

SRI MANAKULA VINAYAGAR ENGINEERING COLLEGE (An Autonomous Institution)

Puducherry

B.TECH.

COMPUTER SCIENCE AND ENGINEERING

ACADEMIC REGULATIONS 2023 (R - 2023)

d. Dr.K.PRENKUMAR Professor & Head Dept. of Computer Science and Engg. Sri Manakula Vinayagar Engg. College [An Autonomous Institution]

CURRICULUM



COLLEGE VISION AND MISSION

VISION

To be globally recognized for excellence in quality education, innovation and research for the transformation of lives to serve the society.

MISSION

M1: Quality Education : To provide comprehensive academic system that amalgamates the cutting edge technologies with best practices.

M2: Research and Innovation : To foster value-based research and innovation in collaboration with industries and institutions globally for creating intellectuals with new avenues.

M3: Employability and

Entrepreneurship : To inculcate the employability and entrepreneurial skills through value and skill based training.

 M4: Ethical Values
 : To instill deep sense of human values by blending societal righteousness with academic professionalism for the growth of society.

DEPARTMENT VISION AND MISSION

VISION

To create a productive learning and research environment for graduates to become highly dynamic, competent, ethically responsible, professionally knowledgeable in the field of computer science and engineering to meet the industrial needs on par with global standards.

MISSION

M1: Quality Education: Empowering the students with the necessary technical skills through quality education to grow professionally.

M2: Innovative Research: Advocating the innovative research ideas by incorporating with industries for developing products and services.

M3: Placement and Entrepreneurship: Advancing the education by strengthening the Industry-academic relationship through hands-on training to seek placement in the top most industries or to develop a start-ups.
 M4: Ethics and Social Responsibilities: Stimulating professional behaviour and good ethical values to improve the leadership skills and social responsibilities.

PROGRAMME OUTCOMES (POs)

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 modeling 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 EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Competitive Platform: To create a competitive platform for solving critical problems in a wide variety of fields.

PEO2: Exploration: Enthusiastic participation in learning, understanding, designing and applying new innovative research ideas as the field evolves.

PEO3: Career: Applying cutting-edge technology that improves knowledge and to commit students for life-long learning to reach the leading positions in the career.

PEO4: Professional Values: Simulate the graduates to hold the responsibilities in the context of technology, ethics, society and humanity.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Computational Skills: Graduates with the ability to apply basic knowledge of Computer Science in solving the critical problems.

PSO2: Studious Research: Ability to convert innovative ideas into research or society oriented projects through current trending technologies.

PSO3: Employability: Acquire placement in highly reputed industries or accomplish new technical business skills with the contemporary trends in the industry.

SI. No.	Course Category	Breakdown of Credits
1	Humanities and Social Sciences including Management courses (HS)	15
2	Basic Science Courses (BS)	20
3	Engineering Science including workshop, drawing, basics of electrical / mechanical / computer etc. (ES)	18
4	Professional Core Courses (PC)	77
5	Professional Electives Courses (PE)	18
6	Open Electives Courses (OE)	9
7	Project Work and Internship (PA)	13
8	Ability Enhancement Courses (AEC*)	
9	Mandatory Courses (MC*)	-
	Total	170

STRUCTURE FOR UNDERGRADUATE ENGINEERING PROGRAMME

SI. No	AICTE			Cred	its pe	er Sen	neste	r		Total
31. NU	Suggested Course Category	I	II	III	IV	V	VI	VII	VIII	Credits
1	Humanities and Social Sciences (HS)	5	3	1	1	2	-	-	3	15
2	Basic Sciences (BS)	4	7	5	4	-	-	-	-	20
3	Engineering Sciences (ES)	9	5	-	4	-	-	-	-	18
4	Professional Core (PC)	3	8	17	11	12	15	11	-	77
5	Professional Electives (PE)	-	-	-	3	3	3	3	6	18
6	Open Electives (OE)	-	-	-	-	3	3	3	-	9
7	Project Work (PA)	-	-	-	-	1	1	2	8	12
8	Internship (PA)	-	-	-	-	-	-	1	-	1
9	Employability Enhancement Courses (AEC)*	-	-	-	-	-	-	-	-	-
10	Mandatory Courses (MC)*	-	-	-	-	-	-	-	-	-
	Total			23	23	21	22	20	17	170

SCHEME OF CREDIT DISTRIBUTION - SUMMARY

* AEC and MC are not included for CGPA calculation

HONOURS DEGREE PROGRAMME:

The student is permitted to opt for earning an *honours degree* in the same discipline of engineering in addition to the degree in his/her own discipline. To earn an honours degree the student is required to earn an additional 18 - 20 credits (over and above the total 170 credits prescribed in the curriculum) starting from fourth semester onwards by completing 5 additional courses offered in respective semesters. A student is eligible to exercise this option if he/she has passed all the courses offered up to third semester in the first attempt itself and has earned a CGPA / GPA^{*} (*for lateral entry) of not less than 8.0.The prescribed courses offered for Honours degree are given in Annexure IV.

	SEMESTER – I									
SI.	Course Code	Course Title	Cotogory	P	erioc	ls	Credits	Max. Marks		ks
No.		Course mile	Category	L	Т	Ρ	Credits	CAM	ESM	Total
Theo	ory			-		-				
1	U23MATC01	Engineering Mathematics - I	BS	3	1	0	4	25	75	100
2	U23ESTC03	Basics of Electrical and Electronics Engineering	ES	3	0	0	3	25	75	100
3	U23CSTC01	Programming in C	ES	3	0	0	3	25	75	100
4	U23CSTC02	Problem Solving Approach	PC	3	0	0	3	25	75	100
5	U23HSTC01	Universal Human Values- II	HS	2	0	0	2	25	75	100
Theo	Theory Cum Practical									
6	U23ENBC01	Communicative English - I	HS	2	0	2	3	50	50	100
Pract	tical									
7	U23ESPC01	Basics of Electrical and Electronics Engineering Laboratory	ES	0	0	2	1	50	50	100
8	U23CSPC01	Programming in C Laboratory	ES	0	0	2	1	50	50	100
9	U23ESPC03	Engineering Graphics using AutoCAD	ES	0	0	2	1	50	50	100
Ability Enhancement Course										
10	U23CSC1XX	Certification Course – I **	AEC	0	0	4	-	100	-	100
Mano	datory Course									
11	U23CSM101	Induction Programme	MC	2 Weeks		-	-	-	-	
21					21	425	575	1000		

