003. ces http://nptel.ac.in/courses/106105031/1	I Periods , McGraw Hill Practice Paperbac Sons Inc, 2007. 2003 Third Edition, Pe	45 ck" – arson
Text Book 1. 2. Reference: 1. 2. 3. 4. E-Resour 1. 2.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. S Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, "Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", "Education, 2003. ces http://nptel.ac.in/courses/106105031/1 http://nptel.ac.in/courses/106102064/23	I Periods , McGraw Hill Practice Paperbac Sons Inc, 2007. 2003 Third Edition, Pe	45 ck" – arson
Text Book 1. 2. Reference: 1. 2. 3. 4. E-Resour 1. 2.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", T Education, 2003. ces http://nptel.ac.in/courses/106105031/1	I Periods	45 ck" – arson
Text Book 1. 2. References 1. 2. 3. 4. E-Resour 1. 2. 3. 4. 5. 3. 3. 3.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", " Education, 2003. ces http://nptel.ac.in/courses/106105031/1 http://nptel.ac.in/courses/106102064/23 https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/ system-engineering-spring-2009/video-lectures/ lecture by Prof. Robert I Madden MIT	I Periods	45 ck" – arson
Text Book 1. 2. References 1. 2. 3. 4. E-Resour 1. 2. 3. 4. E-Resour 1. 2. 3.	s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. S Mohammad Amjad, "Cryptography and Network Security", Wiley,2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", " Education, 2003. ces http://nptel.ac.in/courses/106105031/1 http://nptel.ac.in/courses/106102064/23 https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/ system-engineering-spring-2009/video-lectures/ lecture by Prof. Robert 1 Madden MIT https://www.brainkart.com/article/Remote-User-Authentication-Using-As	I Periods	45 ck" – arson
Text Book 1. 2. References 1. 2. 3. 4. E-Resour 1. 2. 3. 4. 5. 3. 4. 4. 4. 4. 4.	Tota s Behrouz A. Forouzan, "Cryptography and Network Security" 3rd Edition Publications, 2016. William Stallings, "Cryptography and Network Security - Principles and PEARSON, 8 th Edition, 2023. s Mohammad Amjad, "Cryptography and Network Security", Wiley, 2019 Bruce Schneier, "Applied Cryptography, Second Edition", John Wiley & Atul Kahate, "Cryptography and Network Security", Tata McGraw-Hill, "Charles B. Pfleeger, Shari Lawrence Pfleeger, "Security in Computing", "Education, 2003. ces http://nptel.ac.in/courses/106105031/1 http://nptel.ac.in/courses/106102064/23 https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/system-engineering-spring-2009/video-lectures/ lecture by Prof. Robert IM Madden MIT https://www.brainkart.com/article/Remote-User-Authentication-Using-Astropyton_8476/	I Periods ////////////////////////////////////	45 ck" – arson Samuel

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Programme	B.E.		Prog	gramme	e Code	101	Regulation	on	2019
Department	Computer Sci	ence and Engi	neering	Ş			Semest	er	-
Course Code	Course	Nama	Perio	ds Per	Week	Credit	Max	kimum Ma	arks
Course Code	Course	Name	L	Т	Р	С	CA	ESE	Total
U19CSE08	Data Science a	and Analytics	3	0	0	3	50	50	100
Course Objective	 Ine Main Obje know t learn the learn to learn the know t 	the fundamental ne Analytical P o analyze the D ne techniques for he various tech	l concej rocessin ata usir or Mini niques	o pts of I ng in B ng Intel ng Dat in Visu	Data Sci ig Data ligent T a Strear talizatic	ience Fechnique ns on	S		
	At the end of the	ne course, the st	tudent s	should	be able	to,		Knowle	edge level
Course	CO1: Examine	the Data Scier	nce Pro	cess.					K2
Outcome	CO2: Generali	ze the Data Ana	alytics	process					K2
Outcome	CO3: Select th	e appropriate D	Data An	alysis [Fechniq	lues			K3
	CO4: Detect th	e output using	algorit	hms for	mining	g the data	stream		K4
	CO5: Apply th	e various visua	lizatior	n techni	ques				K3
Pre-requisites	-								

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													O 1g
COs	Os Programme Outcomes (POs)													
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2
CO 1	3	3	3	1								1	3	2
CO 2	3	3	3	1								1	2	3
CO 3	3	3	2	3	3							2	3	3
CO 4	3	3	3	2	2							3	3	2
CO 5	3	3	3	2	2							2	3	2

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Unit -	I INTRODUCTION TO DATA SCIENCE	Periods	8
Need for	ata science - benefits and uses - facets of data - data science pro	cess – setting th	ne research goal –
retrieving	data – cleansing, integrating, and transforming data – exploratory	data analysis – ł	ouild the models –
presenting		Dariada	0
Chorootor	The DATA ANALITICS	h Dete Evol	y ution of Analytic
Scalability	- Analytic Processes – Analytic Tools and methods - Analysis vs	B = Bala = EVOI Reporting = St	atistical Concepts:
Sampling	Distributions - Statistical Inference - Prediction Error – Resamplin	g	uisticui concepts.
Unit –	III DATA ANALYSIS	Periods	10
Types of Support V Competiti	Data Analysis, Regression Modeling - Multivariate Analysis - Ba ector and Kernel Methods - Rule Induction - Neural Networks we Learning – Principal Component Analysis and Neural Networks	yesian Inferences: Learning and - Fuzzy Logic:	e and Networks - Generalization - Extracting Fuzzy
Models fr	om Data - Fuzzy Decision Trees		8
Unit -	IV MINING DATA STREAMS	Periods	9
Introducti Application Filtering S Window - Time Sent	on – Stream Data Management Systems – Data Stream Minir n – Stream Queries – Issues in Data Stream Query Processing streams – Counting Distinct Elements in a Stream –Querying o Decaying Window – Real Time Analytics Platform(RTAP) Appendix Analysis – Stock Market Predictions.	ng - Examples - Sampling Da n Windows: Co oplications - Ca	s of Data Stream ata in a Stream – punting Ones in a use Studies - Real
Unit –	V VISUALIZATION	Periods	9
Visualizat Technique Collective	ons – Classification of Visual Data Analysis Techniques – Data s – Specific Visual Data Analysis Techniques - Interaction Techni Inferencing – Egonets - Systems and Applications	Type to be Vi ques - Social N	sualized – Visual etwork Analysis –
		Total Periods	45
Text Boo	is:		
1.	David Cielen, Arno D. B. Meysman, and Mohamed Ali, "Introdu Publications, 2016	cing Data Scien	ce", Manning
2.	Michael Berthold, David J. Hand, "Intelligent Data Analysis", Sp	oringer, 2007	
Reference	s:		
1.	Bill Franks, "Taming the Big Data Tidal Wave: Finding Opportu Advanced Analytics", John Wiley & sons, 2012.	nities in Huge D	Data Streams with
2.	Bart Baesens,"Analytics in a Big Data World – The Essentials G Applications", Wiley, 2014	uide to Data Sci	ence and its
3.	RadhaShankarmani, M.Vijayalakshmi, "Big Data Analytics", Wi	ley, 2016	
4.	SeemaAcharya, SubhashiniChellapan, "Big Data Analytics", Wil	ey, 2018 Reprir	ited.
E-Resour	ces		
1.	https://www.simplilearn.com/tutorials/data-science-tutorial/what	-is-data-science	
2.	https://www.ibm.com/cloud/learn/data-science-introduction		
3.	https://www.educba.com/data-science/data-science-tutorials/data	-analytics-basic	<u>es/</u>
4.	https://www.mygreatlearning.com/blog/understanding-data-visu	alization-technic	ques/

	VIVEKANA (Autono	NDHA COLLI omous Institution Elayampalay	EGE OF , Affiliate ram, Tiruc	ENGI d to An chengod	NEERI na Univer e – 637 2	NG FOR rsity ,Chen 05	WOMEN nai)	TWReter TWReter TURED					
Programme	B.E.		Prog	ramme	e Code	101	Regulation	2	2019				
Department	Computer Scie	nce & Engine	ering				Semester		-				
Course Code	Course	Name	Perio	ds Per	Week	Credit	Maxii	num Ma	arks				
Course Coue	Course I	Name	L	Т	Р	С	CA	ESE	Total				
U19CSE09	Embedded Sy	stems	3	0	0	3	50	50	100				
	The Main Object	e Main Objective of the course is to											
	• Learn th	e architecture	and pro	gramn	ning of	ARM pro	ocessor.						
Course	• Be fami	liar with the e	mbedde	d com	puting p	olatform	design and ana	lysis.					
Objective	• Learn th	e system desig	gn techn	iques	and net	works for	r embedded sys	stems					
	• Discuss	the major con	ponent	s that c	constitu	te an eml	bedded system.						
	• Implem	ent small prog	rams to	solve	well-de	fined pro	blems on an er	nbedded	l platform.				
	At the end of the	e course, the st	udent sl	hould l	be able	to,		Kr	nowledge level				
Course	CO1: Describe	the architectur	e & pro	gramn	ning of A	ARM pro	ocessor.		K1				
Outcome	CO2: Discuss d	ifferent memo	ry mana	gemer	nt schen	nes.			K2				
Outcome	CO3: Analyze e	mbedded core	based c	lesign	& real	time OS			K3				
	CO4: Use the sy	ystem design t	echniqu	es to d	evelop	software	for embedded		КЛ				
	system								K4				
	CO5: Formulate	e real time exa	mples u	sing ei	nbedde	d system			K2				
Pre-requisites	-												

					CO / P() Mapp	ing						CO/PSO			
	(3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak															
COs	COs Programme Outcomes (POs)													PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO	PO 12	PSO1	PSO 2		
CO 1		2	2		2					10	11	14	2	2		
COT	3	3	2		2								2	2		
CO 2	2	1	2		1								3	2		
CO 3	3	2	2		1								2	1		
CO 4	2	3	3		2								2	2		
CO 5	2	2	2		1								3	2		

Direct

- Continuous Assessment Test I, II & III
 Assignment / Quiz / Seminar
 End-Semester examinations

Indirect

1. Course - end survey

Content of	the sylla	abus		
Unit –	Ι	EMBEDDED COMPUTING	Periods	9
Introduction	n to Em	bedded Systems -Structural units in embedded processor, selection of	f processor &an	np;
memory m	nanagen	ent methods devices- Embedded system design process. Embed	lded processor	s – 8051
Microcontro	oller, A	RM processor – Architecture, Instruction sets and programming.		1
Unit -	II	MEMORY AND INPUT / OUTPUT MANAGEMENT	Periods	9
Programmi	ng Inpu	t and Output - Memory system mechanisms - Memory and I/O d	levices and inte	erfacing –
Interrupts h	andling			0
Unit – J	111	PROCESSES AND OPERATING SYSTEMS	Periods	9
Multiple tas	sks and	processes – Context switching – Scheduling policies – Inter process c	ommunication	
	s - Peri		Dariada	0
Unit - I		EMBEDDED SOFT WARE	Periods	9
Embedded issues in H	Product Iardwar Model	e-software Co-design, Data Flow Graph, state machine model, Sec	leling of EDLC quential Program	; m Model,
concurrent	wiodei,	EMBEDDED SVSTEM APPLICATION AND		
Unit –	V	DEVELOPMENT	Periods	9
Case Study	of Was	hing Machine- Automotive Application- Smart card System Applicat	ion-ATM mach	line
Surver	nunce e	Total	Dominda	15
Tart Daala		10141	1 er ious	43
Text Books	S:	Welf "Commenter of Commenter Driver 1 and Frederic 1.1.	ting Court and Da	
1.	w ayne Third I	Edition "Morgan Kaufmann Publisher (An imprint from Elsevier), 20	ting System De	sign ,
2.	Michae	el J. Pont, "Embedded C", Pearson Education, 2007		
REFEREN	ICE BC	OOKS		
1.	Steve I	Heath, "Embedded System Design", Elsevier, 2005.		
2.	Muhar and En	nmed Ali Mazidi, Janice Gillispie Mazidi and Rolin D. McKinlay, "T nbedded Systems", Pearson Education, Second edition, 2008	The 8051 Micro	controller
E-Resour	ces			
1.	https://	/www.digimat.in/nptel/courses/video/108102045/L01.html		

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Prog	gramme	B.	Е.			P	Progra	amme	code	1	101	Regulat	ion		2019
Dep	artment	t Co	mputer	Scien	ce and	Engine	ering					•	Semes	ter	-
Course	Code		(Course	e nam	e		Per	riods p	er we	ek	Credit	Ma	ximum	Marks
U19C	SE10	Se	manti	c Wel	b		_	I 3	;	T 0	P 0	C 3	CA 50	ESE 50	Total 100
Cou Objec	rse ctive	Т	he stud • Ext • Inte • Cor • Cor • Rec	lent sh rapola erpret npreh nstruct	ould b ate the the co end th t logic e and	e made basic incept c incept c inferent inferent	to, conc of RE logy nce a he se	cepts, DF and and se and rule	tasks, i its sch mantic e mark c web	metho nemas web tup in proce	ods, and archite XML. ss and	d techniqu ecture issues	ues in so	emantic	web
		At	the en	d of t	he cou	urse, th	e stu	dent sł	nould t	be abl	e to,				KL
		C)1: D	escrib	e the	feature	s and	l uses i	n Sem	antic	Web a	nd its Tee	chnolog	ties	K2
Cou Oute	rse ome	CC RI)2: Co DF data	onstru a mod	ct the el	RDF d	ata n	nodel a	nd def	ining	the vo	cabularie	s used i	in	К2
0		CO)3: Ide	entify	the re	quirem	nents	of On	tology	and k	know tl	ne sublang	guages		K3
		CO)4: W	rite th	e Moi	notonic	and	Non n	nonoto	nic R	ules				K2
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Uni	it – I	INTRODUCTION	Periods	9
History Structur	r – Semar ring – Nai	tic Web Layers – Semantic Web technologies – Semantics in S nespaces – Addressing – Querying–Processing	emantic Web -	- XML:
Uni	t - II	RESOURCE DESCRIPTION FRAMEWORK	Periods	9
RDF an element and Nor –Editing	nd Seman ts – RDF n- XML - g, Parsing	tic Web – Basic Ideas - RDF Specification – RDF Syntax: XML relation RDF and Semantic Web – Basic Ideas - RDF Specificatio RDF elements – RDF relationship: Reification, Container, Collab , Browsing, RDF/XML-RQL-RDQL	and Non- XMI n – RDF Synta oration – RDF	L - RDF x: XML Schema
Unit	t – III	ONTOLOGY	Periods	9
Why C Simple Ontole	Ontology - e and Co ogies – Or	 Ontology movement – OWL – OWL Specification - OWL Elemonter – Ontology Engineering : Introduction –Constructing To Knowledge Semantic Web architecture 	ents –OWL con Ontologies –	nstructs: Reusing
Unit –	IV	LOGIC AND INFERENCE	Periods	9
Logic – Rules – Rules	- Descript - Motivati	on Logics - Rules – Monotonic Rules: Syntax, Semantics and Exar on, Syntax and Examples – Rule Markup in XML: Monotonic Rul	nples – Non mo es and Non-Mo	onotonic onotonic
Uni	t - V	APPLICATIONS OF SEMANTIC WEB TECHNOLOGIE	ES Periods	s 9
RDF U	ses: Com	mercial and Non-Commercial use – Sample Ontology – E-Learn	ning –Web Serv	vices –
Web mi	ining – He	prizontal information – Data Integration – Future of Semantic Web	T (1 D • 1	45
Web mi	ining – Ho	orizontal information – Data Integration – Future of Semantic Web	Total Periods	45
Web mi	ining – Ho oks	Antoniou Frank van Harmelen "A Semantic Web Primer "MIT 2 nd Ed	Total Periods	45
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3D Obje	ct represen	tations – Polygonal Mesh Modeling – Bezier Curves and B-Splines - Tran	nsforma	tions –3D	Viewing
Unit	– III	RENDERING	Pe	riods	9
Color M Textures	odels - Re and Shado	ndering - Shading Models – Flat shading and Smooth Shading –Visible Sows. Ray Tracing, Volume Rendering.	urface	Detection	- Adding
Unit – I	V	FRACTALS AND ANIMATION	Pe	riods	9
Fractals Graphics	and Self S - Graphic	imilarity – Peano Curves – Mandelbrot Sets – Julia Sets – Random Fr s File Formats, Animation, Virtual Reality.	actals,	Data Stru	ctures for
Unit	t - V	AUTHORING AND TOOLS		Periods	9
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Textbo	oks		I otur I	criticus	
1.	Donald I Edition,	D. Hearn, M. Pauline Baker and Warren Carithers, —Computer Graph Pearson / Prentice Hall, 2010.	ics with	n OpenGI	, Fourth
2.	Press, 20	21.	Editio	I, A K I (
3.	Peter Shi	rley, -Fundamentals of Computer GraphicsI, Third Edition, A K Peters,	2009.		
4.	Ze - Niai 2014.	n Li, Mark S Drew and Jiangchuan Liu —Fundamentals of Multimedial,	Second	Edition,	Springe r,
Referen	ces				
1.	Peter Shi and AK	rley, Michael Ashikhmin, Michael Gleicher, Stephen R Marschner, Erik Peters, —Fundamentals of Computer Graphics ^{II} , CRC Press, 2010.	Reinha	ard, elvin	Sung,
2.	William 1978.	M. Newman and Robert F.Sproull, -Principles of Interactive Computer	Graph	icsI, Mc	Graw Hill
3.	Bufford	Multimedia Systems, Addison Wesley.			
E-Resou	irces				
1.	https://he	lpx.adobe.com/acrobat/using/displaying-3d-models-pdfs.html			
2.	https://w note/202	ww.studocu.com/my/document/universiti-teknologi-mara/introduction-to- 87616	-c/chapt	ter-9-and-	<u>10-lect-</u>
3.	http://gra	phics.berkeley.edu/			
4.	https://w	ww.blender.org/support/tutorials/			
5.	https://he	lpx.adobe.com/in/after-effects/using/basics-rendering-exporting.html			

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U19C	SE12	Cy	ber L	aw ai	nd Etl	hical I	Hacking	L 3	T 0	P 0	C 3	CA 50	ESE 50	Total 100					
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		CO	CO1: Define Cyber Crime and explain types of Cyber Crime K1																
Cou	rse	CO	CO1: Define Cyber Crime and explain types of Cyber CrimeK.CO2: Recite laws and Acts in India for cyber CrimeK.																
Outco	ome	CO	CO2: Recite laws and Acts in India for cyber CrimeKCO3: Explain the basics and phases of Ethical backingK																
		CO	4: Ide	ntify 7	Types of	of Atta	cks and the	ir counte	er mea	sures				K2					
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	(3	3/2/1 ir	1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak																
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COs CO 1 CO 2	(1 PO 1 2 2	3/2/1 ir PO 2	PO 3	PO 4	gth of o Pi PO 5	correla rogram PO 6 2 2 2	tion) 3-Stro me Outcom 7 8 2 2 2	$\begin{array}{c c} ng, 2 - M \\ \hline les (POs) \\ \hline 0 & PO \\ g \\ \hline \end{array}$	PO 10	PO 11	eak PO 12 2	PSO 1 2 2	PSOs PS	0 2 2 2					
COs CO 1 CO 2 CO 3	(1 PO 1 2 2 2	3/2/1 ir PO 2	PO 3	PO 4	gth of e Pr PO 5	rogram PO 6 2 2 2 2	tion) 3-Stro me Outcom 7 8 2 2 3	ng, 2 – M hes (POs) PO 9	PO 10	PO 11	eak PO 12 2 2 2	PSO 1 2 2	PSOs PS	0 2 2 2 2					
COs CO 1 CO 2 CO 3 CO 4	(1) PO 1 2 2 2 2 2	3/2/1 ir PO 2	PO 3	PO 4	gth of e PO 5	rogram PO 6 2 2 2 2 2 2	tion) 3-Stro me Outcom 7 8 2 2 3 3	ng, 2 – M hes (POs) D PO 9	PO 10	PO 11	eak PO 12 2 2 2	PSO 1 2 2	PSOs PSO PSO	0 2 2 2 2 2 2 2					
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COs CO 1 CO 2 CO 3 CO 4 CO 5 Course 4	(1 PO 1 2 2 2 2 2 2 4 SSESSE	3/2/1 ir PO 2 nent 1	PO 3 Metho	PO 4	gth of or PO 5	rogram PO 6 2 2 2 2 2 2 2 2 2	tion) 3-Stro me Outcom 7 8 2 2 3 3 3 3	ng, 2 – N hes (POs) PO 9 9	PO 10	PO 11	eak PO 12 2 2 2 2 2	PSO 1 2 2	PSOs PS	0 2 2 2 2 2 2 2 2 2					
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Crackin Technol	g, Viruses, logy, Socia	Virus Attacks, Pornography, Software Piracy, Intellectual property, Leg Engineering, Mail Bombs, Bug Exploits, and Cyber Security etc.	al System of Inf	ormation
Uni	it - II	LAWS AND ACTS	Periods	9
Laws an and CrP	nd Ethics - PC - Electro	Digital Evidence Controls - Evidence Handling Procedures - Basics of Innic Communication Privacy ACT - Legal Policies.	ndian Evidence	ACT IPC
Unit	t – III	ETHICAL HACKING BASICS	Periods	9
Introduc Footpri Active	ction to Eth nting with machines	ical Hacking – Types of hacking – Phases of Ethical hacking. Reconnai DNS – Determining Network Range – Google Hacking. Scanni – Port Scanning. Enumeration: Windows Security basics – Enumer	ssance And Sc ng for targets: ation Techniqu	anning: Identify es.
Unit –	IV	SYSTEM ATTACK & WEB ATTACKS	Periods	9
Sniffing Session Enginee	: Commun hijacking, pring: Huma	ications basics –Sniffing techniques and tools –Network Roadblock System Attack: Windows system hacking – Password Cracking – Explo an Based attack – Computer based attack. Web Server Hacking: Web serv	s: Intrusion Depoiting privilege vice architecture	tection – s. Social
Uni	t - V	MALWARES AND PENETRATION TESTING	Periods	3 9
Web atta attacks. Penetrat	acks. Web Malware iion testing	Applications: Web applications attack – Web resources protection. Wirel Attacks: Trojans, viruses and worms. Penetration Testing: Types of methodologies – Penetration test tools.	less Attacks – Bl of Penetration te	uetooth esting –
		-	Total Periods	45
Textbo	oks			
1.	Bernadett	e H Schell, Clemens Martin, "Cybercrime", ABC – CLIO Inc, California, 2004.		
2.	R K Jha, .	Digital Forensic and Cyber Crime Hardcover – 2016,		
3.	Matt Wall	ter, "CEH- Certified Ethical Hackers Guide ", 4th Edition, McGraHill Education	, 2019	
4.	Michael Educatio	Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Guide' n, 2018	", 2nd Edition,	Pearson
Referen	nces			
1.	Patrick E Testing	Engebretson, "The Basics of Hacking and Penetration Testing: Ethical Made Easy", 2 nd Edition, Syngress, Elseveir, 2013.	Hacking and Pe	netration
2.	Parteek S	harma," Hacking Revealed", 1 st Edition, White Falcon Publishing, 2018.		
3.	Reginald Publishi	Wong, "Mastering Reverse Engineering: Re-engineer your ethical ng, 2018.	hacking skills	", Packt
4.	Dafydd Security	Stuttard, Marcus Pinto, "The Web Application Hacker's Handbook: Flaws", 2 nd Edition, John Weily & Sons, 2011	Finding and E	xploiting
5.	Monnapp investig	a K A, "Learning Malware Analysis: Explore the concepts, tools, and to ate Windows malware", 1st Edition, Packt Publishing, 2018.	echniques to ana	ılyze and
E-Reso	urces			
1.	https://do	oc.lagout.org/security/ceh-official-certified-ethical-hacker-review-guid 782144376.27422.pdf	le-exam-312-	
2.	https://ww ystems.zi	vw.mediafire.com/file/dyewn6f3r3olnuw/A Beginners Guide To p/file	Hacking Com	puter_S
3.	https://w	ww.pdfdrive.com/hacking-beginner-to-expert-guide-to-computer-hack on-testing-computer-science-series-e175287729.html	king-basic-secur	ity-and-