		SEM	MESTER – II								
SI.	Course Code	Course Title	Cotogory	P	erio	ds	Cradita	N	lax. Marl	rks	
No.	Course Code	Course Title	Category	L	Т	Ρ	Credits	CAM	ESM	Total	
Theo											
1	U23MATC02	Engineering Mathematics - II	BS	3	1	0	4	25	75	100	
2	U23BSTC01	Physical Science for Engineers	BS	3	0	0	3	25	75	100	
3	U23ADTC01	Programming in Python	ES	3	0	0	3	25	75	100	
4	U23CSTC03	Data Structures	PC	3	0	0	3	25	75	100	
5	U23ITTC01	Digital Design and System Architecture	PC	3	0	0	3	25	75	100	
Theo	ry Cum Practica	al									
6	U23ENBC02	Communicative English - II	HS	2	0	2	3	50	50	100	
Pract	ical										
7	U23ESPC02	Design Thinking and IDEA Lab	ES	0	0	2	1	50	50	100	
8	U23ADPC01	Programming in Python Laboratory	ES	0	0	2	1	50	50	100	
9	U23CSPC02	Data Structures Laboratory	PC	0	0	2	1	50	50	100	
10	U23ITPC01	Digital Design and System Architecture Laboratory	PC	0	0	2	1	50	50	100	
Ability Enhancement Course											
11	U23CSC2XX	Certification Course – II **	AEC	0	0	4	-	100	-	100	
Manc	latory Course										
12	U23CSM202	Sports Yoga and NSS	MC	0	0	2	-	100	-	100	
							23	575	625	1200	

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** Certification Courses are to be selected from the list given in Annexure III

		SEME	STER – III							
SI.	Courses Code		Catamami	Pe	erio	ds	Creatite	ľ	Max. Ma	rks
No.	Course Code	Course Title	Category	L	Τ	Ρ	Credits	CAM	ESM	Total
Theory										
1	U23MATC03	Probability and Statistics	BS	3	1	0	4	25	75	100
2	U23CST301	Embedded System Architecture and Interfacing	PC	3	0	0	3	25	75	100
3	U23CST302	Software Engineering and Testing	PC	3	0	0	3	25	75	100
4	U23CSDC01	Automata and Compiler Design	PC	3	0	0	3	25	75	100
5	U23CST303	Computer Networks	PC	3	0	0	3	25	75	100
Theo	ry Cum Practical	·								
6	U23CSBC01	Design and Analysis of Algorithms	PC	2	0	2	3	50	50	100
Pract	ical	·								
7	U23ENPC01	General Proficiency - I	HS	0	0	2	1	50	50	100
8	U23MAPC01	Engineering Mathematics Laboratory	BS	0	0	2	1	50	50	100
9	U23CSP301	Embedded System Architecture and Interfacing Laboratory	PC	0	0	2	1	50	50	100
10	U23CSP302	Software Engineering and Testing Laboratory	PC	0	0	2	1	50	50	100
Ability Enhancement Course										
11	U23CSC3XX	Certification Course – III**	AEC	0	0	4	-	100	-	100
12	U23CSS301	Skill Enhancement Course – I*	AEC	0	0	2	-	100	-	100
Mand	latory Course									
13	U23CSM303	Climate Change	MC	2	0	0	-	100	-	100
							23	675	625	1300

		SEME	STER – IV							
SI.	Course Code	Course Title	Category	F	Perio	ds	Credite	N	lax. Marl	s
No	Course Code	Course little		L	Т	Ρ	Credits	CAM	ESM	Total
Theory										
1	U23MATC05	Discrete Mathematics and Graph Theory	BS	3	1	0	4	25	75	100
2	U23ITTC02	Programming in Java	ES	3	0	0	3	25	75	100
3	U23CSTC04	Database Management Systems	PC	3	0	0	3	25	75	100
4	U23CSTC05	Operating Systems	PC	3	0	0	3	25	75	100
5	U23CSE4XX	Professional Elective I #	PE	3	0	0	3	25	75	100
Theo	ry Cum Practica	l								
6	U23CSB401	Android Programming	PC	2	0	2	3	50	50	100
Practical										
7	U23ENPC02	General Proficiency - II	HS	0	0	2	1	50	50	100
8	U23ITPC02	Programming in Java Laboratory	ES	0	0	2	1	50	50	100
9	U23CSPC03	Database Management Systems Laboratory	PC	0	0	2	1	50	50	100
10	U23CSPC04	Operating Systems Laboratory	PC	0	0	2	1	50	50	100
Ability Enhancement Course										
11	U23CSC4XX	Certification Course – IV **	AEC	0	0	4	-	100	-	100
12	U23CSS402	Skill Enhancement Course -II *	AEC	0	0	2	-	100	-	100
Mandatory Course										
13	U23CSM404	Right to Information and Good Governance	MC	2	0	0	0	100	-	100
	-						23	675	625	1300

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Professional Electives are to be selected from the list given in Annexure I

* Skill Enhancement Courses (1and 2) are to be selected from the list given in Annexure III

		SEMESTER	R – V							
SI.	Course	Course Title	Catagony	Pe	erio	ds	Credits	M	ax. Mar	'ks
No	Code	Course The	Category	L	ΤP		Credits	CAM	ESM	Total
Theo	Theory									
1	U23HSTC02	Research Methodology	HS	2	0	0	2	25	75	100
2	U23CST504	Cloud Computing	PC	3	0	0	3	25	75	100
3	U23CSTC06	Artificial Intelligence	PC	3	0	0	3	25	75	100
4	U23CSTC07	Web Designing	PC	3	0	0	3	25	75	100
5	U23CSE5XX	Professional Elective II #	PE	3	0	0	3	25	75	100
6	U23XXO5XX	Open Elective I \$	OE	3	0	0	3	25	75	100
Prac	Practical									
7	U23CSP503	Cloud Computing Laboratory	PC	0	0	2	1	50	50	100
8	U23CSPC05	Artificial Intelligence Laboratory	PC	0	0	2	1	50	50	100
9	U23CSPC06	Web Designing Laboratory	PC	0	0	2	1	50	50	100
Proje	ect Work		·							
10	U23CSW501	Micro Project	PA	0	0	2	1	100	-	100
Abili	ty Enhancemen	t Course	·							
11	U23CSC5XX	Certification Course –V **	AEC	0	0	4	-	100	-	100
Man	datory Course									
12	U23CSM505	Essence of Indian Traditional Knowledge	MC	2	0	0	-	100	-	100
							21	600	600	1200