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205										
Programme	B.E.	Programme	e code	1	101	Regulati	ion	2	019		
Department	Computer Science and Engin	neering		Sen	nester				-		
Course Code	Course name		Period	s per	week	Credit Maxin		imum N	num Marks		
U10CSE13	Dosign Thinking		L	Т	Р	C	CA	ESE	Total		
UI9CSEIS	Design Thinking		3	0	0	3	50	50	100		
Course Objective	 The student should be made familiarize students v ensure students can p ensure students can a world situations. enable students to any thinking 	de to, with design the practices the r pply the desi alyze primary	ninking co methods, ign thinki y and sec	oncep proce ng ap ondar	ots and pesses an oproach	principles d tools of and have rch in the	design t ability to introduc	hinking. o model ction to d	real lesign		
	CO1: Outline Design Thin	king concept	ts and pri	ncipl	es				K2		
Course	CO2: Apply the Design Th	inking appro	ach and i	node	l to real	world situ	ations		K3		
Outcome	CO3: develop many creativ	ve ideas throu	ugh struct	tured	brainsto	orming ses	sions.		K3		
	CO4: develop proof of Co	ncept or stor	y boardin	g to	bring th	ne ideas int	to reality	ý	K3		
	CO5: plan the implementat	ion of the an	y system	cons	idering	the real tir	ne feedl	back	K3		
Pre-requisites	-										

			(3/2/1 i	ndicate	eak	CO/PSO Mapping									
						PS	Os								
(COs	PO 1	PO 2	PO PO<											PSO 2
C	01	3	3	3	2	2	2	3	3					3	3
C	202	3	3	3	1	2	2	3 3						2	2
C	203	3	3	1	1	2	1	2	3					2	2
C	2 0 4	3	3	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$										2	2
C	205	3	2	1	1	2	2	1	2					2	2

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus											
Unit – I		INTRODUCTION	Periods	9							
Introduct Explore -	ion – Need - STEEP A	l for design thinking - Phases of Design Thinking –Visualization – Four nalysis – Strategic Priorities – Activity System – Stakeholder Mapping –	Questions, Ten Opportunity Fra	Tools – aming.							
Unit - Il	[VISUALIZATION	Periods	9							
Introduct Observat	ion – Vis ions – Nee	ualization – Journey Mapping – Value Chain Analysis – Mind Ma d Finding – User Personas.	apping – Empa	thize –							
Unit – I	II	BRAINSTORMING	Periods	9							
Introduct	ion – Braiı	storming - Concept Development - Experiment - Ideation - Prototyping	g – Idea Refinem	ent.							
Unit – I	V	ASSUMPTION TESTING	Periods	9							
Introduct	ion – Assu	mption Testing – Rapid Prototyping – Engage – Storyboarding									
Unit – V	7	CUSTOMER CO-CREATION LEARNING LAUNCH	Periods	; 9							
Introduct	ion – Cus	tomer Co-Creation Learning Launch – Leading Growth and Innovati	on – Evolve– (Concept							
Synthesis	s – Strategi	e Requirements – Evolved Activity Systems – Quiek Wills.	Fotal Periods	45							
Textboo	oks										
1.	Jeanne La Columbia	edtka and Tim Ogilvie, "Designing for Growth: A Design Thinking T University Press, 2011.	ool Kit for Ma	nagers",							
2.	Lee Chon	g Hwa, "Design Thinking The Guidebook", Design Thinking Master Tra	iners of Bhutan,	2017.							
Reference	es										
1.	Jeanne Li Step Proj	edtka, Tim Ogilvie, and Rachel Brozenske, "The Designing for Growth ect Guide", Columbia University Press, 2014.	FieldBook: A S	step-by-							
E-Resou	rces										
1.	https://w	ww.collectivecampus.io/blog/6-resources-to-help-you-learn-design-think	ing								
2.	https://th	isisdesignthinking.net/on-design-thinking/design-thinking-resources/									
3.	http://hs.	griet.ac.in/pdf/studymaterials-gr20/Design%20Thinking%20Lab%20202	<u>0-21.pdf</u>								

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205											
Programme	B.E.	Programme	e code]	101	Regulat	ion		2019			
Department	Computer Science and Engi	neering		Ser	nester				-			
Course Code	Course name	Course name Periods per week Credit Maximum M										
U10CSE14	Mahila Adhaa Natwarks		L	Т	Р	C	CA	ESE	Total			
UI9C5E14	WIDDIE AUHOC Networks		3	0	0	3	50	50	100			
Course Objective	 Study the basic and eme Understand the func protocols that can be used Learn the concepts of Se understand the role of concepts 	de to, erging techno tioning of for ad-hoc n ecurity issues cross layer de	ologies in differen etworks. s for designin e	the c t M gning	ontext of edium g a routicing the	of ad-hoc n Access ng protoco network p	network Protoco ol performa	s ls and ance	routing			
	At the end of the course, th	e student sho	ould be at	ole to	,				KL			
Course	CO1: Remember and un today's Internet and Mobil	nderstand the	e princip tworks	les o	n how	mobility i	s dealt	with in	K2			
Outcome	CO2: Discuss various MA	C routing pro	otocols fu	nctio	n				K2			
	CO3: Apply different routi	ng technolog	gies for de	esign	ing a ro	uting prote	ocol.		K3			
	CO4: Illustrate the security	v issues in ad	hoc netw	orks					K2			
	CO5: exposed to the advances in adhoc network design concepts											
Pre-requisites	-											

		(3/2/1 ii	ndicate	eak	CO/PSO Mapping									
					PSOs									
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	3	2	3			2			2	3	3	3
CO 2	3	2	3	3	3			1			2	3	3	3
CO 3	3	3	2	3	3						3	3	3	3
CO 4	3	3	3 2 2 2 2 2 2 2 3											3
CO 5	3	1	2	1	2						3	3	3	3

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Un	it – I	INTRODUCTION	Per	riods	9
Introduc channel,	tion to ad ad-hoc mo	-hoc networks – definition, characteristics features, applications. Ch bility models: indoor and outdoor models.	aracteri	stics of v	vireless
Uni	it - II	MEDIUM ACCESS PROTOCOLS	Per	riods	9
MAC Pr algorithm	rotocols: D ms, protoco	esign issues, goals and classification. Contention based protocols – with ls using directional antennas. IEEE standards: 802.11a, 802.11b, 802.11g	n reserv g. 802.1	ation, sch 5. HIPERI	eduling LAN
Unit	t – III	NETWORK PROTOCOLS	Pei	riods	9
Routing Multicas aware ro	Protocols: st routing a outing.	Design issues, goals and classification. Proactive Vs reactive routing, un lgorithms, hybrid routing algorithm, energy aware routing algorithm, h	icast ro ierarchi	uting algo ical routin	rithms, g, QoS
Unit –	IV	END – END DELIVERY AND SECURITY	Per	riods	9
Transpo adhoc ne	rt Layer: Is etworks: iss	sues in designing – Transport layer classification, adhoc transport prot ues and challenges, network security attacks, secure routing protocols.	ocols. S	Security is	sues in
Uni	t - V	CROSS LAYER DESIGN		Periods	9
Cross la layer cau	yer Design utionary pe	Need for cross layer design, cross layer optimization, parameter optimization, parameter optimization of adhoc with Mobile IP networks.	zation te	echniques,	cross
		r 	Fotal F	Periods	45
Textbo	oks				
1.	C.Siva F edition, F	am Murthy and B.S.Manoj, Ad hoc Wireless Networks Architectur Pearson Education. 2011 (For units1,2 and 3)	res and	protocoll	sll, 2 nd
2.	Charles H	E. Perkins, Ad hoc Networking!, Addison – Wesley, 2000 (For units 4 and	d 5)		
Referen	ces				
1.	Mohamm	ad Ilyas, The handbook of adhoc wireless networksl, CRC press, 2002.			
2.	Erdal Qay and Sons,	irci and Chunming Rong c, Security in Wireless Ad Hoc and Sensor Net Ltd.	works 2	2009, Johr	ı Wiley
3.	Stefano Ba IEEE pres	sagni, Marco Conti, Silvia Giordano and Ivan stojmenovic, Mobile ads, 2004	-hoc ne	tworking,	Wiley-
4.	Xiuzhen C 2004.	heng, Xiao Hung, Ding-Zhu Du: Ad-hoc Wireless Networking, Kluwe	er Acad	lemic Pub	lishers,
E-Resou	irces				
1.	Research, Trends an	"Wireless Commun, and Mobile Comp.Special Issue on Mobile Ad-ho d Applications, Vol. 2, no. 5, 2002, pp. 483 – 502.	oc Netw	orking Re	search,
	A survey	of integrating IP mobility protocols and Mobile Ad-hoc networks,	Fekri	M. bdulja	lil and
2.	Shrikant	K. Bodhe, IEEE communication Survey and tutorials, no: 12007		5	

				VI	VEKA (Au	NAND	HA CO ous Insti Elayan	DLLEC tution, A	FE OF Affiliate	ENGI d to Ann hengode	NEEF a Univ e – 637	RING FO versity ,C 7 205	OR WOM hennai)	EN	TUVRestand CENTED	Mongeneer System 30 M012019 We house 0 Tomato
	Prog	ramme	B.E	E.			Р	rograr	nme o	code	1	101	Regulat	ion	2	2019
	Depa	rtmen	t Con	nputer	Scienc	e and]	Engine	ering			Ser	nester				-
	Course (Code			Cou	rse na	ime]	Period	s per	week	Credit	Max	kimum I	Marks
	U19CS	E15	Sof	't Con	nputir	g				L 3	T 0	P 0	C 3	CA 50	ESE 50	Total 100
	Cour Object	se tive	Th	e stude • Le • Ui • De • Ui • Gi	ent sho earn th ndersta esign v ndersta ain kno	ould be e vario and the various and the owledg	e made ous typ e know s types e conce ge on A	to, bes of s redge a of neu epts of Artificia	oft con about ral net neuro al Inte	mputin Genetio tworks fuzzy. lligenc	g frai c Alg e.	nework orithms	s.			
			At t	he end	of the	cours	e, the	student	shoul	d be at	ole to	,				KL
			CO	1: De	escribe	huma	n intel	ligence	and h	now int	ellige	ent syste	em works.			K2
	Cour	se	CO	2: App	oly bas	ics of	Fuzzy	logic a	ind ne	ural ne	twork	KS				K2
	Outco	me	CO	3: Dise	cuss at	oout N	euro F	uzzy c	oncept	ts						K3
			CO use	4: Des ful wh	cribe nile se	with eking	geneti globa	ic algo l optin	orithn num i	ns and n self-	oth learn	er rand	lom sear uations	ch proc	edures	К2
			CO in S	5: Dev oft Co	velop s mputii	ome fa 1g Tec	amilia hnique	rity wit es.	h curr	ent res	earch	n proble	ms and re	search n	nethods	K3
I	Pre-requ	iisites	-													
		(3	3/2/1 in	dicates	streng	C th of c	O / PC) Mapp ion) 3-3	oing Strong	, 2 – M	ediur	n, 1 – W	/eak	CO/P	SO Map	ping
						Pr	ogramı	ne Out	comes	(POs)					PSOs	
	COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PC 10) PC) 11	PO 12	PSO 1	PS	O 2
	CO 1	1	1	3	2	3	2	-	2	1	2	2	2	2		3
	CO 2	1	2	1	1	3	2	-	2	1	2	2	1	3		2
	CO 3	2	2	2	2	2	2	-	3	1	2	. 1	2	1		3
-	CO 4	2	3	1	3	3	3	-	3	1	2	2	2	2		1
	CO 5	2	3	2	2	2	3	-	2	1	3	2	1	2		1
C	ourse A Direc 1. 2. 3. Indirect 1.	t Cont Assig End- ect Cour	inuou gnmer Semes	A Assents / Q ster ex	ds essmer uiz / S amina vey	nt Tes Semina ations	t I, II a ar	& III								

Conten	t of the sy	llabus		
Uni	it – I	NEURAL NETWORKS	Periods	9
Introduc organizi	tion to Al ng maps- S	NS - Adaline - Back propagation network - Hopfield network - Bo upport Vector Machines-Spike Neuron Models.	ltzman machine	s - Self
Content of the syllabus Unit - I NEURAL NETWORKS Periods Introduction to ANS - Adaline - Back propagation network - Hopfield network - Boltzman machine - organizing maps-Support Vector Machines-Spike Neuron Models. Periods Unit - II FUZZY LOGIC Periods Fuzzy sets - Fuzzy rules and fuzzy reasoning - Defuzzification- Fuzzy inference system - Mamdani fuzzy model Periods Adaptive Neuro Fuzzy Inference System - Coactive neuro-fuzzy modelling - Classification and regression tre Data Clustering Algorithm - Rule based structure - Neuro - Fuzzy control I - Neuro -Fuzzy control II - Fidecision making. Periods Unit - IV GENETIC ALGORITHM Periods Introduction - Implementation of GA - Reproduction - Crossover - Mutation - Coding - Fitness scaling - Applica of GA. Periods Unit - V ARTIFICIAL INTELLIGENCE Periods Introduction - Searching techniques - First order Logic - Forward reasoning - Backward reasoning - Semantic Frames. Total Periods 1. James A. Freeman and David M. Skapura, —Neural Networks Algorithms, Applications, Programming Techniques, Addison Wesley, 2003. S. R.Jang, C. T. Sun And E.Mizutani, "Neuro-Fuzzy And Soft Computing", PHI / Pearson Education 20 3. 3. S.R.Sivanandam ,S.N.Deepa, "Principles of Soft Computing", Wiley India Pvt. Ltd., 2nd Edition, 2011. S. Rajasekaran, G.A. VijayalakshmiPai, "Neura		9		
Fuzzy se Sugenof	ets - Fuzzy uzzy mode	rules and fuzzy reasoning –Defuzzification- Fuzzy inference system - I I - Tsukamoto fuzzy model	Mamdani fuzzy	model -
Unit	t – III	NEURO FUZZY	Periods	9
Adaptive Data Cludecision	e Neuro Fu ustering Al making.	zzy Inference System - Coactive neuro-fuzzy modelling - Classificatio gorithm - Rule based structure - Neuro - Fuzzy control I - Neuro -Fu	n and regressior uzzy control II	i trees - - Fuzzy
Unit –	IV	GENETIC ALGORITHM	Periods	9
Introduc of GA.	tion - Impl	ementation of GA - Reproduction - Crossover - Mutation - Coding - Fitne	ess scaling - App	lication
Uni	t - V	ARTIFICIAL INTELLIGENCE	Periods	9
Introduc Frames.	tion - Sear	ching techniques - First order Logic - Forward reasoning - Backward r	easoning - Sema	untic –
			Fotal Periods	45
Textbo	oks			
1.	James A Programn	. Freeman and David M. Skapura, —Neural Networks Algorith ning Techniques, Addison Wesley, 2003.	ms, Application	is, and
2.	S.R.Jang,	C.T. Sun And E.Mizutani, "Neuro-Fuzzy And Soft Computing", PHI / P	earson Education	n 2004.
3.	David E. Education	Goldberg, "Genetic Algorithm In Search Optimization And Mach India, 2013.	ine Learning"	Pearson
4.	Stuart J. Education	Russel, Peter Norvig, "Artificial Intelligence A Modern Approach", 2003.	, 2nd Edition,	Pearson
Referen	ces			
1.	S.N.Sivar 2011.	aandam ,S.N.Deepa, "Principles of Soft Computing", Wiley India Pvt	. Ltd., 2nd Edit	ion,
2.	S.Rajasek and App	aran, G.A.VijayalakshmiPai, "Neural Networks, Fuzzy Logic and Genet lications", PHI Learning Pvt. Ltd., 2017.	tic Algorithm, Sy	ynthesis
3.	S.N.Sivar	andam • S.N.Deepa, — Introduction to Genetic Algorithms ^{II} , Springer, 2	007.	
E-Resou	urces			
1.	http://ho	ome.iitk.ac.in/~utsav/ChE645pdf.pdf		
2.	https://o	onlinecourses.nptel.ac.in/noc22_cs02/preview		
3.	https://v	www.tutorialspoint.com/fuzzy_logic/index.htm		
4.	https://to	wardsdatascience.com/soft-computing-6cef872f7704		
5.	https://l	ecturenotes.in/subject/124/soft-computing-sc/124		

	VIVEKANANDHA (Autonomous I Ela	COLLEGE (nstitution, Affili yampalayam, T	OF ENGI iated to Ani iruchengod	NEEI na Uni e – 63	RING F versity ,C 7 205	OR WOM Chennai)	EN	TUNNetitad	Monganeer Sotan So 1001 2019 Westcare C 1000203		
Programme	B.E.	Programm	e code	1	101	Regulati	on	,	2019		
Department	Computer Science and Engi	neering		Ser	nester				-		
Course Code	Course name		Period	s per	week	Credit	Max	kimum I	Marks		
U19CSE16	Digital Image Processi	ng	L	Т	Р	С	CA	ESE	Total		
erreblin	Digital inlage i locessi		3	0	0	3	50	50	100		
Course Objective	The student should be ma Learn digital image Be exposed to simp Be familiar with in represent image in	de to, e fundamenta ple image pro nage compres form of featu	als. ocessing t ssion and ures.	echn segn	iques. nentatio	n techniqu	les.				
	At the end of the course, the	e student sho	ould be at	ole to	,				KL		
Course	CO1: Outline the fundame	ental concept	s of DIP.						K2		
Outcome	CO2: Evaluate the technic	iques for im	age enha	ncer	nent				K2		
Outcome	CO3: Interpret image res	toration and	l regimei	ntatio	on tech	niques			K3		
	CO4: Interpret image con	npression s	tandouts						K2		
	CO5: Categorize various in	mage represe	ntation a	nd ree	cognitic	on techniqu	ies		K3		
Pre-requisites	-										
	C0/1	PO Manning									

		(3/2/1 i	ndicate	s stren	gth of o	correla	O Map tion) 3-	ping -Strong	$y_{2}, 2 - N_{2}$	Iedium,	1 – We	eak	CO/PSO	Mapping
					P	rogram	me Ou	tcomes	(POs)				PS	Os
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	2	3	3	2	2	2	3						2	2
CO 2	2	3	3	1	2	2	3						2	2
CO 3	2	3	1	1	2	1	2						2	1
CO 4	3	3	1	1	3	2	2						3	2
CO 5	3	2	1	1	2	2	1						2	2

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

2. Course - end survey

Unit –	[DIGITAL IMAGE FUNDAMENTALS	Periods	9
Introdu	ction – Or	igin – Steps in Digital Image Processing – Components – Element	ts of Visual Per	ception
– Image color m	odels.	and Acquisition – Image Sampling and Quantization – Relation	ships between	pixels -
Unit - I	I	IMAGE ENHANCEMENT	Periods	9
Spatial	Domain:	Gray level transformations - Histogram processing - Basics	of Spatial Fi	ltering-
Smooth	ing and S	harpening Spatial Filtering – Frequency Domain: Introduction to	o Fourier Trans	sform –
Smooth	ing and Sl	harpening frequency domain filters – Ideal, Butterworth and Gauss	ian filters.	
Unit –	III	IMAGE RESTORATION AND SEGMENTATION	Periods	9
Noise n	nodels – N	Iean Filters – Order Statistics – Adaptive filters – Band reject Filt	ers – Band pass	s Filters
- Notch	1 Filters –	Optimum Notch Filtering – Inverse Filtering – Wiener filtering Se	gmentation: De	etection
process	ing- erosic	-Edge Emissing and Boundary detection – Region based segment	nation- worpho	Jiogicai
Unit –	IV	WAVELETS AND IMAGE COMPRESSION	Periods	9
Wavele	ts – Subl	oand coding – Multi resolution expansions - Compression: F	undamentals –	Image
Compre	ession mod	lels – Error Free Compression – Variable Length Coding – Bit-Pl	ane Coding – I	Lossless
Predicti	ve Coding	– Lossy Compression – Lossy Predictive Coding – Compression S	Standards.	
Unit – `	V	IMAGE REPRESENTATION AND RECOGNITION	Peri ods	i 9
Boundar	ry represen	tation - Chain Code - Polygonal approximation, signature, boundar	y segments – B	oundary
descripti	ion – Shape	e number – Fourier Descriptor, moments- Regional Descriptors – Topol	logical feature, T	exture -
1 atterns		relasses - Recognition based on matering.	Total Periods	45
Textbo	oks			
1.	Rafael C.	Gonzales, Richard E. Woods, "Digital Image Processing", 4th Edition, F	Pearson Education	n, 2018.
2.	Rafael C. 3 rd Edition	Gonzalez, Richard E. Woods, Steven L. Eddins, "Digital Image Proce n Tata McGraw Hill Pvt. Ltd., 2020.	ssing Using MA	TLAB",
3.	Anil Jain	K. "Fundamentals of Digital Image Processing", PHI Learning Pvt. Ltd.,	, 2011.	
Referen	ces			
1.	Malay K. Ltd., 201	Pakhira, "Digital Image Processing and Pattern Recognition", First Ed	lition, PHI Learn	ing Pvt.
2.	Willliam	K Pratt, "Digital Image Processing", John Willey, 4th Edition, 2007.		
E-Resou	irces			
1.	www.ima	geprocessingplace.com		
2.	http://ww	w.nptel.iitm.ac.in/courses/IITCommunication//		
3.	www.mat	hworks.com		
4.	https://ww	ww.tutorialspoint.com/dip/image_processing_introduction.htm		
5.	https://lec	turenotes.in/subject/89/digital-image-processing-dip		

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Programme	B.E.	Programme	e code]]	101	Regulati	on		2019
Department	Computer Science and Engi	neering		Ser	nester				-
Course Code	Course name		Period	s per	week	Credit	Max	kimum 1	Marks
UIOCSE17	Como Theory		L	Т	Р	С	CA	ESE	Total
UI9CSEI7	Game Theory		3	0	0	3	50	50	100
Course Objective	 familiarize with th learn the processes understand the arcl know about game Appraise theoretic world conflicts. 	e process of g a, mechanics, hitecture of g engine develo cal prediction	game des issues in game prog opment, r ns obtain	ign an game gramr nodel ied fr	nd deve e design ning ling, tec rom Ga	lopment hniques an me Theor	nd frame ry analy	eworks. /ses aga	inst real
	At the end of the course, the	e student sho	ould be al	ole to	,				KL
Course	CO1: Demonstrate the pr	ocess of gam	e design	& de	velopm	ent.			K2
Outcome	CO2: Apply the 3G graphi	cs in game p	rogramm	ing.					K2
outcome	CO3: Analyzes the princip	oles before de	esigning a	ı gam	e.				K3
	CO4: Choose the animation	n techniques	and use i	it in g	game de	sign.			K2
	CO5: Develop interactive	games							K3
Pre-requisites	-								

		(3/2/1 i	ndicate	s stren	(gth of	C O / P correla	O Map tion) 3 [,]	p ing -Strong	g, 2 – N	Iedium,	1 – We	eak	CO/PSO	Mapping
					P	rogram	me Ou	tcomes	s (POs)				PS	Os
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	3	3	3	1	1	-	2	2	1	-	3	3
CO 2	3	3	3	2	2	-	-	-	2	2	-	-	2	2
CO 3	3	3	2	2	2	-	-	-	2	1	-	-	2	3
CO 4	3	2	2	1	1	-	-	-	2	-	-	-	3	3
CO 5	3	3	3	2	1	-	-	-	3	-	-	-	3	3
Course	Assess	sment	Meth	ods										
Direct														
1.	Conti	nuous .	Assess	sment	Test I	, II &	III							
2.	Assig	nments	s / Qui	z / Se	minar									
3.	End-S	emeste	er exa	minati	ons									
Indire	ct													
3.	Cours	e - end	l surve	ey										
Content	t of the	e sylla	bus											

Unit - I INTRODUCTION Periods 9 Elements of Game Play – Artificial Intelligence – Getting Input from the Player - Sprite Programming – Sprite Animation - Multithreading – Importance of Game Design – Game Loop. Init - II 3D GRAPHICS FOR GAME PROGRAMMING Periods 9 Coordinate Systems, Ray Tracing, Modeling in Game Production, Vertex Processing, Rasterization, Fragment Processing and Output Merging, Illumination and Shaders, Parametric Curves and Surfaces. 9 Unit - III GAME DESIGN PRINCIPLES Periods 9 Character Development, Story Telling, Narration, Game Balancing, Core mechanics, Principles of level design, Genres of Games, Collision Detection, Game Logic, Game AI, Path Finding, Case study : Tetris. 9 Init - IV GAMING ENGINE DESIGN Periods 9 Renderers, Software Rendering, Hardware Rendering, and Controller Based Animation, Spatial Sorting, Level of Detail, Collision Detection, Standard Objects, and Physics, Case study : The Sims 9 Unit - V GAME DEVELOPMENT Periods 9 Developing 2D and 3D Interactive Games Using OpenGL, DirectX – Isometric and Tile Based Games, Puzzle Games, Single Player Games, Multi-Player Games. Case study: Mine craft. 1 1 1. David H. Eberly, 3D Game Engine Design: A Practical Approach to Real-Time Computer Graphics, Second Edition, Morgan Kaufmann, 2010. 2 <t< th=""></t<>						
Unit - I INTRODUCTION Periods 9 Elements of Game Play – Artificial Intelligence – Getting Input from the Player - Sprite Programming – Sprit Animation - Multithreading – Importance of Game Design – Game Loop. Periods 9 Unit - II 3D GRAPHICS FOR GAME PROGRAMMING Periods 9 Coordinate Systems, Ray Tracing, Modeling in Game Production, Vertex Processing, Rasterization, Fragmer Processing and Output Merging, Illumination and Shaders, Parametric Curves and Surfaces. Periods 9 Chriacter Development, Story Telling, Narration, Game Balancing, Core mechanics, Principles of level desigr Genres of Games, Collision Detection, Game Logic, Game AI, Path Finding, Case study : Tetris. 9 Unit - IV GAMING ENGINE DESIGN Periods 9 Renderers, Software Rendering, Hardware Rendering, and Controller Based Animation, Spatial Sorting, Level o Detail, Collision Detection, Standard Objects, and Physics, Case study : The Sims 9 Unit - V GAME DEVELOPMENT Periods 9 Developing 2D and 3D Interactive Games Using OpenGL, DirectX – Isometric and Tile Based Games, Puzzl Games, Single Player Games, Multi-Player Games. Case study: Mine craft. 9 1. David H. Eberly, 3D Game Engine Design: A Practical Approach to Real-Time Computer Graphics Second Edition, Morgan Kaufmann, 2010. 2. Jung Hyun Han 3D Graphics for Game Programming, First Edition, Ch						
Unit - l	I	3D GRAPHICS FOR GAME PROGRAMMING	Periods	9		
Coordin Processi	ate System	s, Ray Tracing, Modeling in Game Production, Vertex Processing, put Merging, Illumination and Shaders, Parametric Curves and Surfaces.	Rasterization, F	ragment		
Unit –	III	GAME DESIGN PRINCIPLES	Periods	9		
Characte Genres of	er Develop of Games, (ment, Story Telling, Narration, Game Balancing, Core mechanics, Pri Collision Detection, Game Logic, Game AI, Path Finding, Case study : To	inciples of level etris.	design,		
Unit –	IV	GAMING ENGINE DESIGN	Periods	9		
Rendere Detail, C	ers, Softwar Collision De	re Rendering, Hardware Rendering, and Controller Based Animation, Stetection, Standard Objects, and Physics, Case study : The Sims	Spatial Sorting, I	Level of		
Unit –	V	GAME DEVELOPMENT	Periods	9		
Develop Games,	oing 2D an Single Play	d 3D Interactive Games Using OpenGL, DirectX – Isometric and Til er Games, Multi-Player Games. Case study: Mine craft.	e Based Games	, Puzzle		
		,	Fotal Periods	45		
Textbo	oks					
1.	David H. Second E	Eberly, 3D Game Engine Design: A Practical Approach to Real-Ti dition, Morgan Kaufmann, 2010.	me Computer G	raphics,		
2.	Jung Hyu	n Han 3D Graphics for Game Programming, First Edition, Chapman and	Hall/CRC, 2011	•		
3.	Jonathan 2009.	S. Harbour, Beginning Game Programming, Course Technolog	y, Third Editio	n PTR,		
4.	Ernest Ad 2014.	lams and Andrew Rollings, Fundamentals of Game Design, Third Edit	tion, Pearson Ed	ucation,		
Referen	ices					
1.	Scott Rog	ers, Level Up: The Guide to Great Video Game Design, First Edition, W	iley, 2014.			
2.	Jim Thor Techniqu	npson, Barnaby Berbank-Green, and Nic Cusworth, Game Design: I es-The Ultimate Guide for the Aspiring Game Designer, First Edition, W	Principles, Practi iley, 2008.	ice, and		
E-Resou	urces					
1.	Game Th	eory - Course (nptel.ac.in)				
2.	Game the	eory - Wikipedia				
3.	Game Th	eory (Stanford Encyclopedia of Philosophy)				
4.	Game Th	eory - Course (nptel.ac.in)				

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Programme	B.E.	Programme	e code]	101	Regulat	ion	2	2019
Department	Computer Science and Engin	eering		Ser	nester				-
Course Code	Course name		Period	s per	week	Credit	Max	kimum I	Marks
U10CSE19	Professional Ethics in		L	Т	Р	C	CA	ESE	Total
UISCIE	Engineering		3	0	0	3	50	50	100
Course Objective	 The student should be mad Stimulate critical and practices Provide conceptual too Create awareness on a Aware of the different moralities in an organi Create awareness on c 	e to, responsible ols necessar ssessment o ethical issu ization. omputer and	reflectior y for purs f safety a es, codes d environ	us on suing nd ria for c ment	moral i those is sk. conduct al ethics	ssues surro ssues. for engine s.	ounding ers in so	enginee ociety an	ring d
	At the end of the course, the	student sho	ould be at	le to	,				KL
Course	CO1: Outline the basic per social issues, industrial stand	ception of p dards, code	orofession of ethics.	, pro	fessiona	al ethics, v	arious n	noral &	K2
Outcome	CO2: Analyze the role of pr	rofessional e	ethics in e	engin	eering f	ield.			K2
	CO3: Assessment of safety	and risk and	l understa	andin	g of ris	k benefit a	nalysis.		K3
	CO4: Identify the profession	nal rights ar	nd respon	sibili	ty of an	engineer.			K2
	CO5: Apply ethical principl	les to solve	situation	that a	arise in	the global	society.		K3
Pre-requisites	-								
(3/2	CO / P 2/1 indicates strength of correla	O Mapping tion) 3-Stron	ng, 2 – Me	ediun	n, 1 – W	eak	CO/PS	SO Mapj	ping
	Drogram		$a_{\rm R}$ (DOa)					DCOs	

		(3/2/1)	ndicate	s streng	gth of o	correlat	tion) 3-	Strong	5, 2 - N	ledium,	1 - We	eak		
					Pı	rogram	me Ou	tcomes	(POs)				PS	Os
COs	PO 1	PO 2	PO 3	PO 4	РО 5	PO 6	PO 7	РО 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	2	1	1	1	2	2	2	2	-	1	2	1	1
CO 2	3	2	1	1	1	2	3	2	2	-	1	2	2	1
CO 3	3	2	1	1	1	2	3	2	2	2	2	2	2	1
CO 4	3	2	-	-	1	-	2	3	3	1	2	2	-	2
CO 5	3	2	1	1	1	2	3	2	2	2	2	2	1	1
Course A	Assess	sment	Meth	ods										

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Conten	nt of the sy	llabus		
Unit – I	I	ENGINEERING ETHICS	Periods	9
Senses o Kohlber Professi	of 'Enginee g's theory onal Ideals	ring Ethics' – Variety of moral issues – Types of inquiry – Moral dilemn – Gilligan's theory – Consensus and Controversy – Professions and Virtues – Uses of Ethical Theories	nas – Moral Auto and Professiona	nomy – llism –
Unit - I	I	ENGINEERING AS SOCIAL EXPERIMENTATION	Periods	9
Enginee Industria	ring as Ex	perimentation – Engineers as responsible Experimenters – Research Etl s - A Balanced Outlook on Law – The Challenger Case Study	hics - Codes of E	Ethics –
Unit –	III	ENGINEER'S RESPONSIBILITY FOR SAFETY	Periods	9
Safety a Regulate	and Risk – or's Approa	Assessment of Safety and Risk – Risk Benefit Analysis – Reducing I ach to Risk - Chernobyl Case Studies and Bhopal	Risk – The Gove	ernment
Unit – I	IV	RESPONSIBILITIES AND RIGHTS	Periods	9
Collegia Occupat	ality and Lo tional Crim	oyalty – Respect for Authority – Collective Bargaining – Confidentiality e – Professional Rights – Employee Rights – Intellectual Property Rights	Conflicts of In (IPR) – Discrimination	terest – nation
Unit –	V	GLOBAL ISSUES	Periods	9
Multinat Develop	tional Corp oment – W	eapons Development – Engineers as Managers – Consulting Engineers	- Role in Techno s – Engineers as	blogical Expert
Witness	es and Adv	1sors – Honesty – Moral Leadership – Sample Code of Conduct		
Witness	es and Adv	<u>isors – Honesty – Moral Leadership – Sample Code of Conduct</u>	Fotal Periods	45
Witness Textbo	es and Adv	isors – Honesty – Moral Leadership – Sample Code of Conduct	Fotal Periods	45
Witness Textbo	oks Mike W I Publishin	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M g Company Pvt Ltd,2017.	Fotal Periods IcGraw Hill	45
WitnessTextbo1.2.	oks Mike W I Publishin Charles E Thompso	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M <u>g Company Pvt Ltd,2017.</u> Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000.	Fotal Periods IcGraw Hill s -Concepts and	45 Cases",
Witness Textbo 1. 2. Referen	es and Adv oks Mike W I Publishin Charles E Thompso ces	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M g Company Pvt Ltd,2017. Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000.	Fotal Periods IcGraw Hill s –Concepts and	45 Cases",
Witness Textbo 1. 2. Referen 1.	es and Adv oks Mike W I Publishin Charles E Thompso ces Prof. (Co Delhi, 20	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M <u>g Company Pvt Ltd,2017.</u> Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000. 1) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Persp 04.	Fotal Periods IcGraw Hill s -Concepts and pective", Biztantr	45 Cases", a, New
Witness Textbo 1. 2. Referen 1. 2.	oks Mike W I Publishin Charles E Thompso ces Prof. (Co Delhi, 20 David Er	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M g Company Pvt Ltd,2017. Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000. P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Persp 04. mann and Michele S Shauf, "Computers, Ethics and Society", Oxford Un	Fotal Periods IcGraw Hill s -Concepts and bective", Biztantr iversity Press, (20)	45 Cases", a, New 003)
Witness Textbo 1. 2. Referen 1. 2. 3.	es and Adv oks Mike W I Publishin Charles E Thompso ces Prof. (Co Delhi, 20 David Ert Charles E	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M <u>g Company Pvt Ltd,2017.</u> Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics <u>n Learning, 2000.</u> I) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Persp 04. mann and Michele S Shauf, "Computers, Ethics and Society", Oxford Un 8. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey	Fotal Periods IcGraw Hill s -Concepts and bective", Biztantr iversity Press, (20) , 2004	45 Cases", a, New 003)
Witness Textbo 1. 2. Referen 1. 2. S. E-Resource	es and Adv oks Mike W I Publishin Charles E Thompso ces Prof. (Co Delhi, 20 David Ern Charles E urces	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M g Company Pvt Ltd,2017. Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000. P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Persp 04. mann and Michele S Shauf, "Computers, Ethics and Society", Oxford Un B. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey.	Fotal Periods IcGraw Hill s -Concepts and opective", Biztantr pective", Biztantr iversity Press, (20) , 2004	45 Cases", a, New 003)
Witness Textbo 1. 2. Referent 1. 2. 3. E-Resont 1.	es and Adv oks Mike W I Publishin Charles E Thompso ces Prof. (Co Delhi, 20 David Err Charles E urces https://wy	 Isors – Honesty – Moral Leadership – Sample Code of Conduct Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M g Company Pvt Ltd,2017. Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000. I) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Persp 04. mann and Michele S Shauf, "Computers, Ethics and Society", Oxford Un Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey. ww.brainkart.com/subject/Professional-Ethics-in-Engineering_182/ 	Fotal Periods IcGraw Hill s -Concepts and opective", Biztantr pective", Biztantr iversity Press, (20) , 2004	45 Cases", a, New 003)
Witness Textbo 1. 2. Referen 1. 2. 3. E-Reson 1. 2.	es and Adv oks Mike W I Publishin Charles E Thompso ces Prof. (Co Delhi, 20 David Err Charles E urces https://ww	Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M g Company Pvt Ltd,2017. Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000. 1) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Persp 04. mann and Michele S Shauf, "Computers, Ethics and Society", Oxford Un 8. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey. ww.brainkart.com/subject/Professional-Ethics-in-Engineering_182/ tel.ac.in/courses/110105097	Fotal Periods IcGraw Hill s -Concepts and opective", Biztantr pective", Biztantr iversity Press, (20) , 2004	45 Cases", a, New 003)
Witness Textbo 1. 2. Referent 1. 2. 3. E-Reson 1. 2. 3. E.Reson 1. 2. 3.	es and Adv oks Mike W I Publishin Charles E Thompso ces Prof. (Co Delhi, 20 David Err Charles E urces https://ww https://ww	 Isors – Honesty – Moral Leadership – Sample Code of Conduct Martin and Roland Schinzinger, Ethics in Engineering,4th edition, Tata M g Company Pvt Ltd,2017. Harris, Michael S Pritchard and Michael J Rabins, "Engineering Ethics n Learning, 2000. I) P S Bajaj and Dr. Raj Agrawal, "Business Ethics – An Indian Persp 04. mann and Michele S Shauf, "Computers, Ethics and Society", Oxford Un Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey. ww.brainkart.com/subject/Professional-Ethics-in-Engineering 182/ tel.ac.in/courses/110105097 ww.coursera.org/lecture/ethical-issues-data-science/professional-society-c 	Fotal Periods IcGraw Hill s -Concepts and opective", Biztantr pective", Biztantr iversity Press, (20) , 2004	45 Cases", a, New 003)