	SEMESTER – VI									
SI.	Course	Course Title	Cotogony	Pe	erio	ds	Cradita	M	ax. Mar	'ks
No	Code	Course The	Category	L	Τ	Ρ	Credits	CAM	ESM	Total
Theo	ry							_		-
1	U23ITTC03	Machine Learning	PC	3	0	0	3	25	75	100
2	U23CST605	Designing and Building of Bots	PC	3	0	0	3	25	75	100
3	U23CST606	Animation and Visual Effects	PC	3	0	0	3	25	75	100
4	U23CSE6XX	Professional Elective III #	PE	3	0	0	3	25	75	100
5	U23XXO6XX	Open Elective II \$	HS	3	0	0	3	25	75	100
Theo	ory Cum Practica									
6	U23CSB602	Blockchain Concepts and Applications	PC	2	0	2	3	50	50	100
Pract	tical									
7	U23ITPC03	Machine Learning Laboratory	PC	0	0	2	1	50	50	100
8	U23CSP604	Designing and Building of Bots Laboratory	PC	0	0	2	1	50	50	100
9	U23CSP605	Animation and Visual Effects Laboratory	PC	0	0	2	1	50	50	100
Proje	ect Work									
10	U23CSW602	Mini Project	PA	0	0	2	1	100	-	100
Ability Enhancement Course										
11	U23CSC6XX	Certification Course – VI **	AEC	0	0	4	-	100	-	100
Mano	datory Course									
12	U23CSM606	Gender Equality	MC	2	0	0	-	100	-	100
							22	625	575	1200

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\$ Open electives are to be selected from the list given in Annexure II

	SEMESTER – VII									
SI.	Course Code	Course Title	Category	P	erio	ds	Credits	Ν	lax. Mar	ks
No	Course Coue	Course fille	Calegory	L	Т	Р	Cleans	CAM	ESM	Total
Theo	Theory									
1	U23CST707	IoT and Edge Computing	PC	3	0	0	3	25	75	100
2	U23CST708	Data Science and Digital Marketing Analytics	PC	3	0	0	3	25	75	100
3	U23CST709	Neural computation	PC	3	0	0	3	25	75	100
4	U23CSE7XX	Professional Elective IV #	PE	3	0	0	3	25	75	100
5	U23XXO7XX	Open Elective III \$	OE	3	0	0	3	25	75	100
Prac	tical									
6	U23CSP706	IoT and Edge Computing Laboratory	PC	0	0	2	1	50	50	100
7	U23CSP707	Data Science and Digital Marketing Analytics Laboratory	PC	0	0	2	1	50	50	100
Project Work										
8	U23CSW703	Project phase – I	PA	0	0	4	2	50	50	100
9	U23CSW704	Internship / Inplant Training	PA	0	0	2	1	100	-	100
							20	375	525	900

	SEMESTER – VIII									
SI.	Course Code	Course Title	Category	Periods			Credits	Max. Marks		
No.	Course Coue	Course The	Calegory	L	Т	Ρ	Cieuits	CAM	ESM	Total
Theory										
1	U23HSTC03	Entrepreneurship and Business Management	HS	3	0	0	3	25	75	100
2	U23CSE8XX	Professional Elective V #	PE	3	0	0	3	25	75	100
3	U23CSE8XX	Professional Elective VI #	PE	3	0	0	3	25	75	100
Project Work										
4	U23CSW805	Project phase – II	PA	0	0	16	8	50	100	150
							17	125	325	450

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Professio	Professional Elective –I (Offered in Semester IV)							
SI. No.	Course Code	Course Title						
1.	U23CSE401	Programming in C++						
2.	U23CSE402	Computer Graphics						
3.	U23CSE403	Distributed Systems						
4.	U23CSE404	IoT Design Protocols						
5.	U23CSE405	UI / UX Development						
Professio	onal Elective –II (Offered in Semester V)						
SI. No.	Course Code	Course Title						
1.	U23CSE506	Programming in C#						
2.	U23ECEC01	Digital Image Processing						
3.	U23CSE507	Network Security						
4.	U23CSE508	Open-Source Programming for IOT						
5.	U23CSE509	Software Project Management						
Professio	onal Elective –III (Offered in Semester VI)						
SI. No.	Course Code	Course Title						
1.	U23CSE610	Haskell Programming						
2.	U23CSE611	Game Design and Development						
3.	U23CSE612	NOSQL Database						
4.	U23CSE613	IOT challenges and Future						
5.	U23CSE614	Server-Side Scripting Languages						
Professio	onal Elective –IV	(Offered in Semester VII)						
SI. No.	Course Code	Course Title						
1.	U23CSE715	Go Programming						
2.	U23CSE716	Augmented Reality						
3.	U23CSE717	Digital Watermarking and Steganography						
4.	U23CSE718	Digital Security						
5.	U23CSE719	Drone Technology						
	onal Elective –V (Offered in Semester VIII)						
SI. No.	Course Code	Course Title						
1.	U23CSE820	Redux Programming						
2.	U23CSE821	Virtual Reality						
3.	U23CSE822	Social Networking						
4.	U23CSEC02	Introduction to Industry 4.0						
5.	U23CSE823	Testing and Automation						
Professio	onal Elective –VI	(Offered in Semester VIII)						
SI. No.	Course Code	Course Title						
1.	U23CSE824	Kotlin Programming						
2.	U23CSE825	Scalable Data Science						
۷.								
3.	U23CSE826	Quantum Informatics						
	U23CSE826 U23CSE827 U23CSE828	Quantum Informatics IOT Security Open AI						