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205Image: Image:								Bongeneer Spiten So Mot 2019 Version Street Constants							
	Program	nme	B.E.				Pr	ogrami	me c	code	1	.01	Regulat	tion	,	2019
	Departm	nent	Comp	uter So	cience	and E	nginee	ering			Sen	nester			-	
Co	ourse Coc	le			Cours	se nar	ne		I	Period	s per	week	Credit	Max	kimum l	Marks
U	19CSE1	9	Socia	l Net	work	Anal	ysis			L 3	T 0	P 0	C 3	CA 50	ESE 50	Total 100
C	Course)bjective	e	The : • •	studen Und Lea Lea Und Lea	t shou lerstan rn kno rn the lerstan rn visu	Id be a d the o wledg Extrao d hum aalizat	made to conceg ge repretion a ction be tion of	to, pt of ser esentati and Min havior i Social 1	mant on u ing (n so netw	ic web sing or Commu cial we orks.	and intolog unitie b and	related a gy. s in We l related	applicatio b Social 1 l commur	ns. Networks iities.	5	
			At the	end o	of the c	ourse	, the st	tudent s	houl	d be at	ole to					KL
	Course	ľ	CO1:	Disti	nguish	ı WW	W from	m sema	ntic	web						K2
	Course		CO2 :	Disco	over th	ne kno	owled	lge usir	ng or	ntolog	y.					K2
	Jutcome	;	CO3:	Ident	ify the	e com	imuni	ties in s	socia	al netv	vorks					K3
			CO4:	Predi	ct hur	nan b	ehavi	or in so	ocial	web a	and r	elated of	communi	ties.		K2
			CO5:	Apply	y repre	sentat	ion te	chnique	s for	· visual	izing	social	networks.			K3
Pre	e-requisi	tes	-													
		(3	/2/1 inc	licates	streng	C th of c Pro	O / PO	O Mapp tion) 3-S	oing Stron	<u>.g, 2 – 1</u> s (POs)	Mediu	ım, 1 – `	Weak	CO Ma P	PSO pping	
	COs	(3 PO 1	/2/1 inc PO 2	licates PO 3	streng PO 4	C th of c Pro PO 5	CO / PO correla ogram PO 6	O Mapp tion) 3-5 me Outc PO 7	oing Stron come PO 8	<u>g, 2 – 1</u> s (POs) PO 9	Mediu) PO 10	1 – Tenning (1 – Tenning) 11	Weak PO 12	CO Ma P PSO 1	P/PSO pping SOs PSO	2
	COs CO 1	(3 PO 1 3	/2/1 inc PO 2 2	licates PO 3	streng PO 4 2	C th of c Pro PO 5 2	O / Po correla ogram PO 6 2	O Mapp tion) 3-5 me Outc PO 7 1	oing Stron come PO 8 1	g, 2 – 1 s (POs) PO 9	<u>Mediu</u>) PO 10	1000 11 - 10000 - 10000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000	Weak PO 12 1	CC Ma P PSO 1 2	P/PSO pping SOs PSO	2
	COs CO1 CO2	(3 PO 1 3 3	/2/1 inc PO 2 2 2	licates PO 3 1	streng PO 4 2 2	C th of c Pro 5 2 2	correla ogram PO 6 2	O Mapp tion) 3-5 me Outc PO 7 1	oing Stron come PO 8 1	g, 2 – 1 s (POs) PO 9	Mediu) PO 10	1 – 1 – 1 PO 11	Weak PO 12 1 1	CO Ma P PSO 1 2 2	P/PSO pping SOs PSO 1 1	2
	COs CO1 CO2 CO3	(3 PO 1 3 3 3	/2/1 inc PO 2 2 2 2 2	licates PO 3 1	streng PO 4 2 2 2 2	C th of c Pro 5 2 2 2 2	CO / Pe correla ogram PO 6 2 2 2	O Mapp tion) 3-5 me Outc PO 7 1 1	oing Stron come PO 8 1	g, 2 – 1 s (POs) PO 9	Mediu) PO 10 1	PO 11	Weak PO 12 1 1 1 1	CO Ma P PSO 1 2 2 2 2	Pyping SOs PSO 1 1 1	2
	COs CO1 CO2 CO3 CO4	(3 PO 1 3 3 3 3	/2/1 inc PO 2 2 2 2 2 2 2	PO 3 1	streng PO 4 2 2 2 2 2 2 2 2 2 2 2	C th of c Pro 5 2 2 2 2 2 2	CO / PC correla ogram PO 6 2 2 2	O Mapp tion) 3-5 me Outo PO 7 1 1	bing Stron come PO 8 1 1	g, 2 – 1 s (POs) PO 9	<u>Mediu</u>) PO 10 1	m, 1 – ` PO 11	Weak PO 12 1 1 1 1 1	CC Ma P PSO 1 2 2 2 2 2 2	Pyping SOs PSO 1 1 1 1 1 1	2
	COs CO1 CO2 CO3 CO4 CO5	(3 PO 1 3 3 3 3 3 3 3	/2/1 inc PO 2 2 2 2 2 2 2 2 2	PO 3 1	streng PO 4 2 2 2 2 2 2 2 2	C th of c Pro 5 2 2 2 2 2 2 2 2 2 2	CO / Pe correla ogram PO 6 2 2 2 2 2	O Mapp tion) 3-5 me Outc PO 7 1 1 1 1	bing Stron come PO 8 1 1 1	g, 2 – 1 s (POs) 9	Mediu) PO 10 1 1	PO 11	Weak PO 12 1 1 1 1 1 1 1 1 1	CO Ma P PSO 1 2 2 2 2 2 2 2 2 2 2 2	PSO pping SOs PSO 1 1 1 1 1 1 1 1 1 1 1	2
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Applica	tions of Soc	cial Network Analysis.			
 Unit - 1	T	MODELLING, AGGREGATING AND KNOWLEDGE	Periods	Q	
	L	Network Analysis. MODELLING, AGGREGATING AND KNOWLEDGE REPRESENTATION Periods 9 le in the Semantic Web: Ontology-based knowledge Representation - Ontology languages f socurce Description Framework - Web Ontology Language - Modeling and aggregating soci f-the-art in network data representation - Ontological representation of social individuals oning with social network. Periods 9 EXTRACTION AND MINING COMMUNITIES IN WEB SOCIAL NETWORKS Periods 9 I of Web Community from a Series of Web Archive - Detecting communities in soci on of community - Evaluating communities - Methods for community detection ar ns of community mining algorithms - Tools for detecting communities social network communities - Decentralized online social networks - Multi-Relational characterizatio etwork communities 9 PREDICTING HUMAN BEHAVIOUR AND PRIVACY ISSUES Periods 9 redicting human behaviour for social communities - User data management - Inference at g new human experiences - Context - Awareness - Privacy in online social networks - Trust Trust models based on subjective logic - Trust derivation based on trust comparisons - Attat neasures. 9 visuALIZATION AND APPLICATIONS OF SOCIAL NETWORKS Periods 9 ality - Clustering - Node-Edge Diagrams - Matrix representation - Visualizing online soci social networks with matrix-based representations - Matrix and Node-Link Diagrams - Hybr ications - Cover networks - Community welfare. 9 "Social Networks and the Semantic Web", First Edition, Springer 2007. "Handbook of Social Network Technologies			
Ontolog	y and their	role in the Semantic Web: Ontology-based knowledge Representation -	Ontology langu	ages for	
the Sem	antic Web:	Resource Description Framework - Web Ontology Language - Modelin	g and aggregatir	ig social	
network	data: Stat	e-of-the-art in network data representation - Ontological representation	n of social indiv	iduals -	
Aggrega	ating and re	asoning with social network.			
Unit –	III	EXTRACTION AND MINING COMMUNITIES IN WEB	Periods	9	
		SOCIAL NETWORKS			
Extract	ing evoluti	on of Web Community from a Series of Web Archive - Detecting	communities in	n social	
networ	ks - Defin	ition of community - Evaluating communities - Methods for com	nmunity detect	ion and	
mining	- Applicat	tions of community mining algorithms - Tools for detecting comm	iunities social r	network	
infrastr	uctures and	a communities - Decentralized online social networks - Multi-Rela	itional characte	rization	
of dyna	imic social	DEDICTING HUMAN DEHA VIOUD AND DEIVACY			
Unit –	IV	PREDICTING HUMAN BEHAVIOUR AND PRIVACY	Periods	9	
		ISSUES			
Underst	anding and	predicting human behaviour for social communities - User data mana	agement - Infere	nce and	
Distribu	ition - Enab	ling new human experiences - Context - Awareness - Privacy in online s	ocial networks -	Trust in	
spectrur	n and count	- Trust models based on subjective logic - Trust derivation based on the	ust comparisons	- Attack	
spectru		VISUALIZATION AND APPLICATIONS OF SOCIAL			
Unit –	V	NETWORKS	Periods	9	
Graph f	heory - Ce	ntrality - Clustering - Node-Edge Diagrams - Matrix representation - V	Visualizing onlin	e social	
network	ts. Visualizi	ng social networks with matrix-based representations - Matrix and Node	-Link Diagrams	- Hybrid	
represer	ntations - A	pplications - Cover networks - Community welfare.			
		,	Fotal Periods	45	
Textbo	oks				
1.	Peter Mik	a, "Social Networks and the Semantic Web", First Edition, Springer 200	7.		
2.	Borko Fu	rht, "Handbook of Social Network Technologies and Applications", 1st E	Edition, Springer,	2010.	
2	Guandon	g Xu ,Yanchun Zhang and Lin Li, "Web Mining and Social Networ	rking – Techniq	ues and	
5.	applicatio	ns", First Edition Springer, 2011.		·	
4.	Dion Go	h and Schubert Foo, "Social information Retrieval Systems: Emer	ging Technolog	ies and	
Referen	Application	ons for searching the web Effectively, 101 Global Shippet, 2008.			
KUUUU	Mov Ch	violiar Christing Julian and Chantel Soule Durnur "Calleborative	and Social Info	rmation	
1.	Retrieval	and Access: Techniques for Improved user Modeling" IGI Global Snipp	et 2009	mation	
2.	John G. E	Breslin, Alexander Passant and Stefan Decker, "The Social Semantic Web	", Springer, 2009).	
2	Stanley V	Vasserman, "Social Network Analysis Methods and Applications", Cam	bridge Universit	y Press,	
3.	June 2012	2.	C		
E-Reso	urces				
1.	Social N	etwork Analysis and Mining Home (springer.com)			
2.	Social ne	etwork analysis - Wikipedia			
3.	Social ne	etwork analysis: An approach and technique for the study of inform	ation exchange	_	
4.	SNA-To	olkit.pdf (digitalpromise.org)			
5	Online S	ocial Network Analysis (degruyter.com)			
Э.	Unite of				

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Programme	B.E.	Programm	e code	1	101	Regulati	ion		2019
Department	Computer Science and Engi	neering		Ser	nester				-
Course Code	Course name		Period	s per	week	Credit	Max	ximum l	Marks
LIIOCSE20	Total Quality Managar	nont	L	Т	Р	C	CA	ESE	Total
UI9CSE20		liciit	3	0	0	3	50	50	100
Course Objective	 Facilitate the unde Understand the phi Determine the influence. 	rstanding of (ilosophy and uence of the o	Quality N core valu customer	Ianagues of and t	gement j total qu he impa	principles uality man act of qual	and pro- agemen ity on e	cess. t. conomic	KI
	CO1: Outline the dimens	ions and barr	iers rega	ding	with qu	ality.			K2
Course Outcome	CO2: Evaluate the princip can be applied within quality	les of quality ty manageme	manager ent syster	nent an.	and exp	lain how t	hese pri	nciples	K2
	CO3: Demonstrate tools u	tilization for	quality in	nprov	vement.				K3
	CO4: Explain the various	types of tech	niques us	ed to	measur	e quality.			K2
	CO5: Apply various qualit	y system and	l auditing	on ir	npleme	ntation of	TQM.		K3
Pre-requisites	-								
	CO/1	PO Mapping					CO/PS	SO Mani	ning

		(3/2/1 i	ndicate	s stren	gth of o	correla	tion) 3	-Strong	g, 2 – N	Iedium,	1 – We	eak	CO/PSO	Mapping
		Programme Outcomes (POs)									PS	Os		
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	3			2		2			3		1	
CO 2	3	3	3						3		3			2
CO 3	3	3	3								3			2
CO 4	3	3	3			3			3		3			
CO 5	3	3	3								3			

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus

Unit – I

INTRODUCTION

9

Introduc	tion - Need	for quality - Evolution of quality - Definitions of quality - Dimension	is of product and	l service
quality -	- Basic cor Ouality sta	tements - Customer focus - Customer orientation. Customer satisfactio	and Crosby - Ba n. Customer cor	rriers to nplaints.
Custome	er retention	- Costs of quality.		
Unit - I	Ι	TQM PRINCIPLES	Periods	9
Leaders	hip - Strate	egic quality planning, Quality Councils - Employee involvement - Mo	tivation, Empov	verment,
improve	nd Teamw ment - PDO	ork, Quality circles Recognition and Reward, Performance appraisa	ll - Continuous	process
Unit – I		TOM TOOLS AND TECHNIQUES I	Periods	<u>9</u>
The seve	en tradition	al tools of quality - New management tools - Six sigma: Concepts, Meth	nodology, applica	ations to
manufac	turing, ser	vice sector including IT - Bench marking - Reason to bench mark, B	Bench marking p	rocess -
FMEA -	Stages, Ty	pes.	Devie de	
Unit –	$\frac{1}{C^{1}}$	TQM TOOLS AND TECHNIQUES II	Periods	9
quality 1	Charts - P oss functio	n - TPM - Concepts, improvement needs - Performance measures.	pment (QFD) -	Taguchi
Unit – Y	V	QUALITY SYSTEMS	Periods	9
Need for	r ISO 9000	- ISO 9001-2008 Quality System - Elements, Documentation, Quality A	uditing - QS 900	00 - ISO
14000 -	Concepts, l	Requirements and Benefits - TQM Implementation in manufacturing and	service sectors.	45
Textbo	oks		Total Perious	45
TEXIDO	James R	Evans and William M. Lindsay. "The Management and Control of Ou	ality" 8th Editi	on First
1.	Indian Ed	ition, Cengage Learning, 2012.	anty, our Luiu	JII, THSt
2.	Joel E. Ro	ss, Total Quality Management -Text, Cases, and Readings, Third Edition, Taylor	and Francis, 2017	7
3.	Janakiran Ltd., 2006	aan. B and Gopal .R.K., "Total Quality Management - Text and Cases", P 5.	Prentice Hall (Ind	ia) Pvt.
4.	Besterfiel Urdhware	d Dale H., BesterfieldCarol ,Besterfield Glen H., Besterfield Mary, sheRashmi, Total Quality Management (TOM) 5e by Pearson, Pearson	Urdhwareshe	Hemant, October
	2018			
Referen	ces			
1.	Vikrant P	rasad, Quality Management and Control, Bioscientific Publisher, 2021		
2.	Suganthi.	L and Anand Samuel, "Total Quality Management", Prentice Hall (India)	Pvt. Ltd., 2006.	
3.	M.P.Poor	ia, Total Quality Management, Khanna Publishing; First edition (1 May	2017)	
4.	Logotheti Pvt. Ltd.	s N., "Managing for Total Quality – From Deming to Taguchi and SPC 1996.	", Prentice Hall	of India
E-Resou	irces			
1.	https://w	ww.managementstudyguide.com/total-quality-management.htm		
2.	https://as	q.org/quality-resources/total-quality-management		
3.	https://w	ww.geektonight.com/total-quality-management-pdf/		
4.	https://w	ww.educba.com/total-quality-management-notes/		
5.	https://w	ww.managementstudyguide.com/total-quality-management.htm		

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Programme	B.E.	Programm	e code	1	101	Regulati	ion		2019
Department	Computer Science and Eng	ineering		Ser	nester				
Course Code	Course name		Period	s per	week	Credit	Max	ximum]	Marks
U10CSE21	Agila Softwara Davalar	mont	L	Т	Р	С	CA	ESE	Total
UI9CSE21	Agile Software Develop	Jillelit	3	0	0	3	50	50	100
Course Objective	 The student should be ma Learn the background Apply the fundamenta project of interest and Successfully manage a Select and use both cla Understand and be al project management. 	and origins and origins al principles relevance. a project in t assical and n ble to integ	of variou and pra he busin nodern p rate both	is ag ictice ess e rojec h the	ile con es of ag nviron et mana e custo	cepts and gile softw ment. gement to mer and	method vare dev pols. the qu	dologies velopme ality to	s. ent on a ols into
Course	CO1: Explain the backg software development	round and dr	iving for	ces fo	, or taking	g an Agile	approac	h to	KL K2
Outcome	CO2: Recognize the busi	ness value of	adopting	Agil	e appro	aches			K2
	CO3: Drive development	with unit tes	ts using T	Fest I	Driven I	Developme	ent		K3
	CO4: Apply design princ	ciples and ref	actoring	to ac	hieve A	Agility			K2
	CO5: Deploy automated	build tools, v	ersion co	ntrol	and cor	ntinuous in	itegratio	n	K4
Pre-requisites	-								

		(3/2/1 i	ndicate	s stren	gth of o	CO / PO	D Map tion) 3-	ping -Strong	$y_{2}, 2 - N_{2}$	Iedium,	1 – We	eak	CO/PSO	Mapping
					P	rogram	me Ou	tcomes	(POs)				PS	Os
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	2	1	1	3	1	-	1	2	1	1	3	3	2
CO 2	3	2	1	2	3	1	1	2	2	1	2	3	1	2
CO 3	3	1	1	2	3	1	-	1	2	1	1	3	2	2
CO 4	3	2	1	2	3	1	1	2	2	1	2	3	1	2
CO 5	3	2	1	2	3	1	-	2	2	1	2	3	3	2
Course A	ssessn	nent N	letho	ds										

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

The Genesis of Agile, Introduction and background, Agile Manifesto and Principles, Overview of Scrum, Extreme Programming, Feature Driven development, Lean Software Development, Agile project management, Design and development practices in Agile project, Test Driven Development, Continuous Integration, Refactoring, Pair Programming, Simple Design, User Stories, Agile Testing, Agile Tools. 9 Introduction to Scrum, Project phases, Agile Estimation, Planning game, Product backlog, Sprint backlog, Iteration 9 Janning, User story definition, Characteristics and content of user stories, Acceptance tests and Verifying stories, Project velocity, Burn down chart, Sprint planning and retrospective, Daily scrum, Scrum roles – Product Owner, Scrum Master, Scrum Team, Serum case study, Tools for Agile project management. 9 The Agile lifecycle and its impact on testing. Test-Driven Development (TDD), xUnit framework and tools for TDD, Testing user stories - acceptance tests and scenarios, Planning and managing testing cycle, Exploratory testing, Risk based testing, Regression tests, Test Automation, Tools to support the Agile Design. 9 Agile design practices, Role of design Principles including Single Responsibility Principle, Open Closed Principle, Liskov Substitution Principle, Interface Segregation Principles, Dependency Inversion Principle, in Agile Design, Need and significance of Refactoring, Refactoring Techniques, Continuous Integration, Automated build tools, Version control. 9 Unit - V NDUSTRY TRENDS Periods 9 Market scenario and adoption of Agile Agile ALM, Roles i	Uni	it – I	FUNDAMENTALS OF AGILE	Periods	9
Programming, Feature Driven development, Lean Software Development, Agile project management, Design and development practices in Agile projects. Test Driven Development, Continuous Integration, Refactoring, Pair Programming, Simple Design, User Stories, Agile Testing, Agile Tools. Unit - II AGILE SCRUM FRAMEWORK Periods 9 Introduction to Scrum, Project phases, Agile Testing, Agile Tools. 9 Agile design practices, Role of design Principles, Dependency Inversion Principle, Open Closed Principle, Liskov Substitution Principle, Interface Segregation Principles, Dependency Inversion Principle, Inderface Segregation Principles, Indegregation, Automate build tools, Version control. 9 </td <td>The Ger</td> <td>nesis of Ag</td> <td>ile, Introduction and background, Agile Manifesto and Principles, Over</td> <td>view of Scrum,</td> <td>Extreme</td>	The Ger	nesis of Ag	ile, Introduction and background, Agile Manifesto and Principles, Over	view of Scrum,	Extreme
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 Ken Schawber, Mike Beedle, "Agile Software Development with Scrum", Pearson Publications, 2008. Robert C. Martin, "Agile Software Development, Principles, Patterns and Practices", Prentice Hall Publications, 2002. References Lisa Crispin, Janet Gregory, "Agile Testing: A Practical Guide for Testers and Agile Teams", Addison Wesley Publications, 2008. Alistair Cockburn, "Agile Software Development: The Cooperative Game", Addison Wesley Publications, 2006. Mike Cohn, "User Stories Applied: For Agile Software", Addison Wesley Publications, 2004. E-Resources https://www.tutorialspoint.com/agile.html https://www.tutorialspoint.com/scrum/index.htm https://www.edureka.co/blog/what-is-agile-testing/ 	Textbo	oks			
2. Robert C. Martin, "Agile Software Development, Principles, Patterns and Practices", Prentice Hall Publications, 2002. References 1. Lisa Crispin, Janet Gregory, "Agile Testing: A Practical Guide for Testers and Agile Teams", Addison Wesley Publications, 2008. 2. Alistair Cockburn, "Agile Software Development: The Cooperative Game", Addison Wesley Publications, 2006. 3. Mike Cohn, "User Stories Applied: For Agile Software", Addison Wesley Publications, 2004. E-Resources 1. https://martinfowler.com/agile.html 2. https://www.tutorialspoint.com/agile/index.htm 3. https://www.tutorialspoint.com/scrum/index.htm 4. https://www.edureka.co/blog/what-is-agile-testing/	1.	Ken Scha	wber, Mike Beedle, "Agile Software Development with Scrum", Pearson	Publications, 20	008.
Publications, 2002. References 1. Lisa Crispin, Janet Gregory, "Agile Testing: A Practical Guide for Testers and Agile Teams", Addison Wesley Publications, 2008. 2. Alistair Cockburn, "Agile Software Development: The Cooperative Game", Addison Wesley Publications, 2006. 3. Mike Cohn, "User Stories Applied: For Agile Software", Addison Wesley Publications, 2004. E-Resources 1. https://martinfowler.com/agile.html 2. https://www.tutorialspoint.com/agile/index.htm 3. https://www.tutorialspoint.com/scrum/index.htm 4. https://www.edureka.co/blog/what-is-agile-testing/	2.	Robert C	. Martin, "Agile Software Development, Principles, Patterns and P	ractices", Prent	ice Hall
1. Lisa Crispin, Janet Gregory, "Agile Testing: A Practical Guide for Testers and Agile Teams", Addison Wesley Publications, 2008. 2. Alistair Cockburn, "Agile Software Development: The Cooperative Game", Addison Wesley Publications, 2006. 3. Mike Cohn, "User Stories Applied: For Agile Software", Addison Wesley Publications, 2004. E-Resources I. 1. http://martinfowler.com/agile.html 2. https://www.tutorialspoint.com/agile/index.htm 3. https://www.tutorialspoint.com/scrum/index.htm	Referen	Publicatio	ns, 2002.		
1. Discrete one gory, many restrict restring. In Proceeder of Pesters and Agne		Lisa Crisr	nin Janet Gregory "Agile Testing: A Practical Guide for Testers and Ag	ile Teams" Add	ison
2. Alistair Cockburn, "Agile Software Development: The Cooperative Game", Addison Wesley Publications, 2006. 3. Mike Cohn, "User Stories Applied: For Agile Software", Addison Wesley Publications, 2004. E-Resources 1. http://martinfowler.com/agile.html 2. https://www.tutorialspoint.com/agile/index.htm 3. https://www.tutorialspoint.com/scrum/index.htm 4. https://www.edureka.co/blog/what-is-agile-testing/	1.	Wesley P	ublications, 2008.		15011
3. Mike Cohn, "User Stories Applied: For Agile Software", Addison Wesley Publications, 2004. E-Resources 1. http://martinfowler.com/agile.html 2. https://www.tutorialspoint.com/agile/index.htm 3. https://www.tutorialspoint.com/scrum/index.htm 4. https://www.edureka.co/blog/what-is-agile-testing/	2.	Alistair C 2006.	ockburn, "Agile Software Development: The Cooperative Game", Addis	son Wesley Publ	ications,
E-Resources 1. http://martinfowler.com/agile.html 2. https://www.tutorialspoint.com/agile/index.htm 3. https://www.tutorialspoint.com/scrum/index.htm 4. https://www.edureka.co/blog/what-is-agile-testing/	3.	Mike Coh	n, "User Stories Applied: For Agile Software", Addison Wesley Publicat	tions, 2004.	
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3. https://www.tutorialspoint.com/scrum/index.htm 4. https://www.edureka.co/blog/what-is-agile-testing/	2.	https://w	ww.tutorialspoint.com/agile/index.htm		
4. <u>https://www.edureka.co/blog/what-is-agile-testing/</u>	3.	https://w	ww.tutorialspoint.com/scrum/index.htm		
	4.	https://w	ww.edureka.co/blog/what-is-agile-testing/		

	VIVEKANANDHA COL (Autonomous Institution At	LEGE C ffiliated to Tiruchen	DF ENG Anna Unigode – 63'	INE versity 7 205	ERIN(y, Chenr	G FOR W ai) Elayam	/ OME l palayam	N ,	Managament Spatien Spa
Programme	B.E. Pr	rogramm	e code	1	l 01	Regulat	ion	1	2019
Department	Computer Science and Enginee	ering		Ser	nester				-
Course Code	Course name		Periods	s per	week	Credit	Max	kimum N	Marks
U19CSE22	Fundamentals of Deen Le	arning	L	Т	Р	С	CA	ESE	Total
	T undamentals of Deep Le	arning	3	0	0	3	50	50	100
	The student should be made	to,							
	• Understand the conte	ext of neu	ral netwo	rks a	nd deep	learning			
Course	• Identify how to use a	a neural ne	etwork		ľ	C			
Objective	• Understand the data	needs of c	deep learr	ning					
	• Have a working kno	wledge of	neural ne	etwor	ks and	deep learn	ing		
	• Discover the parame	eters for ne	eural netv	vorks			0		
	At the end of the course, the s	tudent sho	ould be at	ole to	,				KL
	CO1: apply the concepts of m	hachine lea	arning alg	gorith	ms to s	olve simpl	e proble	ems	K2
Course	CO2: solve simple problems	using the o	concepts	of de	ep neur	al network	S		K2
Outcome	CO3: use different regularizat	tion metho	ods for De	eep le	earning				K3
	CO4: exemplify the concepts related problems	of CNN n	nodels an	d app	oly it fo	r solving c	ompute	r vision	K2
	CO5:explicate the concepts	of RNN	M models	and	apply	it for s	olving	Natural	К3
	Language problems								IX.5
Pre-requisites	-								
		0 Monrin	a						