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ANNEXURE - I PROFESSIONAL ELECTIVE COURSES

		01 211 22201112 0								
S. No.	Course Code	Course Title	Offering Department	Permitted Departments						
Open I	Open Elective – I (Offered in Semester V/VI)									
1	U23CSOC01	Structured Query Language	CSE	ECE, EEE, ICE, MECH, CIVIL, BME and MECHTRONICS						
2	U23CSOC02	Computer Peripherals and Networking	CSE	Offered to all Branches						
Open El	ective – II (Offered	in Semester VII)								
1	U23CSOC03	Web Programming	CSE	ECE, EEE, ICE, MECH, CIVIL, BME AND MECHTRONICS						
2	U23CSOC04	Cloud Technology	CSE	ECE, EEE, ICE, MECH, CIVIL, BME and MECHTRONICS						

ANNEXURE - II OPEN ELECTIVE COURSES (R-2023)

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ANNEXURE – III

ABILITY ENHANCEMENT COURSES-(A) CERTIFICATION COURSES

S. No	Course Code	Course Title	Certified By
1	U23XXCX01	Adobe Photoshop	Adobe
2	U23XXCX02	Adobe Animate	Adobe
3	U23XXCX03	Adobe Dreamweaver	Adobe
4	U23XXCX04	Adobe After Effects	Adobe
5	U23XXCX05	Adobe Illustrator	Adobe
6	U23XXCX06	Adobe InDesign	Adobe
7	U23XXCX07	Autodesk AutoCAD -ACU	Autodesk
8	U23XXCX08	Autodesk Inventor - ACU	Autodesk
9	U23XXCX09	Autodesk Revit - ACU	Autodesk
10	U23XXCX10	Autodesk Fusion 360 - ACU	Autodesk
11	U23XXCX11	Autodesk 3ds Max - ACU	Autodesk
12	U23XXCX12	Autodesk Maya - ACU	Autodesk
13	U23XXCX13	Cloud Security Foundations	AWS
14	U23XXCX14	Cloud Computing Architecture	AWS
15	U23XXCX15	Cloud Foundation	AWS
16	U23XXCX16	Cloud Practitioner	AWS
17	U23XXCX17	Cloud Solution Architect	AWS
18	U23XXCX18	Data Engineering	AWS
19	U23XXCX19	Machine Learning Foundation	AWS
20	U23XXCX20	Robotic Process Automation / Medical Robotics	Blue Prism
21	U23XXCX21	Advance Programming Using C	CISCO
22	U23XXCX22	Advance Programming Using C ++	CISCO
23	U23XXCX23	C Programming	CISCO
24	U23XXCX24	C++ Programming	CISCO
25	U23XXCX25	CCNP Enterprise: Advanced Routing	CISCO
26	U23XXCX26	CCNP Enterprise: Core Networking	CISCO
27	U23XXCX27	Cisco Certified Network Associate - Level 2	CISCO
28	U23XXCX28	Cisco Certified Network Associate- Level 1	CISCO
29	U23XXCX29	Cisco Certified Network Associate- Level 3	CISCO
30	U23XXCX30	Fundamentals Of Internet of Things	CISCO
31	U23XXCX31	Internet Of Things / Solar and Smart Energy System with IoT	CISCO
32	U23XXCX32	Java Script Programming	CISCO
33	U23XXCX33	NGD Linux Essentials	CISCO
34	U23XXCX34	NGD Linux I	CISCO
35	U23XXCX35	NGD Linux II	CISCO
36	U23XXCX36	Advance Java Programming	Ethnotech
37	U23XXCX37	Android Programming / Android Medical App Development	Ethnotech
38	U23XXCX38	Angular JS	Ethnotech
39	U23XXCX39	Catia	Ethnotech
40	U23XXCX40	Communication Skills for Business	Ethnotech
41	U23XXCX41	Coral Draw	Ethnotech
42	U23XXCX42	Data Science Using R	Ethnotech
43	U23XXCX43	Digital Marketing	Ethnotech

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44	U23XXCX44	Embedded System Using C	Ethnotech
45	U23XXCX45	Embedded System with IOT / Arduino	Ethnotech
46	U23XXCX46	English For IT	Ethnotech
47	U23XXCX47	Plaxis	Ethnotech
48	U23XXCX48	Sketch Up	Ethnotech
49	U23XXCX49	Financial Planning, Banking and Investment Management	Ethnotech
50	U23XXCX50	Foundation Of Stock Market Investing	Ethnotech
51	U23XXCX51	Machine Learning / Machine Learning for Medical Diagnosis	Ethnotech
52	U23XXCX52	IOT Using Python	Ethnotech
53	U23XXCX53	Creo (Modelling & Simulation)	Ethnotech
54	U23XXCX54	Soft Skills, Verbal, Aptitude	Ethnotech
55	U23XXCX55	Software Testing	Ethnotech
56	U23XXCX56	MX-Road	Ethnotech
57	U23XXCX57	CLO 3D	Ethnotech
58	U23XXCX58	Solid works	Ethnotech
59	U23XXCX59	Staad Pro	Ethnotech
60	U23XXCX60	Total Station	Ethnotech
61	U23XXCX61	Hydraulic Automation	Festo
62	U23XXCX62	Industrial Automation	Festo
63	U23XXCX63	Pneumatics Automation	Festo
64	U23XXCX64	Agile Methodologies	IBM
65	U23XXCX65	Block Chain	IBM
66	U23XXCX66	Devops	IBM
67	U23XXCX67	Artificial Intelligence	ITS
68	U23XXCX68	Cloud Computing	ITS
69	U23XXCX69	Computational Thinking	ITS
70	U23XXCX09	Cyber Security	ITS
70	U23XXCX71	Data Analytics	ITS
72	U23XXCX72	Databases	ITS
73	U23XXCX73	Java Programming	ITS
74	U23XXCX74	Networking	ITS
75	U23XXCX75	Python Programming	ITS
76	U23XXCX76	Web Application Development (HTML, CSS, JS)	ITS
77	U23XXCX77	Network Security	ITS & Palo alto
78	U23XXCX78	MATLAB	MathWorks
79	U23XXCX79	Azure Fundamentals	Microsoft
80	U23XXCX80	Azure AI (AI-900)	Microsoft
81	U23XXCX81	Azure Data (DP -900)	Microsoft
82	U23XXCX82	Microsoft 365 Fundamentals (SS-900)	Microsoft
83	U23XXCX83	Microsoft Security, Compliance and Identity (SC-900)	Microsoft
84	U23XXCX84	Microsoft Power Platform (PI-900)	Microsoft
85	U23XXCX85	Microsoft Dynamics Fundamentals 365 – CRM	Microsoft
86	U23XXCX86	Microsoft Excel	Microsoft
87	U23XXCX87	Microsoft Excel Expert	Microsoft
88	U23XXCX88	Securities Market Foundation	NISM
89	U23XXCX89	Derivatives Equinity	NISM
90	U23XXCX90	Research Analyst	NISM
91	U23XXCX91	Portfolio Management Services	NISM

4. M

92	U23XXCX92	Cyber Security	Palo alto
93	U23XXCX93	Cloud Security	Palo alto
94	U23XXCX94	PMI – Ready	PMI
95	U23XXCX95	Tally – GST & TDS	Tally
96	U23XXCX96	Advance Tally	Tally
97	U23XXCX97	Associate Artist	Unity
98	U23XXCX98	Certified Unity Programming	Unity
99	U23XXCX99	VR Development	Unity

ABILITY ENHANCEMENT COURSES - (B) SKILL ENHANCEMENT COURSES

SI. No.	Course Code	Course Title
		Skill Enhancement Course 1 *
4	U23CSS301	 Computer Assembly and Troubleshooting
١.	023035301	2) Aptitude - I
		3) Electronic Devices and Circuits
		Skill Enhancement Course 2 *
2.	U23CSS402	1) Exploring Photoshop
Ζ.	023033402	2) Aptitude - II
		3) Office Automation
* 4	an annual ta ba a	a la a fa al five me tha liat

L.F.

* Any one course to be selected from the list

14

ANNEXURE – IV

DETAILS OF HONOURS/MINOR DEGREE

HONORS/MINOR IN CYBER SECURITY

			SEMESTE	R – VIII							
SI.	Semester	Course	Course Title	Category	P	eriod	ls	Credits	Ma	ax. Mar	ks
No.	Ochicater	Code		Oalcyory	L	Т	Ρ	Orcuits	CAM	ESM	Total
Theo	ory										
1	IV	U23CSX401	Cyber Security Essentials	PC	3	1	0	4	25	75	100
2	V	U23CSX502	Cryptography	PC	3	1	0	4	25	75	100
3	VI	U23CSX603	Malware Analysis and Reverse Engineering	PC	3	1	0	4	25	75	100
4	VII	U23CSX704	Security Incident and Response Management	PC	3	1	0	4	25	75	100
5	VIII	U23CSX805	Artificial Intelligence for Cyber Security	PC	3	1	0	4	25	75	100
			Total					20	125	375	500
			Equivalent NPT	EL courses	##						
1											
	IV to VIII	U23CSXN01	Cyber Security Equivalent NPTEL courses			3			-	2 WEE Course	

The student shall be given an option to earn 3 credits through one 12 week NPTEL course (equivalent) instead of any one course listed for honours degree programme and shall be completed before the commencement of eighth semester. The equivalent courses are subject to change based on its availability as per NPTEL course list.