		(3/2/1 i	ndicate	s stren	gth of o	correla	O Map tion) 3-	ping -Strong	g, 2 – N	Iedium,	1 – We	eak	CO/PSO	Mapping
					P	rogram	me Ou	tcomes	s (POs)				PS	Os
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	2	1	3	2	1	1	1	-	1	3	1	2
CO 2	3	3	2	1	3	2	1	1	1	-	1	3	1	2
CO 3	3	2	1	2	3	1	1	1	1	-	1	3	2	2
CO 4	3	1	1	2	3	1	1	-	1	-	-	3	2	2
CO 5	3	2	1	2	3	1	1	-	1	-	-	3	2	2

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Unit –	Ι	Overview of Machine Learning	Periods	9											
Learning	g Algorithn	ns - Capacity, Overfitting and Underfitting - Hyperparameters and Valid	dation Sets – Est	imators,											
Bias an	d Variance	e - Bayesian Estimates - Maximum Likelihood Estimation -Stochas	stic Gradient De	escent –											
Building	g a Machine	e Learning Algorithm – Challenges Motivating Deep Learning.													
Unit - l	Ι	Deep Feed forward Networks	Periods	9											
Deep Fe	eed forwar	d Networks: Learning XOR – Gradient-Based Learning – Hidden Units	- Architecture I	Design –											
Back-Pr	opagation a	nd Other Differentiation Algorithms.													
Unit –	III	Regularization for Deep Learning	Periods	9											
Paramet	er Norm Po	enalties - Dataset Augmentation - Noise Robustness - Semi-Supervised	d Learning – Mu	ılti-Task											
Learning	g – Early S	topping - Parameter Tying and Parameter Sharing - Bagging and Oth	er Ensemble Me	ethods –											
Dropout	t – Adversa	rial Training.													
Unit –	IV	Sequence Modeling: Recurrent and Recursive Nets	Periods	9											
Recurrent	nt Neural N	letworks – Bidirectional RNNs – Encoder-Decoder Sequence-to-Sequen	ce Architectures	– Deep											
Recurre	nt Network	s – Recursive Neural Networks – The Long Short-Term Memory and othe	er Gated RNNs.												
Unit –	V	Convolutional Networks	Periods	9											
The Co	nvolution (Departion – Motivation – Pooling – Variants of the Basic Convolution	n Function – St	ructured											
Outputs	Efficient (onvolution Algorithms													
Suput	Linelent C			47											
			Fotal Periods	45											
Textbo	oks		Fotal Periods	45											
Textbo	oks Ian Good	fellow, YoshuaBengio, and Aaron Courvill, "Deep Learning", MIT Press,	Fotal Periods , USA, 2016.	45											
Textbo 1. 2.	oks Ian Good: Josh Patte Series, 20	fellow, YoshuaBengio, and Aaron Courvill, "Deep Learning", MIT Press, erson and Adam Gibson, "Deep Learning – A Practitioner"s Approac 117.	Fotal Periods , USA, 2016.	45 D"Reilly											
Textbo	oks Ian Good: Josh Patte Series, 20 Ices	fellow, YoshuaBengio, and Aaron Courvill, "Deep Learning", MIT Press, erson and Adam Gibson, "Deep Learning – A Practitioner"s Approac 117.	Total Periods , USA, 2016h", 1 Edition, C	45 D"Reilly											
Textbo 1. 2. Referent 1.	oks Ian Good: Josh Patt Series, 20 Ices Indra den	fellow, YoshuaBengio, and Aaron Courvill, "Deep Learning", MIT Press, erson and Adam Gibson, "Deep Learning – A Practitioner"s Approac 17. Bakker, "Python Deep Learning Cookbook", 1 Edition, Packt Publishing	Fotal Periods , USA, 2016. h", 1 Edition, C	45 D"Reilly											
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C		V	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205Image: Constraint of the second												Minoperient Sottern Sotterns Sotterns Sotterns Sotterns
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Pro	gramn	ne B .	E.]	Program	mme	code	1	01	Regulat	ion		2019
Dep	oartme	nt Co	ompute	r Scien	ice and	Engin	eering						Semest	er	-
Course	e Code			Co	urse n	ame			Period	ls per	week	Credit	Max	timum I	Marks
U19C	SE23	In	forma	ation S	Secur	ity		_	L 2	T	P	C2	CA 50	ESE	Total
Cou Obje	ırse ctive	1	The stude • • • • • • • • • •	dent sh know th know th become know th	nould b he lega he aspo e award he tech	be mad al, ethic ects of e of va anologi	e to, cal and risk ma rious st ical asp	profe anager andar ects o	ssional ment ds in th f Infor	issues is area mation	in Info Securi	rmation S	ecurity		
		At	the en	nd of th	ne cour	se, the	studen	t shou	ıld be a	ble to,					KL
~		C	01: 0	utline	the bas	sic mo	dels of i	inforn	nation	system	•				K2
Cou	irse	C	D2: Ide	entify	the leg	al, ethi	ical & p	orofes	sional i	ssues i	n infor	mation see	curity.		K2
Outc	come	C	D3: Ar	nalyses	the ris	sk mar	agemei	nt in p	providi	ng secu	ırity.				K3
			04: Int	terpret ure	the va	rious p	olices,	stand	ards an	d prac	tices for	r designin	g securit	y	K2
	CO5: Use analysis tools, technologies and control devices for security implementation K												K3		
Pre-req	luisite	s -													
		(3/2/1 i	ndicate	es stren	(gth of	C O / P correla	O Mapp tion) 3-	p ing Strong	g, 2 – N	ledium	, 1 − W	eak	CO/PS	O Mapp	oing
					P	rogram	me Out	comes	s (POs)					PSOs	
COs	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	РО 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PS	0 2
CO 1	2					2	2						2		2
CO 2	2					2	2					2	2		2
CO 3	2														2
CO 4	2					2	3								2
CO 4 CO 5	2 2				3	2 2	3 3					2			2 2
CO 4 CO 5 Course	2 2 Assess	sment	Metho	ods	3	2 2	3 3					2			2
CO 4 CO 5 Course 2 Direct 1. 2. 3. Indirect	2 2 Assess Contin Assign End-S	ment nuous nment: emest	Metho Assess s / Qui er exa	ods sment z / Se minati	3 Test I minar	2 2 , II &	3 3					2			2

Conten	t of the sy	llabus									
Unit –	I	INTRODUCTION	Periods	9							
History, Informa	definition tion System	- Critical Characteristics of Information, NSTISSC Security Mod , Securing the Components, Balancing Security and Access, The SDLC,	el, Components The Security SI	s of an DLC.							
Unit - I	Ι	SECURITY INVESTIGATION	Periods	9							
Need for	r Security,	Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues									
Unit –	III	SECURITY ANALYSIS	Periods	9							
Risk Ma	Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk.										
Unit –	IV	SECURITY POLICIES	Periods	9							
Blueprir VISA In	nt for Securational	rity, Information Security Policy, Standards and Practices, ISO 17799/ Security Model, Design of Security Architecture, Planning for Continuit	BS 7799, NIST y.	Models,							
Unit –	V	SECURITY TECHNOLOGY	Periods	s 9							
IDS, Sc Personne	canning an el.	d Analysis Tools, Cryptography, Access Control Devices, Physical	Security, Secu	rity and							
		,	Fotal Periods	45							
Textbo	oks										
1.	Michael	E Whitman and Herbert J Mattord, "Principles of Informat	tion Security"	, Vikas							
	Publishi	ng House, New Delhi, 2017		th							
2.	Micki k	Krause, Harold F. Tipton, "Handbook of Information Securi	ty Manageme	nt", 6 ^m							
D 6	edition,2	019.									
Referen	nces										
1.	Stuart M	c Clure, Joel Scrambray, George Kurtz, "Hacking Exposed", Tata I	McGraw Hill, 2	2013							
2.	Matt Bis	hop, "Computer Security Art and Science", Pearson/PHI, 2015									
3.	Sanil Na	dkarni"Fundamentals of Information Security"1st edition, 2020									
E-Resou	urces										
1.	https://ww	vw.utc.edu/sites/default/files/2021-06/3600									
2.	https://ww	vw.geeksforgeeks.org/principle-of-information-system-security/									
3.	https://ww	vw.coursehero.com/file/33632699/									
4.	https://lec	turenotes.in/subject/453/information-security									

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205											
Programme	B.E.	Programm	e code]	101	Regulati	ion		2019			
Department	Computer Science and Eng	ineering		Ser	nester				-			
Course Code	Course name		Period	s per	week	Credit	Max	ximum	Marks			
U10CSE24	Knowledge Menegeme	nt	L	Т	Р	C	CA	ESE	Total			
U19C5E24	Knowledge Manageme	111	3	0	0	3	50	50	100			
Course Objective	The student should be ma •Study the basic concept •Learn the life cycle evon •Study the basic concept •Be familiar with tools. • Learn the Knowledge	 The student should be made to, Study the basic concepts of knowledge management. Learn the life cycle evolution of knowledge management. Study the basic concepts of Expert Knowledge. Be familiar with tools. Learn the Knowledge Transfer and Sharing of Knowledge Management. 										
	At the end of the course, the	ne student sho	ould be at	ole to	,				KL			
Course	CO1: Implement knowled	lge managem	ent conce	epts, i	in all as	pect.			K2			
Outcome	CO2: Demonstrate the know	owledge man	agement	life c	ycle.				K2			
Outcome	CO3: Compute the fuzzy l	ogic in desig	ning expe	ert sy	stem.				K3			
	CO4: Analyze the knowledge management system using tools & testing techniques. K2											
	CO5: Infer the knowledge	D5: Infer the knowledge transfer & shearing in knowledge management application. K3										
Pre-requisites	-											

		CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 – Weak												CO/PSO Mapping		
					Pı	rogram	me Ou	tcomes	s (POs)				PS	Os		
COs	PO 1	PO 2	O PO III PO 2 3 4 5 6 7 8 9 10 11 PO								PO 12	PSO 1	PSO 2			
CO 1	3	2	1						3		2		3	2		
CO 2	3	3	2	1	1				2				3	1		
CO 3	2	3	3			2						2	2	2		
CO 4	3	3	2		3				2			2	3	3		
CO 5	3	3 2 2 1 1 1										2	2	2		
Course A	Assess	ment	Meth	ods												

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignments / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Conten	t of the sy	llabus		
Unit –	I	KNOWLEDGE MANAGEMENT	Periods	9
KM My	ths – KM I	ife Cycle – Understanding Knowledge – Knowledge, intelligence – Expe	erience – Commo	on Sense
– Cognit	tion and K	M – Types of Knowledge – Expert Knowledge – Human Thinking and Le	earning.	
Unit - I	Ι	KNOWLEDGE MANAGEMENT SYSTEM LIFE CYCLE	Periods	9
Challeng and Kn Architec	ges in Buil lowledge	ding KM Systems – Conventional vs KM System Life Cycle (KMSLS Architecture – Nonaka's Model of Knowledge Creation and Tran) – Knowledge (sformation. Kn	Creation owledge
Unit –	III	KNOWLEDGE CAPTURING	Periods	9
Evaluati	ng the Exp	ert – Developing a Relationship with Experts – Fuzzy Reasoning and the	Quality of Knov	vledge –
Knowled	dge Captur	ing Techniques, Brain Storming – Protocol Analysis – Consensus Decis	sion Making – R	epertory
Grid-Co	oncept Map	ping – Blackboarding.	-	
Unit –	IV	KNOWLEDGE CONVERSION AND TESTING	Periods	9
Modes of	of Knowle	dge Conversion - Codification Tools and Procedures - Knowledge I	Developer's Skil	1 Sets –
System '	Testing and	l Deployment – Knowledge Testing – Approaches to Logical Testing, Us	ser Acceptance T	esting –
KM Sys	tem Deploy	yment Issues – User Training – Post implementation.		
Unit – `	V	KNOWLEDGE TRANSFER AND SHARING	Periods	9
Transfer	Methods -	- Role of the Internet – Knowledge Transfer in e-world – KM System T	ools – Neural Ne	etwork –
Associat	tion Rules -	- Classification Trees – Data Mining and Business Intelligence – Decisio	n Making Archit	tecture –
Data Ma	anagement	- Knowledge Management Protocols – Managing Knowledge Workers.		45
			I otal Periods	45
Textbo	oks			
1.	Elias. M.	Award & Hassan M. Ghaziri "Knowledge Management" Pearson, Educa	ation 2003.	
2	Guus Sch	nreiber, Hans Akkermans, Anjo Anjewierden, Robert de Hoog, Nigel S	Shadbolt, Walter	Van de
۷.	Velde and	Bob Wielinga, "Knowledge Engineering and Management", Universitie	es Press, 2001.	
Referen	ices			
1.	C.W. Ho Systems,	lsapple, "Handbooks on Knowledge Management", International Har Vol 1 and 2, 2004	ndbooks on Info	ormation
	Ronald r	naiser "Information and Communication Technologies for Knowledge	dge Manageme	nt" 3rd
2.	Edition,2	2007		
E-Resou	urces			
1.	Knowled	ge Management - Course (nptel.ac.in)		
2.	www.cs.u	nibo.it/~gaspari/www/teaching/slides_KM2.pdf		
3.	What is	Knowledge Management? The 2022 Guide Guru (getguru.com)		

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Pro	gramm	ne l	B.E.]	Prograr	nme	code	1	.01	Regulat	ion		2019
Dep	artmei	nt	Comput	er Scie	ence a	nd Eng	gineerir	ng		Sen	nester				-
Course	Code			Co	urse n	ame			Period	ls per	week	Credit	Max	kimum I	Marks
U19C	SE25		Wireles	s Sens	sor No	etwor	ks		L 3	T 0	P 0	C 3	CA 50	ESE 50	Total
Course ObjectiveThe student should be made to, • learn basic concepts of Wireless sensor networks • Familiar with architecture and protocols used in Wireless sensor networks. • Provide knowledge of deployment and security issued of Wireless sensor networks. • Study the basic concepts Energy management • Provide knowledge of operating system for Wireless sensor networksCourse OutcomeAt the end of the course, the student should be able to, CO1:explain the fundamentals of wireless sensor networks.KiCourse OutcomeCO2:demonstrate various routing protocols for gathering information in Wireless sensor networks.KiCod:summarize various challenges, attacks and countermeasures for attacks in wireless sensor networks.KiPre-requisites-													rks. KL K2 K2 K3 K2 K3 K3		
		(2/2/1	lindiaata	a atuan	(ath of		O Mapp	oing	~ 2 \	(a din m	1 W	a a la	CO/PS	SO Map	ping
	(3/2/1	maicate	es streng	gui oi P	rogram	$\frac{1000}{100} 3-3$	come	g, 2 - N s (POs)	Tealun	1, 1 - w	еак		PSOs	
COs	PO	PO) PO	PO	PO		PO	PO	PO	PO	PO	DQ 44	DCO		0.0
	1	2	3	4	5	6	7	8	9	10	11	PO 12	PSO 1	PS	02
CO 1	2	1											2		3
CO 2	3	2		1	1								2		2
CO 3	3	2		1	1								2		3
CO 4	2	1											2		2
CO 5	2	1												2	
Course I Direct 1. 2. 3. Indirect 1.	Direct 1. Continuous Assessment Test I, II & III 2. Assignments / Quiz / Seminar 3. End-Semester examinations Indirect 1. Course - end survey														

Conten	t of the sy	llabus										
Unit –	I	Wireless Sensor Networks Architecture	Periods	9								
Sensors and WS Archited ZigBee	– Sensor N N –Requir cture: Introc – 6LoWPA	Jode Architecture – Sensor Network Architecture – Mote Technology – ements of a WSN – Challenges for a WSN – WSN Applications – W luction – Network Protocol Stack – Communication Standards – IEEE 8 N.	Comparison of 1 ireless Sensor N 02.11 – IEEE 80	MANET letworks 02.15.4 –								
Unit - I	I	Information Gathering	Periods	9								
Introduc Hierarch Location Aggrega	Introduction – Routing – Flat-based Routing Algorithms – Sensor Protocols for Information Negotiation (SPIN) – Hierarchical Routing Algorithms – LEACH Routing Protocol – Information Gathering Based on Geographic Locations – Geographical Routing – Greedy Perimeter Stateless Routing – Landmark-based Routing – Data Aggregation – Content-based Naming.											
Unit –	III	Energy Management in WSN	Periods	9								
Introduc – Async Protocol Location	ction – Duty chronous S ls – Data-c n-based Ro	 V Cycling – Independent Strategies – Dependent Strategies – Independent chemes – TDMA-based MAC Protocols – Contention-based MAC Pr Iriven Approaches – Energy-aware Routing Protocols – Hierarchical E uting – Data Aggregation-based Routing. 	Sleep/Wakeup S otocols – Hybr Energy-aware Ro	Schemes id MAC outing –								
Unit –	IV	Security in WSN	Periods	9								
Introduc Routing	tion – Cha in WSNs -	llenges in WSN – Attacks in WSN – Protection against Attacks – Ker- Attacks on Routing Protocols – Countermeasures for Attacks – Intrusion	y Management - Detection in WS	- Secure SN.								
Unit –	V	Operating Systems for WSNs	Periods	s 9								
Introduc	ction – Arcl	nitecture – Execution Model – Scheduling – Power Management – Com	munication – Ca	se Study								
on Popu	lar Operati	ng Systems. Programming WSNs – Introduction – TinyOS – Contiki- Car	stalia – NS-3.	45								
Toutho	alra		Total Periods	45								
Textbo	UKS Nondini I	Authorize Sermiethe Neegy & Serbani Poy "Puilding Wireless Sensor	Natworks Theor	ratical &								
1.	Practical	Perspectives", 3rd Edition, CRC Press, Taylor & Francis Group, 2016.	Inetworks Theor									
2.	HolgerKa Sons 200	rl& Andreas Willig, "Protocol and Architecture for Wireless Sensor No	etworks", John V	Wiley &								
Referen	ices											
1	KazemSo	hraby, Daniel Minoli & TaiebZnati, "Wireless Sensor Networks Tec	chnology, Protoc	cols and								
1.	Applicati	ons", John Wiley &Sons, 2007										
2.	Edgar H. CRC Pres	Callaway, Jr. and Edgar H. Callaway, "Wireless Sensor Networks: Arch ss, August 2003,	itectures and Pro	otocols,"								
E-Reso	urces											
1.	https://ww	vw.coursera.org/lecture/internet-of-things-history/sensor-networks-n-to-1	-iOmzK									
2.	https://ww	vw.geeksforgeeks.org/wireless-sensor-network-wsn/										
3.	https://ww	vw.tutorialspoint.com/what-are-wireless-sensor-networks										
4.	https://ww	ww.electronicshub.org/wireless-sensor-networks-wsn/										
5.	https://ww	ww.elprocus.com/architecture-of-wireless-sensor-network-and-application	ns/									

	VIVEKANA (Autonomous)	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205 Image: Control of Control												
Programme	B.E.		Prog	gramme	e Code	101	Regulati	on	2	2019				
Department	Computer Sci	ence and Engi	neering	5			Semes	er		-				
Course Code	Course	Name	Perio	ds Per	Week	Credit	Ma	kimu	ım Ma	ırks				
Course Coue	Course	Name	L	Т	Р	С	CA	E	ESE	Total				
U19CSE26	E-Commerce		3	0	0	3	50	4	50	100				
Course Objective	The Main Obje Variou Underl How to E-Payr Compa At the end of th CO1: Outline environment	ctive of the cou s e-commerce l ying telecomm o plan and exec nent and Secur re B2B and B2 e course, the stu- the compon	urse is t busines unicatio ute e-co ity in E- C E-Co dent sho ents &	o s mode on netwo ommerce oummerce ould be z roles	ls vork, ha ce proje herce ce strate able to s of e	erdware, a ects egies, incl , lectronic	nd softwar uding mark commerce	e tec et se K	hnolog egmen Knowle	gies; tation edge level K2				
Course Outcome	CO2: Explain	the E-commerc	e busin	ess mo	del]	K2				
	CO3: Classify	the various sup	ply cha	in man	ageme	nt techniq	ues]	K3				
	CO4: Analyze	to apply.]	K4									
	CO5: Indentify how security is provided in the E-commerce K3													
Pre-requisites	-							•						

	CO / PO Mapping (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak													O 1g
COs		Programme Outcomes (POs)												
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2
CO 1	3	3	3	1								1	3	2
CO 2	3	3	3	1								1	2	3
CO 3	3	3	2	3								2	3	3
CO 4	3	3 3 3 2 3											3	2
CO 5	3	3 3 3 2											3	2