k.M

SEMESTER I

k.M

Department	Mathematics	Program	me: B.	Tech.				
Semester	I	Course	<u> </u>	ry: BS	i	Semester		
Course Code	U23MATC01	Periods/			Credit		num Marks	
Course Name		L 3	Т 1	P	C 4	CAM 25	ESE 75	TM 100
Course Marrie	Engineering Mathematics – I (Common to ALI		-	- CSBS)	4	23	13	100
Prerequisite	Basic Mathematics		глосрі	0000)				
	On completion of the course, the stud	lonte will be	able t	•			BT Ma	pping
	On completion of the course, the stud						(Highest	
	CO1 Understand the concept of Eigen value	es and Eigen	ectors,	Diagona	ization of a	Matrix	K	5
Course Outcomes	CO2 Solve higher order differential equation	IS					K	3
Outcomes	CO3 Understand the different types of partia	al differential e	quations	5			K	3
	CO4 Know about the Applications of double	and triple into	egrals				K	3
	CO5 Gain the knowledge about Vector Calc	culus and its A	pplicatio	ons			K	3
UNIT – I	Matrices				Periods:	- —		
	- Systems of Linear Equations – Characteristic Matrix–Diagonalization of Matrices.	equation – Ca	ayley Ha	amilton T	neorem – E	igen values a	and Eigen	C01
UNIT – II	Differential Equations (Higher Order)				Periods:	12		
	equations of higher order with constant coe od of Variation of parameters.	efficients – E	uler's lir	ear equa	ation of hig	her order wi	th variable	CO2
UNIT – III	Functions Of Several Variables				Periods:	12		
Partial derivatives	 Total derivatives – Maxima and Minima of tw 	o variables –	Lagrang	je's Meth	od of multip	oliers.		CO3
UNIT – IV	Multiple Integrals				Periods:	12		
	 Change of order of integration (Cartesian for integral (Cartesian form). 	orm). Applica	tions: A	rea as a	double inte	egral (Cartesi	an form) –	CO4
UNIT – V	Vector Calculus				Periods:	12		
	ence and Curl – Directional derivatives – Irrotat Theorem and Stoke's Theorem (without proof		enoidal	vector fie	lds – Prope	erties (Statem	nent only) –	CO5
Jauss Divergence							de:60	
Lecture Period	· · ·	Practica	l Perio	ds: -		Total Peric	us.ov	
Lecture Period	``·	Practica	l Perio	ds: -		Total Peric	JUS.00	
Lecture Period Text Books	``·				tion Chenn		005.00	
Lecture Perioc Text Books 1. M.K. Venkatara	ds:45 Tutorial Periods:15	al Publishing (Compan	y, 2 nd Edi		ai, 2016.		
Lecture Period Text Books 1. M.K. Venkatara 2. N. P Bali and	ds:45 Tutorial Periods:15 aman, "Engineering Mathematics", The Nationa	al Publishing (athematics", L	Company akshmi	y, 2 nd Edi Publicatio	ons, New D	ai, 2016. elhi, 9 th Editio	on, 2018.	ers Pvt
Lecture Period Text Books 1. M.K. Venkatara 2. N. P Bali and 3. S. Narayanan Ltd, 2009. Reference Bool	ds:45 Tutorial Periods:15 aman, "Engineering Mathematics", The Nationa Manish Goyal, "A Text Book of Engineering Ma and T.K. Manickavasagam Pillay," Differential ks	al Publishing (athematics", L Equations an	Compan akshmi d Its App	y, 2 nd Edi Publications	ons, New D ", Viswana	ai, 2016. elhi, 9 th Editic than.S, Printe	on, 2018.	ers Pvt
Lecture Period Text Books 1. M.K. Venkatara 2. N. P Bali and 3. S. Narayanan Ltd, 2009. Reference Bool 1. G. Balaji, "Ma	ds:45 Tutorial Periods:15 aman, "Engineering Mathematics", The Nationa Manish Goyal, "A Text Book of Engineering Ma and T.K. Manickavasagam Pillay," Differential ks trices and Calculus (Engineering Mathematics	al Publishing (athematics", L Equations an – I)" Balaji Pu	Compan akshmi d Its App blication	y, 2 nd Edi Publications	ons, New D ", Viswana	ai, 2016. elhi, 9 th Editic than.S, Printe	on, 2018.	ers Pvt
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Lecture Period Text Books 1. M.K. Venkatara 2. N. P Bali and 3. S. Narayanan Ltd, 2009. Reference Bool 1. G. Balaji, "Ma 2. A. Singarave 3. Erwin Kreyszi	ds:45 Tutorial Periods:15 aman, "Engineering Mathematics", The Nationa Manish Goyal, "A Text Book of Engineering Ma and T.K. Manickavasagam Pillay," Differential ks trices and Calculus (Engineering Mathematics lu, "Engineering Mathematics – I", Meenakshi p g, "Advanced Engineering Mathematics ", Wile	al Publishing (athematics", L Equations an – I)" Balaji Pu publications, 1 y, 10 th Edition	Company akshmi d Its App blication 998. , 2019.	y, 2 nd Edi Publicatio blications	ons, New D ", Viswana tion June 2	ai, 2016. elhi, 9 th Editic than.S, Printe	on, 2018.	ers Pvi
Lecture Period Fext Books I. M.K. Venkatara R. N. P Bali and S. S. Narayanan Ltd, 2009. Reference Bool G. Balaji, "Ma C. A. Singarave Erwin Kreyszi B. B.V.Ramana,	ds:45 Tutorial Periods:15 aman, "Engineering Mathematics", The Nationa Manish Goyal, "A Text Book of Engineering Ma and T.K. Manickavasagam Pillay," Differential ks trices and Calculus (Engineering Mathematics – lu, "Engineering Mathematics – I", Meenakshi p g, "Advanced Engineering Mathematics ", Wiley " Higher Engineering Mathematics", Tata McGr	al Publishing (athematics", L Equations an – I)" Balaji Pu publications, 1 y, 10 th Edition aw – Hill, Nev	Company akshmi d Its App blication 998. , 2019. v Delhi,	y, 2 nd Edi Publicatio Dications Is, 9 th Edi	ons, New D ", Viswana tion June 2	ai, 2016. elhi, 9 th Editic than.S, Printe	on, 2018.	ers Pvi
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Lecture Period Text Books 1. M.K. Venkatara 2. N. P Bali and 3. S. Narayanan Ltd, 2009. Reference Bool 1. G. Balaji, "Ma 2. A. Singarave 3. Erwin Kreyszi 4. B.V.Ramana, 5. C W. Evans, " Web Reference 1. http://www.yo 2. http://www.ma	ds:45 Tutorial Periods:15 aman, "Engineering Mathematics", The Nationa Manish Goyal, "A Text Book of Engineering Ma and T.K. Manickavasagam Pillay," Differential ks trices and Calculus (Engineering Mathematics - lu, "Engineering Mathematics – I", Meenakshi p g, "Advanced Engineering Mathematics ", Wiles " Higher Engineering Mathematics", Tata McGra 'Engineering Mathematics", A Programmed App S rku.ca/yaoguo/math1025/slides/chapter/kuttler- ath.cum.edu/~wn0g/2ch6a.pdf	al Publishing (athematics", L Equations an – I)" Balaji Pu publications, 1 y, 10 th Edition aw – Hill, New proach, 3 rd Ec	Company akshmi d Its App blication 998. , 2019. v Delhi, i lition, 20	y, 2 nd Edi Publication Dications Is, 9 th Edi 6 th Edition	ons, New D ", Viswana tion June 2 n, 2018.	ai, 2016. elhi, 9 th Editio than.S, Printe	on, 2018. ers & Publish	ers Pv
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L.F.

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specif Outcomes (PSC		
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	-	2	1	1	-	-	-	-	1	3	-	-
2	3	2	1	1	-	1	1	-	-	-	-	1	3	-	-
3	3	2	1	1	-	1	1	-	-	-	-	1	3	-	-
4	3	2	1	1	-	1	1	-	-	-	-	1	3	-	-
5	2	2	1	-	-	-	1	-	-	-	-	1	3	-	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Contin	uous Asse	ssment Marks (C	AM)	End Semester	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Marks
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

1. Fr

Department	EEE a	and ECE	Program	nme: B	.Tech.				
Semester	1/11		Course	Catego	ry: ES	E	End Semester	Exam Typ	pe: TE
Course Code	11225	STC03	Peri	ods/We	ek	Credit	Maxin	num Marks	S
Course Coue	UZJE	31003	L	Т	Р	С	CAM	ESE	ТМ
Course Name		s of Electrical and Electronics neering	3	-	-	3	25	75	100
		(Common to CSE, IT, MECH, CIVIL,	MCTR, CCE	E, AI&DS	6, FT and	d CSBS Bra	anches)		
Prerequisite	Mathe	matics and Physics							
		mpletion of the course, the students						(Highes	apping st Level)
	CO1	Apply the basic concepts and various				•••			(3
Course	CO2	Analyze the AC circuits and develop r						s. K	(3
Outcomes	CO3	Gain the knowledge of power system and real time applications of transform			ance of e	electrical sa	atety measures	K	(2
	CO4	Understand the operator of semicond	uctor diode a	ind its ap	plication	IS.		K	(2
	CO5	Explain the characteristics and operat	tion of BJT a	nd FET.				K	(2
	CO6	Relate and Explain Different Commun	-					K	(2
		Section A – E	lectrical E	nginee	ring				
UNIT - I	DC Ci			••		Periods:	-	1. \ / 1/	
sources - ideal ar combination of	nd practi R, L, C	erence, Current, Resistance, Inductanc ical sources - concept of dependent and components, Voltage Divider and Theorems - Superposition, Thevenin, N	d independer Current Div	nt source ider Ru	es, Ohm' les, Me	s law, Kirch sh_and_No	nhoff's law, Seri	es parallel	CO1
UNIT - II	AC Cir	rcuits				Periods:	8		
polar and rectan Resonance in se Measurement –	igular fo ries and Two Wa		e, active, re	active, a	apparent	and comp ed AC Circu	blex power, pow	wer factor,	000
		ical Safety and Electrical Machines	·	<i>.</i> .		Periods:		• • •	
and cables, Safe Faraday's Law o principle, load tes	ty device of electro st and pe	r system and its functions, Wiring Acces es - fuse, relay and circuit breaker - Se omagnetic induction, Fleming's Right a erformance characteristics - Auto transf start and run induction motor – Load te	nsors and its and Left han former, Singl	s types. d rule -	DC Gen	erator and	DC Motor - co	nstruction,	CO3
		Section B – Ele	ectronics I	Engine	ering				
UNIT - IV	Semic	onductor Diodes and Applications			U	Periods:	7		
characteristics - zener diode as re	diffusion egulator	ctor materials – Doping - Intrinsic a n and depletion capacitance - Rectifier, – Light Emitting Diode (LED) - Solar C	Half wave a			or – PN ju	unction diode,		CO4
UNIT - V	Transi					Periods:			
characteristics – Transistor, EMO	Biasing SFET-D	tor - construction – operation - Comm - numerical application. Junction Field MOSFET operation characteristics - N	Effect Trans	istor (JF	ET), Met	tal oxide se	emiconductor Fi		CO5
UNIT - VI		unication Systems	O			Periods:			
of digital and ana	alog com annel – I	ock diagram of analog communication munication system- Block diagram of d Block diagram of communication system ation System.	ligital comm	unication	n system	- Electron	nagnetic Spectr	um. Wired	CO6
Lecture Periods	s: 45	Tutorial Periods: -	Practica	I Period	ls: -		Total Periods	s: 45	
Text Books			i			L			
 Dr. R. Sarava Wiley Publish 	anakuma er, 2 nd E amaniar	lectrical and Electronics Engineering", ar, Dr.V. Jegathesan, Dr. K. Vinoth Ku Edition, 2022. n, S. Salivahanan and K. A. Mureleedh	umar, Dr. K.	Kowsal	lya, "Bas	sic Electric	al and Electron	Ū	

k. Fr

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- 2. https://www.electrical4u.com/
- 3. https://nptel.ac.in/courses/108/102/108102146/
- 4. https://onlinecourses.nptel.ac.in/noc21_ee55/
- 5. https://nptel.ac.in/courses/117/102/117102059
 - * TE Theory Exam, LE Lab Exam

COs/POs/PSOs Mapping

COs					Pro	gram O	utcome	es (POs)					jram Spe omes (P	
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
2	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
3	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
4	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
5	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-
6	3	3	3	-	2	-	-	-	-	-	-	1	3	2	-

Correlation Level: 1 – Low, 2 – Medium, 3 – High

Evaluation Methods

		Со	ntinuous Assess	ment Marks (CAM)		End	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