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Content	of the sy	llabus		
Unit	– I	INTRODUCTION	Periods	9
E-Comm	erce: O	verview -Definitions- Advantages & Disadvantages - Threa	ts of E – Comr	nerce, Managerial
Prospecti	ive, Rul	es & Regulations For Controlling E – Commerce, Cyber l	Laws. Relations	ship Between E –
Commer	ce & Ne	tworking, Different Types of Networking For E - Commen	ce, Internet, In	tranet & Extranet,
EDI Syst	ems. W	ireless Application Protocol-Infrastructure Requirement For	E – Commerce	
Unit	- II	BUSINESS MODELS	Periods	9
Business	Models	of e – commerce : Model Based On Transaction Type, Mod	lel Based On Tr	ansaction
Party - B	2B, B20	C, C2B, C2C, E – Governance. E – strategy: Overview, Strat	tegic Methods f	or developing E –
commerc	e. Four	C's: Convergence, Collaborative Computing, Content Man	agement & Cal	l Center
Unit -	- 111	SUPPLY CHAIN MANAGEMENT	Periods	9
E - logi	stics, Su	ipply Chain Portal, Supply Chain Planning Tools (SCP	Fools), Supply	Chain Execution
(SCE), S	$\frac{CE - Fra}{W}$	imework, Internet's effect on Supply Chain Power.	D 1	0
Unit ·	- 1V	E – PAYMENT MECHANISM	Periods	9
E – Payı	ment Me	echanism: Payment through card system, E – Cheque, E -	- Cash, E $-$ Pa	yment Threats &
Protectio	ns. E –	Marketing: Home –shopping, E-Marketing, Tele-marketi	ng . Electronic	Data Interchange
(EDI) : N	/leaning	, Benefits, Concepts, Application, EDI Model, Protocols (U	N EDI FACI /	GIDI, ANSI X –
, Data En	v V	I (DES / KSA).	Dariada	0
	- v	SECURITY IN E-COMMERCE	Periods	9
KISK OF E	z - Com	imerce: Overview, Security for E – Commerce, Security St	andards, Firewa	all, Cryptography,
$(\mathbf{FPD}) \cdot \mathbf{I}$	Footuros	capabilities and Overview of Commercial Software, re-er	s. Enterprise F	c processes for IT
applicatio	ons Rus	iness Process Redesign Knowledge engineering and data w	arehouse	r processes for 11
upphound	5115 , Du 5	r	Fotal Periods	45
Text Boo	nks:			
1.	Adesh	k. Pandey, "Electronic Commerce" (Fourth Edition) : Pete Los	hin,2011	
2.	Adesh	K. Pandev Fundamentals of Electronics Commerce, 2010	,	
2	Dave (Chaffey, "E-Business and E-Commerce Management". 3rd Edit	tion. 2009. Pears	son Education Inc.
3.	New D	elhi	,,	,
Reference	ces:			
1.	"E-Bus	iness (9th edition)" by Gary Schneider, China Machine Press,	2011.	
2	David	Whiteley, "E-Commerce: Strategy, Technologies And Ap	pplications (Inf	ormation Systems
2.	Series)	", McGraw-Hill Higher Education, 2017		
3.	Gary P	. Schneider, "Electronic Commerce", 7th Edition, Cengage Lea	arning India Pvt.	Ltd., New Delhi
E-Resou	rces			
1.	<u>http</u>	://notes4learners.blogspot.com/p/ecommerce-unit-1.html		
2.	<u>http</u>	://oms.bdu.ac.in/ec/admin/contents/387_P16MCE4A_20200)51801071611.j	pdf
3.	<u>http</u>	s://www.nerdwallet.com/article/small-business/what-is-a-bu	siness-model	
4.	<u>http</u>	s://www.tutorialspoint.com/e_commerce/e_commerce_secu	rity.htm	
5.	http	s://www.lyra.com/in/e-payments/		

	*	(VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205												
Progra	amme		B.E.				Prog	gramme	e Code	101	Re	gulatior	1	2019	
Depar	rtment	Cor	nputei	: Scier	nce and	l Engir	neering	3			S	emester	r	-	
Course (ode		Co	urse N	Jame		Perio	ds Per	Week	Credi	t	Maxi	mum Ma	arks	
course c	2000		0	uise i	unie		L	Т	Р	C	C	A	ESE	Total	
U19CSI	E 27	Gre	en Co	mputi	ng		3	0	0	3	5	0	50	100	
Course Objective			 acquire knowledge to adopt green computing practices minimize negative impacts on the environment learn about energy saving practices understand the impact of e-waste and carbon waste. describe green IT in relation to technology 												
		At t	t the end of the course, the student should be able to, Knowledge level												
		СО	CO1: Explain the necessity of green IT. K2												
Course Outcome		CO mar	2: Ou nageme	tline nt.	metho	dologie	es for	creati	ing gr	een as	sets &	their		K2	
		CO	3: Ass	ociate	the use	of gric	l in gre	en IT.						К3	
		CO	4 : Out	ine th	e proto	cols, st	andard	s & au	dits ava	ilable f	or green	IT.		K2	
		CO	5: App	ly the	Enviro	nmenta	ally res	ponsib	le busii	ness stra	ategies			К3	
Pre-requi	sites	-													
COs	(3/2	2/1 ind	licates s	trength	CO / of corr	PO M ateria PO Materia PO Materia PO Materia PO	apping 3-Stroi	ng, 2 – 1 Jes (POs	Medium	n, 1 - We	ak		CO/PS Mappin PSOs	O 1g	
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2	
CO 1	3	3	3										3	2	
CO 2	3	3	3										2	3	
CO 3	3	3	3					<u> </u>					3	$\frac{5}{2}$	
CO 5	3	3	3										3	2	
Course As Direct	Course Assessment Methods Direct														

- 1. Continuous Assessment Test I, II & III
- 2. Assignment / Quiz / Seminar
- 3. End-Semester examinations

Indirect

1. Course - end survey

Unit	– I	FUNDAMENTALS	Periods	9
Green IT	[Funda	nentals: Business, IT, and the Environment - Benefits o	f a Green Dat	a Centre - Green
Computin	ng: Cart	on Foot Print, Scoop on Power - Green IT Strategies: D	rivers, Dimensi	ions, and Goals –
Environn	nentally	Responsible Business: Policies, Practices, and Metrics.	ſ	Γ
Unit	- II	GREEN ASSETS AND MODELING	Periods	9
Green A	ssets: E	uildings, Data Centers, Networks, Devices, Computer a	and Earth Frie	endly peripherals,
Greening	g Mobile	devices - Green Business Process Management: Modeling,	Optimization,	and Collaboration
– Green I	Enterpris	e Architecture – Environmental Intelligence – Green Supply	y Chains .	[
Unit –	- III	GRID FRAMEWORK	Periods	9
Virtualiz	ing of IT	Systems – Role of Electric Utilities, Telecommuting, Telec	conferencing an	d Teleporting –
Materials	s Recycli	ng – Best Ways for Green PC – Green Data Center – Green	Grid Framewo	rk. Optimizing
Compute	r Power	Management, Seamless Sharing Across Systems. Collabora	ting and Cloud	Computing,
Virtual P	resence.		D 1 1	
Unit -	- 1V	GREEN COMPLIANCE	Periods	9
Socio-Cu	iltural A	spects of Green IT – Green Enterprise Transformation	Roadmap – G	reen Compliance:
Protocols	s, Standa	rds, And Audits – Emergent Carbon Issues: Technologies	and Future. Be	est Ways to Make
Compute	r Greene		D 1	0
Unit	- V	GREEN INITIATIVES	Periods	9
Green In	itiative I	Drivers and Benefits with IT - Resources and Offerings to	Assist Green In	nitiatives Green
Initiative	Strateg	with IT - Green Initiative Planning with IT - Green Init	tiative Impleme	entation with IT -
Green In	itiative A	Assessment with 11. The Environmentally Responsible Busin	ness Strategies	(EKBS)
T (D			Total Periods	45
Text Boo	DKS:	Unitality Course IT Contains and Applications Using I		Let all'assess CDC
1.	Bhuvai	Unnelkar, Green II Strategies and Applications-Using E	Invironmental	Intelligence, CRC
2	Piess,	ulle 2011.	ward Cana 20	10
Ζ.	Carl Sp	esnocky, Empowering Green Initiatives with II, John whe	y and Sons, 20	IU.
3.	Alin G	ales, Michael Schaefer, Mike Ebbers, Green Data Center: 5	steps for the Jo	urney, Snott/IBM
Defener	rebook	, 2011.		
	Lohn I	amb The Creaning of IT Decrean Education 2000		
1.	John L	and, The Greening of II, Pearson Education, 2009.	on Dogulatio	na and Industry
2.	Jason	marins green Computing and Green II- best Practices	on Regulatio	ins and industry,
3	Woody	Leonhard Katherrine Murray Green Home computing for	dummies Aug	ust 2009
E-Resou	rces	Leonnard, Radierrine Murray, Green Home computing for	aumines, Aug	ust 2007.
E-Resou	http://	(dta harmataka aay in/Institutas/anthallary/EilaHandlar/4 dh	424020 0207 4	2f 0227
1.	hal6	/uc.kamataka.gov.m/mstrutes/gpt0enary/Fnerrandlef/4-db	<u>+24030-0207-48</u>	<u>101-700/-</u>
	https://	//shareok.org/hitstream/handle/112/1/11105/Letcher_okstat	te 0664M 125	44 ndf?sequence-
2.	1 1	//shareok.org/offstream/nandie/11244/11105/Letener Oksta	$\frac{1000}{101}$	
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Prog	gramme		B.E.				Prog	gramme	e Code	101	Regulat	ion	2	2019
Depa	artment	Cor	nputer	r Scier	ice and	Engiı	neering	5			Semes	ster		-
Course	Code		Co	ourse N	lame		Perio L	ds Per T	Week P	Credit C	CA Ma	axim	um Ma ESE	rks Total
U19CS	SE28	Par Cor	allel a nputin	nd Dis	stribute	d	3	0	0	3	50		50	100
Course Objectiv	'e	The At t	Main Main Un le un le un le un le de he end	Object dersta arn the ndersta arn fevelop of the	ive of the n nd the n e nuance and the p w proble applica course, t	he cou leed an es of p progra ems th tion th the stu	urse is t nd fund parallel umming nat is so nat incl dent sh	o lamenta algorit g princi lved us udes fa ould be	als of p hm des ples in sing pa ult tole able to	arallel co ign parallel a rallel algo rance	mputing pa and distribu prithms	ted a	gms archited	ctures
		CO: prob	1: App	ly para	llel and	distril	outed co	omputii	ng archi	itectures f	for any give	n		K2
Course	٩	CO2 distr	SD: Apply problem solving (analysis, design, and development) skills to stributed applications K2							K2				
Outcom	C	CO. distr	3: . Impributed	plemer archite	nt applie ectures	cation	s by a	pplying	g princ	iples of	parallel an	ıd]	K3
		CO4 com	4: Dev	velop archite	applicat ectures	ions 1	by inco	orporat	ing pa	rallel and	l distribute	ed]	K2
		CO	5: Use	applica	ations by	incor	poratin	g fault	tolerand	ce]	K3
Pre-requ	isites	-												
					CO / 2	PO M	apping						CO/PS)
COs	(3/2	2/1 ind	licates s	trength	of corre	elation)	3-Stroi	$\log_{10}(2-1)$	Medium	i, 1 - Weal	K		Mappir	lg
COS	PO 1	PO 2	PO 3	PO 4	PIOgra					PO 10		2	PSO1	PSO 2
CO 1	3	3	3	1	105	100	107	108	10,	1010			3	2
CO 2	3	3	3	1									2	3
CO 3	3	3	2	3									3	3
CO 4	3	3	3	$\frac{2}{2}$									3	2
	-	-	, e	. –	1 1								-	
Course A	ssessm	ent M	ethods											
Direct	Continu	ious A	ssessm	ient Te	st I, II &	z III								
2. 3.	Assigni End-Se	ment / mester	Quiz / r exami	Semin nation	ar s									
Indirec	t													
2.	Course	- end	survey											

Content o	f the syllabus		
Unit	- I INTRODUCTION TO PARALLEL COMPUTING	Periods	9
Scope of	Parallel Computing - Parallel Programming Platforms - Impl	icit Parallelism	- Limitations of
Memory	System Performance – Control Structure of Parallel Platforms – G	Communication	Model of Parallel
Platforms	 – Physical Organization of Parallel Platforms – Communication C 	osts in Parallel	Machines.
Unit	II PARALLEL ALGORITHM DESIGN	Periods	9
Prelimina	ries – Decomposition Techniques – Characteristics of Tasks and Ir	teractions – Ma	pping Techniques
for Load	Balancing – Methods for Containing Interaction Overheads – Pa	rallel Algorithr	n Models – Basic
Commun	cation Operations - One-to-All Broadcast and All-to-One Redu	ction – All-to-A	All Broadcast and
Reduction	n – All-Reduce and Prefix Sum Operations – Scatter and C	ather – All-to	-All Personalized
Commun	cation- Circular Shift.	1	1
Unit –	III PROGRAMMING USING MESSAGE PASSING AND SHARED ADDRESS SPACE	Periods	9
Principles	of Message Passing Programming - Building Blocks - Send a	nd Receive Op	erations – MPI –
Message	Passing Interface – Topologies and Embedding – Overlapping Co	mmunication w	ith Computation –
Collective	e Communication and Computation Operations – Groups and Com	nunicators – PC	OSIX thread API
Unit -	IV DISTRIBUTED COMPUTING PARADIGM	Periods	9
Paradigm	s for Distributed applications – Leader Election in Rings – Mutual	Exclusion in Sh	ared Memory.
Unit -	- V FAULT TOLERANT DESIGN	Periods	9
Synchron	ous Systems with Crash Failures - Byzantine Failures - Impossi	oility in Asynch	ronous Systems -
Formal 1	Aodel for Simulation - Broadcast and Multicast - Specifica	tion of a Bro	adcast Service -
Implemen	ting a Broadcast Service - Multicast in Groups - Distributed S	Shared Memory	– Linearizable –
Sequentia	lly Consistent Shared Memory – Algorithms.		
		Total Periods	45
Text Boo	ks:		
1.	Ananth Grama, Anshul Gupta, George Karypis and Vipin K	umar, —Introd	uction to Parallel
	Computing, Second Edition, Pearson Education, 2009		
2.	Haggit Attiya and Jennifer Welch, —Distributed Computing -	Fundamentals	, Simulations and
	Advanced Topics, Second Edition, Wiley, 2012.		
3.	Michael Quinn, —Parallel Computing - Theory and Practice, Se	cond Edition, T	ata McGraw Hill,
Df	2002.		
Reference	es: Norman Madaff Densilat Commuting for Data Science With	F 1	
1.	Chapman and Hall/CRC, 2015.	Examples in R,	C++ and CUDA,
2.	Wan Fokkink, —Distributed Algorithms: An Intuitive Approach,	MIT Press, 201.	3.
3	M.L. Liu, -Distributed Computing - Principles and Appl	ications, First	Edition, Pearson
5.	Education, 2011.		
4.	Basu S. K"Parallel and Distributed Computing: Architecture	es and Algorith	1ms",2016.
E-Resou	rces		
1.	http://www.math.nsysu.edu.tw/~lam/MPI/lecture/		
2.	https://www.cs.purdue.edu/homes/ayg/TALKS/NANO_WSHO	2/	
3.	https://www.clear.rice.edu/comp422/lecture-notes/index.html		

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205 Programme B.E. Programme Code 101 Regulation Department Computer Science and Engineering Semestor Course Code Course Name Periods Per Week Credit Mathematication U19CSE29 Software Testing and Quality Assurance 3 0 0 3 50 Course Difference The student should be made to, - - Learn about Automatic Testing Tools. - Objective Explore the basics of Software Quality Assurance. - Explore the basics of Software Quality Assurance. - - - - - - Course Objective At the end of the course, the student should be able to, -								,	Tinthesis Correct	Mangareen Spann 20 M012010 2 Park					
Pı	rogramme		B.E.				Pro	ogramn	ne Code	e 101	R	egula	tion		2019
D	epartment	C	omput	er Scie	nce an	d Engir	neering	-				Seme	ster		-
	Tiruchengode -637 205Tiruchengode -637 205Programme Code101RegulationDepartmentComputer Science and EngineeringSemesterCourse CodeCourse NamePeriods Per WeekCreditMaxinLTPCCAU19CSE29Software Testing and Quality Assurance300Tiruchengode -637 205TereditSemesterCourse CodeComputer Science and EngineeringSemesterCourse NamePeriods Per WeekCreditMaxin LLTPeriods Per WeekCreditMaxin LCourse NamePeriods Per WeekCreditMaxin LCourse NamePeriods Per WeekCreditMaxin LCourse NamePeriods Per WeekCreditMaxin LCourse NamePeriods Per WeekCreditMaxin LCourseCoursePeriods Port String Tools.CoursePeriods Port String Tools. <t< td=""><td>num M</td><td>arks</td></t<>						num M	arks							
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$									ESE	Total					
U19CSE29 Software Testing and Quality Assurance 3 0 0 3 50 Course Objective The student should be made to, • Learn about Automatic Testing Tools. • Understand the various Testing Issues. • Explore the basics of Software Quality Assurance. • Learn the Quality Standards available for Software with Quality M At the end of the course, the student should be able to, Course Outcome CO1: Analyze the automatic testing tools. CO2:Design test cases suitable for software's developed in diffe domains CO3: Describe the quality assurance process and its role in softw development. CO4: List out appropriate Quality Standards for Software. CO5:Demonstrate proficiency in managing a software project to custor requirements Pre-requisites -								50	100						
UI	9CSE29	Q	uality	Assura	nce		3	0	0	5		50		50	100
		Tł	ne stud	ent sho	uld be 1	made to	,								
Cou	rse	•	Lea	rn abou	it Auto	matic T	esting [Fools.							
Obi	ective	•	Unc	lerstand	the va	rious T	esting I	ssues.							
~J		•	Exp	olore the	e basics	s of Soft	tware Q	uality A	Assurar	nce.					
		•	Lea	rn the (Quality	Standar	rds avai	lable fo	or Softv	vare wit	h Qu	ality I	Metric	c Syste	m.
		A	t the er	nd of th	e cours	e, the st	udent s	hould h	e able t	0.				Kn	owledge
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		C	01: Aı	nalyze t	he auto	matic to	esting t	ools.							K3
Cou	rse	C	02: De	sign te	est case	es suita	ble for	softw	are's d	levelop	ed in	diff	erent		V2
Out	come	do	omains												NJ
		C	03: D	escribe	the q	uality a	assuran	ce proc	ess an	d its ro	ole ir	1 soft	ware		к?
		de	evelopr	nent.											112
		C	04: Li	st out a	ppropri	ate Qua	ality Sta	indards	for Sof	tware.					K2
		C	05: De	monstra	ate prof	ficiency	in mar	aging a	a softwa	are proj	ect to	o custo	omer	-	K3
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Pre-	requisites	-													
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	CO 2	3	3	2						2				2	3
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T	1. Continuous Assessment Test I, II & III 2. Assignment/Quiz/ Seminar 3. End-Semester Examinations ndirect 1. Course - End Survey ntent of the syllabus Unit - I SOFTWARE TESTING – INTRODUCTION Periods									iods		9			

Basic Defin	nitions - Software Testing Principles - Role of Process in Soft	ware Quality -	– Testing as a
Process -	- The Tester's Role in a Software Development Organization -	Origins of De	efects - Defect
Classes -	The Defect Repository and Test Design - Defect Examples -	- Developer/Tes	ster Support for
Developing	g a Defect Repository.		
Unit – I	I TESTING ISSUES	Periods	9
Introductio	n to Testing Design Strategies - The Smarter Tester - Test Case Desi	ign Strategies –	Using Black
Box Appro	bach to Test Case Design - Black-box Test Design Approaches	– COTS – Us	ing White-Box
Approach	to Test design - Test Adequacy Criteria- Additional White Bo	x Test Design	Approaches –
Evaluating	Test Adequacy Criteria.		
U	FUNDAMENTALS OF SOFTWARE QUALITY	Dominala	0
Unit – 11	ASSURANCE	Periods	9
Ethical Ba	asis for Software Quality - Goals of SQA- Roles of SQA- R	esponsibilities-	Total Quality
Manageme	nt - Primary Elements- Benefits- History and Evolution- Deming's	14 Points for TO	QM - Principles
– Software	e Processes and Methodologies.		-
Unit - IV	QUALITY STANDARDS	Periods	9
Quality Sta	indards –CMMI model- Practices and Conventions – Software Conf	iguration Mana	gement – Need
-Task in S	CM- Baseline- SCM Plan- Reviews and Audits –Enterprise Resource	e Planning Soft	ware.
Unit – V	ULLITY METRIC SYSTEM	Periods	9
Complexity	w Metrics and Models – Organizational Learning – Improving	Quality with	Methodologies
– Structure	d/Information Engineering	Quality with	methodologies
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U19CSE30	Software	Project Management	3	0	0		3	50	50	100
Course Objective	<ul> <li>outlin</li> <li>high</li> <li>Learn</li> <li>Learn</li> </ul>	ne the need for Software I light different techniques n about activity planning n the project management of	Project N for softv and risk control	Ianager ware co manage	men st es eme	t stimati nt	on ar	nd activity	y plann	ing
	At the end	l of the course, the studen	t should	be able	to,	antan	daan	trol	K	Lnowledge level
Course	CO1: Des CO2: Cla	ssify the various activities	s of projec	ct sche	duli	ing & a	u con evalu	ation		K3
Outcome	CO3: Out	line the risk assessment a	and mana	gement	t pro	cess	evuru	ution		K3 K2
	CO4: De planning	monstrate the different r	models o	of softw	vare	proce	ess ar	nd networ	rk	K2
	CO5: Sur	nmarize organizational be	ehaviors	manage	eme	nt				K3
Pre-requisites	-								•	

	(3/2	2/1 indic	cates str	ength of	CO / PO	<b>) Mapp</b> tion) 3-S	<b>ing</b> Strong, 2	2 – Med	ium, 1 -	Weak			CO/F Map	PSO ping
COs				]	Program	me Out	comes (	POs)					PS	Os
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	3	3	3	2					2		2		3	3
CO 2	3	3	3	3					2		2		2	3
CO 3	3	3	3	2					2		2		2	2
CO 4	3	3	3	2					2		2		2	2
CO 5	3	3	3	3					2		2		2	3

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment/Quiz/ Seminar
- **3.** End-Semester Examinations

Indirect

1. Course - End Survey

Unit - I PR	OJECT EVALUATION AND PROJECT PLANNING	Periods	9
Importance of Sof	ware Project Management - Activities Methodologies	<ul> <li>Categorization</li> </ul>	on of Software
Projects - Setting	Objective - Management Principles - Management	Control – Pr	oject portfolio
Management – Cos	t-benefit evaluation technology - Risk evaluation - Stra	tegic program	Management –
Stepwise Project Pla	nning.		
Unit – II PR	OJECT LIFE CYCLE AND EFFORT ESTIMATION	Periods	9
Software process a	nd Process Models - Choice of Process models - mental	delivery - Raj	oid Application
development - Agil	e methods – Extreme Programming – SCRUM – Managing	g interactive pro	cesses – Basics
of Software estimat	ion - Effort and Cost estimation techniques - COSMIC Fu	all function poir	nts - COCOMO
II A Parametric Pro	luctivity Model - Staffing Pattern.		
Unit – III A	CTIVITY PLANNING AND RISK MANAGEMENT	Periods	9
Objective of Activi	ty planning - Project schedules - Activities - Sequenci	ng and schedul	ing – Network
Planning models -	Forward Pass & Backward Pass techniques - Critical	path (CRM)	method – Risk
identification - Ass	essment – Monitoring – PERT technique – Monte Carlo sir	nulation – Reso	urce Allocation
- Creation of critica	l patterns – Cost schedules.		
Unit - IV	PROJECT MANAGEMENT AND CONTROL	Periods	9
Framework for Ma	nagement and control - Collection of data Project termin	ation – Visualiz	zing progress –
Cost monitoring -	Earned Value Analysis- Project tracking - Change co	ntrol- Software	Configuration
Management – Man	aging contracts – Contract Management.	1 .	
Unit – V	STAFFING IN SOFTWARE PROJECTS	Periods	9
Managing people –	Organizational behavior – Best methods of staff selection	1 - Motivation	- The Oldham-
making – Team stru	ctures – Virtual teams – Communications genres – Commu	working in tea	ms - Decision
making – ream suu	<u>etures – virtuar teams – communeations genres – commu</u>	tal Periods	45
Text Books	× .		
Bob Hu	ghes Mike Cotterell and Raijb Mall: Software Project Ma	nagement – Sixt	h Edition Tata
1. McGrav	v Hill, New Delhi, 2017	ingement bix	in Edition, Tutu
2. Robert	K. Wysocki "Effective Software Project Management" – W	iley Publication	, 2011.
References	v	-	
1. Walker	Royce: "Software Project Management"- Addison-Wesley,	1998.	
2 Gopalas	wamy Ramesh, "Managing Global Software Projects" - M	IcGraw Hill Ed	ucation (India),
Fourtee	nth Reprint 2013.		
E-Resources			
1. <u>https://v</u>	www.tutorialspoint.com/software_engineering/software_pro	ject_manageme	ent.htm
2 https://c	locs.google.com/presentation/d/1hYtTO5nJ1yTlOXPWPZ7	TGtCbYqPEM	<u>-</u>
2. <u>bB5GV</u>	nxYjuoe0/htmlpresent	_	
3. <u>https://v</u>	www.edutechlearners.com/download/Software%20Project%	20Management	. <u>pdf</u>

# **Open Elective Courses**

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Course Outcom	ıe	CO	2: Fan lay	niliar w ver of th	ith the	key teo	chnolog	ies a	and j	protoc	cols e	employ	yed at	each	I	ζ3
		CO	03: Des wi	sign a reless n	simple etwork	IoT s	ystem ctions a	com nd d	iprisi ata a	ing s nalyti	ensor	s, edg pabilit	ge dev ties.	vices,	I	ζ3
		CO	9 <b>4:</b> Ap ap	ply va plicatio	arious ns	securit	y and	au	then	ticatio	on r	nethod	ls in	IoT	I	ζ4
		CO	95: Use res	e the k spective	cnowled applic	lge and ations	d skills	ac	quire	ed du	ring	the c	ourse	with	I	٢3
Pre-requ	uisites	-														
	(3/2	/1 indi	cates str	ength of	<b>CO / P</b> f correla	<b>D Mapp</b> tion) 3-S	o <b>ing</b> Strong, 2	2 - N	Iediu	m, 1 -	Weal	k		CO/ Maj	PSO oping	
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CO 2	1	3	3	2		2							3	2		2
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Indireo 1.	ct Course	e - end	survey													

U	nit – I	INTRODUCTION TO INTERNET OF THINGS	Periods	9
The te	echnology o	of the internet of things, making the internet of things, Elements of	f an IoT ecosy	stem, design
princi	ples for cor	nnected devices, Web thinking for connected devices.		
U	nit – II	NETWORKS AND COMMUNICATION	Periods	9
Netw	orking Tecl	nnology, Communication Technology, Processes Data Manageme	ent, Prototypin	g embedded
devic	es, Sensors	and actuators, Embedded computing basics, Introduction to ARE	DUINO, RASF	'BERRY PI.
Case	Study: Stud	y of sensors used in IoT devices, IoT standards in practice.		
Ur	nit - III	FOUNDATIONAL ELEMENTS OF AN IOT SOLUTION	Periods	9
The I	Edge of the	e IoT, An Abstract Edge Architecture Model, Device Types, Th	ne Cloud Clou	id-to-Device
Conn	ectivity, To	pology of the Cloud Data Normalization and Protocol Translation		•
Ur	nit – IV	SECURITY AND PRIVACY CHALLENGE	Periods	9
Steps	towards a S	Secure Platform, Privacy-Preserving sharing of IOT Data, Secure	Authentication	and Access
Contr	ol in Const	rained Devices, Smarties Approach.		
U	nit - V	IoT APPLICATIONS	Periods	9
IoT A	Application	sValue Creation for Industry, Value Creation and Challer	nges, The Sn	hart Factory
Initia	tive, Cost-e	ffective Process Integration of IoT Devices, IoT for Retailing Indus	stry.	
		Tot:	al Periods	45
Text	Books			
1	Ovidiu V	Vermesan, Peter Friess, "Internet of Things: Converging	Technologies	for Smart
1.	Environm	nents and Integrated Ecosystems" River Publishers, 2013.		
Refe	rences			
1.	Adrian M	cEwen, Hakim Cassimally "Designing the Internet of Things", Joh	n Wiley & So	ns, 2014.
2	Joe Biron	and Jonathan Follett"Foundational Elements of an IoT Solution:	The Edge, The	e Cloud, and
2.	Application	on Development", First Edition. Cisco Press, 2017.		
3.	Qusay F. 2018.	Hassan, "Internet of Things A to Z: Technologies and Application	ons", John Wi	ley & Sons,
4.	Alessandr Architectu	o Bassi, Martin Bauer, "Enabling Things to Talk: Designing Idural Reference Model", Springer, 2013.	oT solutions v	vith the IoT
E-Res	sources	<u> </u>		
1.	https://w	ww.techtarget.com/iotagenda/Ultimate-IoT-implementation-guide	-for-businesse	s
2.	https://w	ww.tutorialspoint.com/internet_of_things/index.htm		
3.	https://3	60digitmg.com/iot-trends		
4.	https://w	ww.insiderintelligence.com/insights/iot-security-privacy/		

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Programme	B.E.	Pr	ogramm	e Code	1	01	Regulation	on	20	19
Department	COMP	UTER SCIENCE AND E	NGINE	ERING	T		Semest	er		-
Course Code		Course Name	Period	s Per W	eek	Crec	lit Ma	axin	num Ma	rks
U19CSOE2	Ethica	Hacking	L 3	0	P 0	<u> </u>	CA		<u>ESE</u> 50	100
Course Objective	The stu Pla Ex Re Ide	dent should be made to, an a vulnerability assessment ecute a penetration test usin port on the strengths and vu entify legal and ethical issue	nt and pe ng standa Inerabil es relateo	enetration ard hack ities of d to vulu	on tes ting t the te nerab	t for a ools in ested n ility a	network. n an ethical network. nd penetrati	mai	nner. testing.	
	At the e	nd of the course, the studen	t should	be able	to,				Knov L	wledge evel
Course	CO1: 1	Know the concept of Ethical	Hackin	g and C	rypto	ograph	nic techniqu	es	ł	ζ2
Outcome	CO2: I relate	dentify the DNS, IP addred to a remote system.	ess, rar	ige and	Ope	erating	g System e	tc.,	ŀ	ζ3
	<b>CO3:</b> A	analyze the packets and able	to find	the intr	uders				ŀ	ζ3
	<b>CO4:</b> D	Discover Vulnerabilities in a	web app	plication	n and	serve	ers		ŀ	ζ4
	<b>CO5:</b> Ii	mplement Pentest tools.							ŀ	٢3
Pre-requisites	-									
		CO / PO Mapping	ţ					CO/	/PSO	

	(3/2	2/1 indi	cates str	ength of	CO / PO f correla	<b>) Mapp</b> tion) 3-S	o <b>ing</b> Strong, 2	2 – Med	ium, 1 -	Weak			CO/H Map	PSO ping	
Cos					Program	nme Out	comes (	POs)					PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2	
CO 1	1	3			2			2					2	3	
CO 2	2	3		2	2			2					2	2	
CO 3	2	2		2	3			2					2	2	
CO 4	2	2		3	3			2					2	3	
CO 5	2	3		3	2			2					2	3	

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment /Seminar/Quiz
- 3. End-Semester examinations

Indirect

1. Course - end survey

U	nit – I	ETHICAL HACKING BASICS	Periods	9
Introd	luction to E	thical Hacking – Types of hacking – Phases of Ethical hacking. Cr	yptography: C	ryptography
and	encryption	- PKI, Digital certificates and digital signature - Encr	ypted commu	nication and
Crypt	ography att	acks		
Uı	nit – II	<b>RECONNAISSANCE AND SCANNING</b>	Periods	9
Foot j	printing : Fo	pot printing with DNS - Determining Network Range. Scanning f	for targets: Ide	entify Active
machi	ines – Port S	Scanning. Enumeration: Windows Security basics – Enumeration 7	Fechniques.	
Un	nit – III	SYSTEM ATTACK	Periods	9
Sniffi	ng: Commu	nications basics -Sniffing techniques and tools -Network Roadble	ocks: Intrusion	Detection –
Sessio	on hijacking	g, Firewalls and Honey pots, Denial of Service attacks. System	Attack: Wind	lows system
hackin	ng – Passwo	ord Cracking – Exploiting privileges. Social Engineering: Human	n Based attack	– Computer
based	attack.			
Un	nit – IV	WEB BASED AND WIRELESS HACKING	Periods	9
Physi	cal Security	v. Web Server Hacking: Web service architecture -Web attacks	s. Web Applic	ations: Web
applic	cations attac	k - Web resources protection. Wireless Attacks - Bluetooth attack	ts.	
Uı	nit – V	MALWARES AND PENETRATION TESTING	Periods	9
Malw	are Attacks	s: Trojans, viruses and worms. Penetration Testing: Types	of Penetratio	on testing –
Penet	ration testin	a mathematican. Demotion test to als		
I Chiet	ration testin	g methodologies – Penetration test tools.		
Tenet		g methodologies – Penetration test tools. Tota	al Periods	45
Text	Books	g methodologies – Penetration test tools. Tota	al Periods	45
Text	Books Matt Wa	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition,	al Periods McGrawHill	45 Education,
Text	Books Matt Wa	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition,	al Periods McGrawHill	<b>45</b> Education,
Text 1	Books Matt Wa 2019 rences	Tot: Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition,	al Periods	<b>45</b> Education,
Text 1 1. Refer	Books Matt Wa 2019 rences Michael	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui	al Periods McGrawHill de", 2ndEditi	45 Education, on, Pearson
<b>Text</b> 1 <b>1.</b> <b>Refe</b> 1.	Books Matt Wa 2019 rences Michael Education	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018	al Periods McGrawHill de", 2ndEditi	45 Education, on, Pearson
<b>Text</b> 1. <b>Refe</b> 1. 2.	Books Matt Wa 2019 rences Michael Education Patrick E	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Congebretson," The Basics of Hacking and Penetration Testir	al Periods McGrawHill de", 2ndEditi ng: Ethical H	45 Education, on, Pearson lacking and
Text I           1.           Refer           1.           2.	Books Matt Wa 2019 rences Michael Education Patrick E Penetratio	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Congebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013.	al Periods McGrawHill de", 2ndEditi ng: Ethical H	45 Education, on, Pearson lacking and
Text           1.           Refer           1.           2.           3.	Books Matt Wa 2019 rences Michael Education Patrick E Penetratio Parteek SI	Tota Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Ingebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013. harma," Hacking Revealed", 1stEdition, White Falcon Publishing,	al Periods McGrawHill de'', 2ndEditi ng: Ethical H 2018	45 Education, on, Pearson lacking and
Text           1.           Refer           1.           2.           3.           4.	Books Matt Wa 2019 rences Michael Education Patrick E Penetratio Parteek SI Reginald Publishing	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Ingebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013. narma," Hacking Revealed", 1stEdition, White Falcon Publishing, Wong, "Mastering Reverse Engineering: Re-engineer your ethi g,2018	al Periods McGrawHill de", 2ndEditi ng: Ethical H 2018 cal hacking sl	45 Education, on, Pearson lacking and kills", Packt
Text I           1.           Refer           1.           2.           3.           4.           E-Res	Books Matt Wa 2019 rences Michael Education Patrick E Penetratio Parteek Sl Reginald Publishing	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Ingebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013. narma," Hacking Revealed", 1stEdition, White Falcon Publishing, Wong, "Mastering Reverse Engineering: Re-engineer your ethi g,2018	al Periods McGrawHill de", 2ndEditi ng: Ethical H 2018 cal hacking sl	45 Education, on, Pearson lacking and kills", Packt
Text           1.           Refer           1.           2.           3.           4.           E-Res           1	Books Matt Wa 2019 rences Michael Education Patrick E Penetratio Parteek SI Reginald Publishing sources	Tota Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Ingebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013. narma," Hacking Revealed", 1stEdition, White Falcon Publishing, Wong, "Mastering Reverse Engineering: Re-engineer your ethi g,2018 /w.mediafire.com/file/dyewn6f3r3olnuw/A_Beginners Guide To	al Periods McGrawHill de", 2ndEditi ng: Ethical H 2018 cal hacking si Hacking Con	45 Education, on, Pearson lacking and kills", Packt
Text I           1.           Refer           1.           2.           3.           4.           E-Res           1.	Books Matt Wa 2019 rences Michael Education Patrick E Penetratio Parteek SI Reginald Publishing sources https://ww ems.zip/fi	Tota Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Congebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013. narma," Hacking Revealed", 1stEdition, White Falcon Publishing, Wong, "Mastering Reverse Engineering: Re-engineer your ethi g,2018 /w.mediafire.com/file/dyewn6f3r3olnuw/A_Beginners_Guide_To_ le	al Periods McGrawHill de", 2ndEditi ng: Ethical H 2018 cal hacking sl Hacking Con	45 Education, on, Pearson lacking and kills", Packt
Text I           1.           Refer           1.           2.           3.           4.           E-Res           1.           2.	Books Matt Wa 2019 rences Michael G Education Patrick E Penetratio Parteek SI Reginald Publishing sources <u>https://ww ems.zip/fi</u>	Tota Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Singebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013. narma," Hacking Revealed", 1stEdition, White Falcon Publishing, Wong, "Mastering Reverse Engineering: Re-engineer your ethi g,2018 w.mediafire.com/file/dyewn6f3r3olnuw/A Beginners Guide To le	al Periods McGrawHill de", 2ndEditi ng: Ethical H 2018 cal hacking sl Hacking Con Hacking and	45 Education, on, Pearson lacking and kills", Packt
Text I           1.           Refer           1.           2.           3.           4.           E-Res           1.           2.	Books Matt Wa 2019 rences Michael Education Patrick E Penetratio Parteek SI Reginald Publishing sources <u>https://ww ems.zip/fi</u> <u>https://ww</u>	Tota Iker, "CEH- Certified Ethical Hackers Guide ", 4th Edition, Gregg," Certified Ethical Hacker (CEH) Version 9 Cert Gui , 2018 Singebretson," The Basics of Hacking and Penetration Testir n Testing Made Easy", 2nd Edition, Syngress , Elseveir, 2013. harma," Hacking Revealed", 1stEdition, White Falcon Publishing, Wong, "Mastering Reverse Engineering: Re-engineer your ethi g,2018 ww.mediafire.com/file/dyewn6f3r3olnuw/A Beginners Guide To le ww.mediafire.com/file/8derf9dueyq64i5/Computer_Viruses%252C or_Dummies.zip/file	al Periods McGrawHill de", 2ndEditi ng: Ethical H 2018 cal hacking si <u>Hacking Con</u>	45 Education, on, Pearson lacking and kills", Packt nputer_Syst 

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Prog	gramme	B.F	Ξ.				Progra	imme (	Code	10	1	Regul	ation	20	)19		
Dep	artmen	t <b>CO</b> I	MPUT	TER SC	CIENC	E AND	ENG	INEEF	RING			Sem	ester		-		
Course	e Code		(	Course	Name		Pe	riods P	er Wee	ek P	Credit C	C	Maxir A	num Ma ESE	urks Total		
U19C	SOE3	Sma	art Se	nsor T	echno	logies	2	3	0 (	)	3	5	0	50	100		
Course Objecti	ve	The	<ul> <li>studer</li> <li>Se</li> <li>De</li> <li>Sin</li> </ul>	nt shou lect the esign ba mulate,	ld be m e right s asic circ synthe	ade to, ensor fo cuit buil size, an	or a giv lding bl d layou	en app ocks. it a con	lication	n. sense	or or se	ensor s	ystem.				
		At tl	he end	of the	course,	the stud	dent she	ould be	able t	0,				Kno L	wledge evel		
Course		CO	1: An rec	alyze quireme	the se	ensors the Sen	availat ising m	ole in ethods	IoT	base	ed on	appli	cation	]	K2		
Outcom	ne	02	2: Creater	ate a R nperatu	ire mon	ie appli itoring.	cation	by cho	osing	appr	opriate	senso	rs for	K3			
		CO	3: Inter	rfacing	differe	nt types	s of Sen	isors w	ith MC	CU				]	K3		
		CO4	4: Infe	r Wirel	ess Sen	sing, R	F Sensi	ing and	RF M	EMS	5			]	K4		
		CO	5: Des mi	ign a r tigation	real-tim n	e appli	cation	for lan	dslide	mon	itoring	and h	azard	1	K3		
Pre-requ	iisites	-															
	(3/2	2/1 indic	ates str	ength o	<b>CO / P</b> f correla	<b>O Mapp</b> ation) 3-5	<b>oing</b> Strong, 1	2 – Mec	lium, 1	- We	eak		CO Ma	/PSO pping			
Cos					Progran	nme Out	comes (	(POs)					PSC	)s			
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	P( 10	D PC	PO 12	PSO 1	PS	SO 2		
CO 1	1	2	3		2	2							2		2		
CO 2	2	2	3		2	2							2		2		
CO 3	2	2	3		2	2							2		2		
CO 4	2	2	3		2	2							2		2		
CO 5	2	2	3		2	2							2		2		
Course	Accore	nont M	othoda														
Direct	A55C551		emous														
1.0	Continu	ous Ass	sessme	ent Test	I, II &	III											
2.4	Assignn	nent / S	eminaı	r/Quiz													
3.	End-Se	mester	examii	nations													
maire	CI																
	1.Cou	rse - eno	d surve	сy													

Conte	ent of the sy	llabus										
U	nit – I	BASICS OF SENSORS	Periods	9								
Introd	uction- S	ensor Vs Transducer, Nature of Sensors, Sensor Output	Characteristic	es, Sensing								
Techn	ologies, Di	gital Output Sensors.										
Ur	nit – II	APPLICATION SPECIFIC SENSORS	Periods	9								
Occup	pancy and	motion detectors: ultrasonic - microwave - capacitive detectors	- optical prese	ence sensor,								
Light	Detectors:	Photo diodes – photo transistor – photo resistor- CCD and	d CMOS ima	ige sensors,								
Temp	erature Sen	sors: thermos-resistive sensors – thermoelectric contact sensor										
Un	it – III	SENSOR WITH MICROCONTROLLER	Periods	9								
Introd	luctions,	Amplification and Signal Conditioning, Integrated Signal	Conditionir	ng, Digital								
Integr	ersion, MC	U Control, MCUs for Sensor Interface, Techniques and System	ns Considerati	ons, Sensor								
Un	it – IV	WIRELESS SENSING	Periods	9								
Wirel	ess Data a	nd Communications, Wireless Sensing Networks, Industrial W	ireless Sensin	g Networks,								
RF Se	ensing, Tele	metry, RF MEMS, Complete System Consideration.										
Upit - V     SMART APPLICATIONS AND SYSTEM												
Ur	Unit – V REQUIREMENTS Periods 9											
Auton Semic	notive A	pplications, Industrial (Robotic) Applications, Consumer Applica Capabilities, Future System Requirements.	tions, Future	Sensor Plus								
		Tota	al Periods	45								
Text l	Books											
1	Randy F	rank, "Understanding smart sensors", Artech House integrat	ed microsyst	ems series,								
1.	3rd Editi	on, 2013.										
Refer	rences											
1.	Jacob Fra Springer,	iden, "Handbook of Modern Sensors: Physics, Designs, and Ap 2016	oplications", 5	th Edition,								
	Vlasios T	siatsis, Stamatis Karnouskos, Jan Holler, David Boyle, Catheri	ne Mulligan,	"Internet of								
2.	Things: 7 2018.	echnologies and Applications for a New Age of Intelligence",	Academic Pre	ss, 16-Nov-								
3.	Henry Le Jan-2015.	ung, Subhas Chandra Mukhopadhyay, "Intelligent Environmenta	al Sensing", S	pringer, 22-								
E-Res	ources											
1.	https://w	ww.techbriefs.com/component/content/article/tb/pub/features/artic	les/33212									
2.	https://w	ww.azosensors.com/article.aspx?ArticleID=1289										
3.	<u>https://3</u>	60digitmg.com/iot-smart-sensors										

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205										TVVnister						
Program	ne <b>B.</b>	E.			]	Progra	mme	Cod	e 1	01	F	Regulat	ion	20	19		
Departme	ent CO	MPUT	ER SC	CIENCI	E AND	ENGI	NEE	RIN	G			Seme	ster		-		
Course Cod	e	(	Course	Name		Per	iods	Per V	Week	Cre	edit	M	laxim	num Ma	urks		
U19CSOE	4 We	b Desi	gning			I	3	$\frac{1}{0}$	P 0		ر ۲	 50	<u> </u>	<u>ESE</u> 50	10tal 100		
	The	e studer	nt shoul	ld be m	ade to,												
Course Objective		<ul> <li>Describe the various steps in designing a creative and dynamic website.</li> <li>Create web pages using html, JavaScript &amp; CSS</li> <li>Understand the basics of open source database</li> <li>Create the three tier applications using PHP &amp; MySQL</li> <li>Create the dynamic application using AJAX.</li> </ul>															
	At t	he end	of the o	course,	the stud	ent sho	ould b	be abl	le to,					Kno L	wledge evel		
C	CO	<b>D1:</b> des	cribe th	ne basic	s of inte	rnet an	net and web design using HTML								K2		
Course	CO	<b>D2:</b> Des	sign the	e Web p	ages wi	th CSS	& J	ava s	script					К3			
outcome	CO	<b>)3:</b> Bui	ild a dy	namic v	web pag	es usin	g Jav	vaScr	ript &	Ajax				K3			
	CO	D4: De with	velop Data	simple abase C	web ap onnectiv	plicati vity usi	on u ng N	sing IySQ	serve L	r sid	e pro	ogramr	ning		X4		
	CO	<b>)5:</b> Des	sign and	d imple	ment a v	web-ap	plica	tions	using	PHP	•			]	K3		
Pre-requisites	-																
(1	3/2/1 indi	cates str	ength of	<b>CO / PO</b> f correla	<b>) Mappi</b> tion) 3-S	<b>ng</b> trong, 2	2 – M	ediun	n, 1 - V	Veak			CO/ Map	PSO oping			
Cos				Program	me Outc	comes (1	POs)						PSO	S			
PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	8 P	09	PO 10	PO 11	PO 12	PSO 1	PS	02		
<b>CO 1</b> 1				2									3		2		
<b>CO 2</b> 1	3	3	3	3									3		2		
CO 3 2	2	3	3	3									3		2		

Direct

CO 4

CO 5

1. Continuous Assessment Test I, II & III

- 2. Assignment/Seminar. Quiz
- 3. End-Semester examinations

Indirect

1. Course - end survey

### Content of the syllabus

U	nit – I	HTML & XHTML	Periods	9
An II	ntroduction	to HTML History-Versions- Basic XHTML Syntax and Sem	antics-Some	Fundamental
HTM	L Elements	-Relative URLs-Lists- tables-Frames-		
Form	s-Creating I	HTML Documents.		
U	nit – II	CSS & JAVA SCRIPT	Periods	9
Style	e Sheets: CS	SS-Introduction to Cascading Style Sheets-Features- Core Syntax-S	Style Sheets an	nd HTML
Box	Model. Cl	ient-Side Programming: The JavaScript Language-History	and Version	ns -Syntax-
Varia	ables and	Data Types-Statements- Operators- Literals-Functions-C	Objects-Array	's- Built-in
Obje	cts.			
Un	nit – III	AJAX	Periods	9
DHT	ML with Jav	vaScript DOM-BOM-AJAX Introduction - XML Http Request C	bject-Call bac	k Methods
Ur	nit – IV	MYSQL	Periods	9
Introc	luction to N	IYSQL - Data definition in SQL, Queries and update statements,	Integrity cons	traints- Drop
Datab	base & Tabl	e - Modifying Record - WHERE Clause -Using Operators - Son	rting Records	-Eliminating
Dupli	cates - Grou	iping Records, Having Clause -Joins - Sub queries.		
U	nit – V	РНР	Periods	9
Essen	ntial PHP - (	Operators and Flow control - Strings and Arrays - Creating functi	ons - Reading	data in web
pages	- PHP Bro	wser Handling Power - File Handling -Session Handling in PH	P – Cookies –	- Connection
with l	Mysql			
		Tota	al Periods	45
Text	Books			
1.	Jeffrey C.	Jackson, "Web Technologies - A Computer Science Perspective",	Pearson Educ	ation, 2011.
Refer	rences			
1	Deitel and	d Deitel and Nieto, "Internet and World Wide Web - How to Pr	rogram", Pren	tice Hall, 5 th
1.	Edition, 2	011.		
2.	Rasmus L	erdorf and Levin Tatroe, "Programming PHP", O'Reilly,2002		
2	Chris Bat	es, Web Programming - Building Intranet Applications, 3rd Ed	lition, Wiley	Publications,
3.	2009.			
E-Res	sources			
1.	https://ww	vw.tutorialspoint.com/mysql/index.htm		
2.	https://ww	w.tutorialspoint.com/php/php and ajax.htm		
3.	https://ww	/w.tutorialspoint.com/html/index.htm		

#### VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN

(Autonomous Institution Affiliated to Anna University, Chennai)Elayampalayam, Tiruchengode – 637 205

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Course coo	de		Co	urse na	me		P	eriods	per we	ek	Credit	Max	kimum l	Marks		
U19CSOI	E5	Data A	Analyti	cs			I	_	Т	Р	С	CA	ES E	Total		
							3	3	0	0	3	50	50	100		
Course Objective	e	The stu • U • L • S • K • U	udent sl Indersta earn B tudy Ti Know N Indersta	hould b and Sta ayesian ime Sei feural n and Vis	e made tistical , Suppo ries Ana etwork sualizat	to, methoo ort Vec alysis a s and F ion Tec	ls tor and nd Rul uzzy L chnique	Kerne e Induo ogic s	l Metho	ods						
		At the	end of	the cou	rse, the	studer	t shoul	d be al	ole to,				Know Le	ledge vel		
Course		<b>CO1:</b>	Explair	how d	lata is c	ollecte	d, mana	aged ar	nd store	d for d	ata scienc	ce	K	2		
Outcome	e	<b>CO2:</b> ]	Descrit	be the k	ey con	cepts in	data so	cience					K	2		
		<b>CO3:</b> ]	O3: Describe real-world applications K2													
		<b>CO4:</b> ]	CO4: Describe toolkit used by data scientists   K2													
		CO5: Implement data collection and management scripts using MongoDB K3														
Pre- requisites	s	_														
1	-				<b>CO</b> /	PO Ma	pping						CO/PS	0		
	(	3/2/1 in	dicates	strength	of corr	elation)	3-Stron	g, 2 − N	Medium,	1 - We	ak		Mappi	ng		
Cos					Progr	amme (	Dutcome	es (POs	)				PSOs			
P	01	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2		
	2	3	3	2	2							2	1	2		
$CO_2$	3	3	3	3	2							2	3	3		
CO 4	3	3	3	3	2							1	2	3		
CO 5	3	3	3	2	2							3	3	3		
Course Asse	essmo	ent Me	thods									•				
Direct																
1. Co	ontinu	lous As	sessme	nt Test	I, II & I	III										
2. As	sign	ment/Q	uiz/Sen	ninar												
J. En	d-Se	mester	examin	ations												
mairect																
1.	C	ourse - (	end sur	vey												
Content of	the	syllabi	us													

Unit - I	STATISTICAL CONCEPTS AND METHODS	Periods	9
Statistical Prediction Analysis.	Concepts: Probability, Sampling and Sampling Distributions, Statistical In Errors–Resampling- Statistical Method: Linear Models, Regression	nference, Predict Modeling, Mult	ion and ivariate
Unit - I	BAYESIAN METHODS AND SUPPORT VECTOR AND KERNEL METHODS	Periods	9
Bayesian Methods: and CCA.	Methods: Bayesian Paradigm, modeling, inference and networks – Sup Kernel Perceptron, Overfitting and Generalization Bounds, Support Vector	port Vector and r Machines, Kern	Kernel el PCA
Unit - II	I TIME SERIES ANALYSIS AND RULE INDUCTION	Periods	9
Analysis o	of time series: linear systems analysis, nonlinear dynamics, Delay Coordi	inate Embedding	- Rule
induction: rule induct	Propositional Rule Learning, Rule Learning as search, Evaluating quality ion, First order rules-ILP systems.	y of rules, Propos	sitional
Unit - I	NEURAL NETWORKS	Periods	9
Neural net networks.	works: learning and generalization, competitive learning, principal compo Prescriptive analytics - creating data for analytics: Active learning & Reinfo	nent analysis and preement learning	neural
Unit - V	VISUALIZATION	Periods	9
Visualizati Technique	ion : Classification of Visual Data Analysis Techniques, Data Type to be V s, Interaction Techniques and Specific Visual Data Analysis Techniques.	/isualized, Visual	ization
		<b>Total Periods</b>	45
Text Book	IS		
1.	Bill Franks, —Taming the Big Data Tidal Wave: Finding Opportunities in advanced analytics, John Wiley & sons, 2012.	Huge Data Strea	mswith
Reference	S		
1.	Michael Berthold, David J. Hand, —Intelligent Data Analysis-An Introdu Springer, 2007.	uction  , Second 1	Edition,
2.	Jimmy Lin and Chris Dyer, — Data Intensive Text Processing using Ma Claypool Publishers, 2010.	ap Reducell, Morg	gan and
3.	Tom White, -Hadoop: The Definitive Guidel, O`Reilly Publishers, 2012.		
E-Resour	ces		
1.	https://link.springer.com/article/10.1023/A:1012489924661		
2.	https://www.ibm.com/topics/neural-networks		
3.	https://www.tableau.com/learn/articles/data-visualization		

		VIV (/	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205													
Progra	imme	B.F	2.				Prog	ramme	Code	101	Reg	gulation	2	2019		
Depart	tment	Comp	uter Sci	ience an	d Engi	neering					S	emester	<u> </u>	-		
Course	Code			Course	Name		-	Perio L	ds Per T	Week P	Cred C	it Ma	iximum ESE	Marks Total		
U19CS	OE6	Enter	prise J	ava				3	0	0	3	50	50	100		
Cour Objec	rse tive	The S	Student Under Under Know Study Learn	should stand b stand b networ the Jav	be mad asic co asic co king A a beans or IS	le to, ncepts o ncepts o pplicat s techno	of J2El of JSO ions. ology	E N								
Cour	:se	At the CO1: CO2:	end of Exami Descri	the council the read	urse, the requirements	e studer nents o s of JS	nt shou f J2EE P and J	ld be ab SON	ole to,				Kno 1	wledge evel K2 K3		
Outco	ome	CO3:	Constr	uct the	networ	king								K3		
		<b>CO4:</b>	CO4: illustrate the concepts of javabeans K3													
		CO5:	CO5: Describe Angular JS working procedure   K2													
Pre- requisit	tes															
		(3/2/1 in	dicates	strength	CO /	PO Ma elation)	<b>pping</b> 3-Stror	ıg, 2 − M	ledium.	1 - We	ak		CO/PS Mappi	O ng		
Cos		<u>`</u>		U	Progr	amme (	Dutcom	es (POs)		·			PSOs	<u> </u>		
<u> </u>	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2		
	2	3	3	3	2								1	2		
CO 3	3	3	2	3	3							3	3	3		
CO 4	3	3	3	3	2							1	2	3		
Cos       3       3       2       2       3       3       3       3         Course Assessment Methods         Direct         1. Continuous Assessment Test I, II & III         2. Assignment/Quiz/Seminar																
	1. Course - end survey															
Content	t o <u>f</u> the	syllabu	15													
Unit	- I				J21	EE OV	ERVI	EW				Peri	ods	9		
Distribu	ited M	ulti-tier	ed App	lication	ns - J2E	EE: Cor	nponer	nts – Co	ntaine	r and C	Connector	rs – Java	12EE N	lodules -		

Structure o	f Java2EE Application - Packaging and Deploying Java2EE Applications		
Unit - II	JAVA SERVER PAGES TECHNOLOGY	Periods	9
Introductio	n to JSP: JSP Architecture – Life Cycle of JSP - Expression – Comments	<ul> <li>Database Conn</li> </ul>	ectivity
– Example	Program. Java Server Pages Standard Tag Library: Using JSTL - Core	Tag Library - XN	ML Tag
Library - S	QL Tag Library - Introduction to JSON.		
Unit – II	I NETWORKING	Periods	9
The Desig	n of JDBC. The Structured Query Language, JDBC Installation, Bas	sic JDBC Progra	amming
Concepts,	Query Execution, Scrollable and Updatable Result Sets, Metadata, Ro	ow Sets, Transa	ctions -
Unit IV	to a Server, Implementing Servers, Sending E-Mail, Making URL Connection	ctions,	0
Daama Th	JAVADEANS CONFORMENTS	Ferious	9 n Doon
Componen	ts and Events Bean Property, Tuples, Bean info Classes, Property editor, C	ustomizers.	bean,
Unit – V	ANGULAR JS	Periods	9
Angular JS	- Introduction - MVC Architecture - Expressions - Modules: Applica	tion Module, Co	ontroller
Module – C	Controllers - Filters - Tables - SQL - Forms - Validation - Introduction to	Node JS – Modu	les
	Total	Periods	45
Text Book	s		
1	H. M.Deitel, P. J. Deitel, S. E. Santry "Advanced Java 2 Platform How	w To Program" I	Prentice
	Hall, Fifth Edition, 2010.		
2.	Jim Keogh, "J2EE: The Complete Reference", McGraw-Hill Education, 2	$\frac{2017}{2017}$	)2D - 11
3.	Publication. First Edition, 2015.	Development, C	) Relliy
References	3		
1.	John Hunt, Chris Loftus, Guide to J2EE: Enterprise Java (Springer P 2012	rofessional Com	puting),
2	Bryan Basham, Kathy Sierra, Bert Bates, "First Head Servlet & JSP",	Second Edition (	O'Reilly
2.	Publication, Second Edition, 2008.		<b>D</b>
3.	Marty Hall, Larray Brown, Core Servlets and Java Server Pages, S Education, 2008.	econd Edition,	Pearson
4.	Ken Williamson, "Learning Angular JS: A Guide to Angular JS Dev Kindle Edition, 2015.	velopment", 1st	Edition,
E-Resour	ces		
1.	https://docs.oracle.com/javaee/5/tutorial/doc/bnaay.html		
2.	https://www.simplilearn.com/tutorials/java-tutorial/java-servlets		
3.	https://www.guru99.com/jsp-tutorial.html		
4.	https://docs.angularjs.org/guide/concepts		
5.	http://index- of.es/Java/Java%20Advanced%20How%20to%20Program%20(redistiller k)%202001.pdf	d%20in%20one%	520boo

	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University ,Chennai) Elayampalayam, Tiruchengode – 637 205											
Programme	B.E.	Pr	ogramm	e Code	e 1	01	F	Regulation	n 2	019		
Department	COMP	UTER SCIENCE AND E	NGINE	ERIN	G			Semeste	er	-		
Course Code		Course Name	Period	s Per V	Veek	Cre	dit	Max	ximum M	arks		
		Course r unie	L	Т	Р	0	2	CA	ESE	Total		
U19CSOE7	Open	Source Software	3	0	0	3	3	50	50	100		
Course Objective	• • •	<ul> <li>Promoting the use of OSS in learning, teaching and administrative IT infrastructure.</li> <li>Train the students in Linux.</li> <li>Make the student to develop websites using PHP and Mysql</li> <li>Understand the open source scripting languages Perl</li> <li>Exploring the use of the Common Gateway Interface (CGI) scripting language to Serve dynamic content.</li> </ul>										
	At the e	nd of the course, the studen	t should	be abl	e to,				Knov Le	wledge evel		
~	CO1: 0	utline the benefits of OSS a	nd essen	tial str	ructure	e of L	.inux.		ŀ	K2		
Course	CO2: Li	st out the various version o	f Linux (	OS.					ŀ	K3		
Outcome	CO3: I informa	Design & implement a s tion storage & retrieval syst	mall to tem usin	medi g PHP	ium s & M	ize YSQI	web	enabled	ŀ	X3		
	CO4: Ei	numerate the syntax and sty	le of PE	RL sci	ripting				ŀ	K3		
	CO5: D	evelop the interactive web	pages.						ŀ	K3		
Pre-requisites	-								1			
(3/2,	/1 indicate	<b>CO / PO Mappin</b> s strength of correlation) 3-Str	<b>g</b> rong, 2 – 2	Mediur	n, 1 - V	Weak		C N	CO/PSO /Iapping			

Cos					Program	nme Out	comes (	POs)					PSOs		
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2	
-	2		3								-	2	2	3	
-	1		3								-	3	2	2	
-	2	2 3 3 2 - 2 2 3													
-	2	2	3	2	1					2	-	2	2	3	
-	2	2	3	3	1					2	-	3	2	2	
Course A	Assessm	ent M	ethods												
Direct															
1.	Contin	uous A	ssessm	ent Test	I, II &	III									
2.	Assign	ment/q	uiz/sem	ninar											
3.	End-Se	emester	examin	nations											
Indirec	t														
	1. Co	ourse - o	end surv	vey											

Conte	ent of the sy	/llabus		
U	nit – I	INTRODUCTION TO OPEN SOURCES	Periods	9
Introc Sourc	luction to ( es. FOSS-	Dpen sources – Need of Open Sources – Advantages of Open Sou Licensing Models - FOSS Licenses – FOSS Examples- Linux Ove	urces – Appli rview.	cation of Open
U	nit – II	LINUX OPERATING SYSTEM	Periods	9
Linux OS- E	system str Debian-Fed		- Linux Distr ervices.	ibutions : Cent
Ur	nit – III	PHP WITH MYSQL	Periods	9
Essen pages MYS	tial PHP - - PHP Bro QL - Work	Operators and Flow control - Strings and Arrays - Creating func owser Handling Power - File Handling -Session Handling in PHP ing with Databases –Connection with Mysql	tions - Readi 9 – Cookies –	ng data in web Introduction to
Ur	nit – IV	INTRODUCTION TO PERL	Periods	9
PERI Modu	overview lles-Error H	- Variables and Data types – Arrays- Control Structures – Iandling – Regular Expressions.	Subroutines,	Packages and
U	nit – V	PERL AND CGI	Periods	9
Work – GE	ing with Fi Γ and POS	les – Sending Emails - Database Access – Perl Process Manageme Γ Methods – Cookies in CGI.	ent – Perl CG	I Programming
		Tota	al Periods	45
Text	Books			
1	Remy Ca 2013	rd, Eric Dumas and Frank Mevel, —The Linux Kernel Book∥,	Wiley Public	ations, January
Refer	ences			
1	Steve Suc	chring, —MySQL Bible, John Wiley, 2012		
2	Rasmus I	erdorf and Levin Tatroe, —Programming PHPI, O'Reilly,		
3	Martin C	Brown, -Perl: The Complete Referencel, 2nd Edition, TataMcG	raw-Hill	
E-Res	sources			
1.	https://ww	ww.synopsys.com/glossary/what-is-open-source-software.html		
2.	https://op	ensource.org/		
3.	https://ww	ww.tutorialspoint.com/basics_of_computers/basics_of_computers_	open_source_	_software.htm
4.	https://ww	ww.javatpoint.com/open-source-operating-system		

	VI (Aut	VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (Autonomous Institution, Affiliated to Anna University, Chennai) Elayampalayam, Tiruchengode – 637 205											
Programme	B.E.	Pr	ogramm	e Code	e 1	01	Regulation	2	019				
Department	COMP	UTER SCIENCE AND E	NGINE	ERIN	G		Semester		-				
Course Code		Course Name	Period	s Per V T	Veek P	Credit	Maxir CA	num Ma ESE	arks Total				
U19CSOE8	Pytho	n Programming	3	0	0	3	50	50	100				
Course Objective	The stu	<ul> <li>The students will able to,</li> <li>learn basics of Python programming.</li> <li>define string methods.</li> <li>learn functions and classes used in python.</li> <li>learn how to read and write files in Python</li> <li>learn how to build and package Python modules for reusability.</li> </ul>											
Course	CO1: I logical	Describe python programmi problems.	ng elem	ients t	o solv	e and d	ebug simple		.evel K2				
Outcome	CO2: [	Develop Python programs us	ing strin	gs.					К3				
	<b>CO3:</b> I	Develop programs using fund	ctions ar	d clas	ses.				K3				
	<b>CO4:</b> I	mplement various file handl	ing oper	ations	•				K3				
	<b>CO5:</b> I	CO5: Demonstrate various libraries and modules in python. K3											
Pre-requisites	-												

<b>CO / PO Mapping</b> (3/2/1 indicates strength of correlation) 3-Strong, 2 – Medium, 1 - Weak									CO/PSO Mapping					
Cos	Programme Outcomes (POs)									PSOs				
	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO1	PSO 2
CO 1	3	2	1	-	1							2	3	2
CO 2	3	3	1	1	2							2	3	2
CO 3	3	3	1	2	2							2	3	2
CO 4	3	3	1	2	2							2	3	2
CO 5	3	3	1	2	2							2	3	2
Course A	Course Assessment Methods													

Direct

- 1. Continuous Assessment Test I, II & III
- 2. Assignment/quiz/seminar
- **3.** End-Semester examinations

Indirect

1. Course - end survey

Content of the syllabus										
Unit – I		INTRODUCTION TO PYTHON	Periods	9						
Introd	luction to p	ython – Installation – Python Interpreter – working with interprete	r -Variables	- Unbound						
Variables - Case Sensitive - Native Data Types - Booleans - Numbers - Lists - Tuples - Sets - Dictionaries										
U	nit – II	STRINGS	Periods	9						
String	gs - Unicode	e - Formatting - String Methods - Bytes - Encoding - Regular Expr	essions - Ver	bose - Case						
Studie	es.									
Un	nit – III	CLASSES	Periods	9						
Funct	ion Declara	tion - Closures - List of Functions - List of Patterns - File of Patter	rns - Generat	ors - Defining						
Classes - Instantiating Classes - Instance Variables - Iterators – Itertools - Assert - Generator Expressions.										
Un	nit – IV	FILE HANDLING	Periods	9						
Reading and Writing Text Files - Binary Files - Stream Objects - Standard Input, Output and Error.										
U	nit – V	LIBRARIES AND MODULES	Periods	9						
Text operations – Persistent and Databases – Controlling Executions – Threads and Processing – Numeric Processing – Extending and Embedding Classical Python. <b>Modules</b> : Math - Statistics - random - Date & time.										
		Tota	al Periods	45						
Text Books										
1	1John V. Guttag, - Introduction to Computation and Programming using Python, Prentice Hall of India, 2014.									
Refer	References									
1	Mark Pilgrim, -Dive into Python, Apress, edition									
2	Mark Lut Shroff Pu	Mark Lutz, -Learning Python: Powerful Object-Oriented Programming, Fifth Edition, O_Reilly, Shroff Publishers and Distributors, 2013.								
2	Allen Downey, Jeffrey Elkner, Chris Meyers, -How to Think Like a Computer Scientist - Learning									
5	with Python, Green Tea Press,									
E-Res	sources									
1.	https://ww	vw.w3schools.com/python/python_intro.asp								
2.	https://on	inecourses.nptel.ac.in/noc22_cs26/preview								
3.	https://ww	vw.javatpoint.com/python-tutorial								
4.	https://ww	ww.tutorialspoint.com/python/index.htm								
5.	https://wv	ww.w3schools.com/python/python_modules.asp								