1.80

-		outer Science and Engineering		nme: B.		·····			
Semester	1/11		Course			i	······		
Course Code	U23C	STC01	Perio	ods/Wee	k	Credit	Ma		irks
			L	T	Р	С	CAM	ariables – Branching – rrays. Simple value – Pass al Structure. ure- Simple out Functions or Directives- ids:45	TM
Course Name	Progr	amming in C	3	-	-	3	25	75	100
	,	(Common to All Bran	ches Exce	ept CSB	S and F	Т)			
Prerequisite	NIL								
	On co	ompletion of the course, the stud	dents will	be able	e to			(Highes	st Leve
0	CO1	Comprehend the basics of Computer	S.					ľ	(2
Course Outcomes	CO2	Illustrate the concepts of control strue	ctures and	looping.				k	(2
Catoomoo	CO3	Implement programs using arrays an	d functions	•				ľ	(3
	CO4	Demonstrate programs using Structu	re and Poir	iters.				k	(3
	CO5	Build the programs using Union and	File manac	ement O	perations	5.		ľ	(3
UNIT - I		luction				Periods:09	9	i	
		on of Computers - Block Diagram o				of Software	- Network	Structure	- CO,
		Decimal – Conversion – Algorithm – P	seudo cod	e – Flow	Chart.	Periods:09			
UNIT - II		gramming Basics ning – Basic structure of a 'C' program	_ compile	tion and	linking pr			/ariables	
	ressions	using operators in 'C' – Managing In							- co
UNIT - III		s and Functions				Periods:09	3		i
rograms- sorting- s y reference – Rec		g – matrix operations- Function – defin	ition of fun	ction – D	eclaratio	n of function	 Pass by 	value – Pa	ss CO
· · · · · · ·	•					.			
		ture and Pointers				Periods:09			
	ion – Str	ture and Pointers ructure definition – Structure declara zation – Pointers arithmetic – Pointers				ructure –Sel	f Referenti		
tructure Introducti ointers - Definition rograms.	ion – Str n – Initiali	ucture definition – Structure declara				ructure –Sel	f Referenti r and Struc		
tructure Introducti ointers - Definition rograms. UNIT - V Inion Introduction - Random Access Dynamic Memory F	ion – Str – Initiali Unior - Progran to Files - unctions	ructure definition – Structure declara zation – Pointers arithmetic – Pointers ns and Files ns Using Structures and Unions – Intro - File System Functions - Command	s and array oduction to I Line Argu	s -Pointe File - File ments- \$	er to Func Operatio Storage (ructure –Sel tion –Pointe Periods:0 ons - File Inp Classes - Pr	f Referenti r and Struc 9 out and Out re-Processo	ture- Simple out Function or Directive	e CO4
tructure Introducti ointers - Definition rograms. UNIT - V Inion Introduction - Random Access lynamic Memory F ecture Periods:	ion – Str – Initiali Unior - Progran to Files - unctions	ructure definition – Structure declara zation – Pointers arithmetic – Pointers ns and Files ns Using Structures and Unions – Intro - File System Functions - Command	s and array	s -Pointe File - File ments- \$	er to Func Operatio Storage (ructure –Sel tion –Pointe Periods:0 ons - File Inp Classes - Pr	f Referenti r and Struc 9 out and Out	ture- Simple out Function or Directive	e CO4
tructure Introducti ointers - Definition rograms. UNIT - V Inion Introduction - Random Access Dynamic Memory F .ecture Periods: Text Books	ion – Str – Initiali Unior - Progran to Files Functions	ructure definition – Structure declara zation – Pointers arithmetic – Pointers ns and Files ns Using Structures and Unions – Intro - File System Functions - Command Tutorial Periods: -	and array	s -Pointe File - File ments- S al Perio	er to Func Operatio Storage (ructure –Sel tion –Pointe Periods:0 ons - File Inp Classes - Pr	f Referenti r and Struc 9 out and Out re-Processo	ture- Simple out Function or Directive	e CO4
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tructure Introducti ointers - Definition rograms. UNIT - V Inion Introduction - Random Access ynamic Memory F ecture Periods: ext Books Balagurusamy. B 2. Yashvant Kanef 3. Herbert Schildt, deference Books 1. Vikas B. Agarw 2. Ashok N Kamth 3. Vikas Verma, " 4. P. Visu, R.Srini 2012. 5. PradipDev, Ma Veb References	ion – Str ion – Initiali Unior - Progran to Files - Initiali - Progran to Files - Initiali - Progran - Progran - S - Initiali - Progran - S - Initiali - Progran - S - S - S - Val Jyoti F hane, "Cc A Workbe ivasan ar	Tutorial Periods: - Tutorial Periods: - Tutorial Periods: - Mirani, "Computer Fundamentals, N omputer Programming", Pearson educ ook on C ", Cengage Learning, Second	and array oduction to Line Argu Practic , 8thEdition , 2017. ourthEditior irali Prakas ation, Secc d Edition,20 Computing	s -Pointe File - File ments- s al Perio ,2019. ,2014. ,2014. shan Aug ond Impre 012. and Pro	e Operatio Storage (ods: - -2019. ession,20 ogrammin	ructure –Sel tion –Pointe Periods:09 ons - File Inp Classes - Pr T 12. g", Fourth Ed	f Referenti r and Struc out and Out re-Processo	ture- Simple out Function or Directive ods:45	ns s- CO
tructure Introduction ointers - Definition rograms. UNIT - V Inion Introduction - Random Access ynamic Memory F ecture Periods: ext Books Balagurusamy. E Balagurusamy. E Balagurusamy. E Balagurusamy. E Balagurusamy. E Balagurusamy. E Balagurusamy. E Sett Books Balagurusamy. E Balagurusamy. E Balagurus	ion – Str ion – Initiali Unior - Progran to Files - Initiali - Progran to Files - Initiali - Progran to Files - Initiali - Progran - Pro	Tutorial Periods: - Tutorial Periods: - Tutorial Periods: - Mirani, "Computer Fundamentals, N Domputer Programming", Pearson educ Dok on C ", Cengage Learning, Second Dok on C ", Second Edition	and array oduction to I Line Argu Practic , 8thEdition , 2017. DurthEdition irali Prakas ation, Secc d Edition,20 Computing on, Oxford	s -Pointe File - File ments- 3 al Perio ,2019. ,2014. ,2014. m,2014. man Aug ond Impre)12. mand Pro Universit	e Operatio Storage (ods: - -2019. ession,20 ogrammin	ructure –Sel tion –Pointe Periods:09 ons - File Inp Classes - Pr T 12. g", Fourth Ed	f Referenti r and Struc out and Out re-Processo	ture- Simple out Function or Directive ods:45	ns s- CO

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COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specific Outcomes (PSOs)		
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	-	-	3	-	-	-	-	-	-	-	3	-	3
2	2	1	-	-	3	-	-	-	-	-	-	-	3	-	3
3	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3
4	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3
5	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Cont	inuous Assess	ment Marks (CAN	/)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

L.F.

Department	Compu	Iter Science and Engineering	Progran	nme: B.	Tech				
Semester	I		Course	Catego	ry: PC	*End	Semester	[.] Exam Typ	e: TE
Course Code	U23CS	TC02	Peric	ds/Wee	ek	Credit	Maxim	um Marks	
	02000		L	Т	Р	С	CAM	ESE	TM
Course Name	Proble	m Solving Approach	3	-	-	3	25	75	100
	,	(Common to (CSE, ICE	and CC	E)				
Prerequisite	NIL								
	After c	ompletion of the course, the st						BT Ma (Highest	Level)
0	CO1	Explain the basic concepts of comp	outational th	inking a	nd probler	n solving.		K	2
Course Outcomes	CO2	Explain basic concepts of algorithm	n and data o	organiza	tion.			K	2
Outcomes	CO3	Illustrate algorithmic solution to pro	blem solvin	g.				K	3
	CO4	Explain the concepts of array, merg	ging, sorting	g & sear	ching.			K	2
	CO5	Implement recursive algorithm to so	olve problei	ns.				K	3
UNIT-I	Compu	Itational Thinking and Logic-So	olving Pro	blems		Period	s:9	L	
		rmation and Data – Converting Infor its of Computation – Pseudocode ar			Data Capa	icity – Data	Types and	Encoding –	CO1
UNIT-II	Algorit	hmic Thinking and Data Organ	ization			Period	s:9		
		nms – Software and Programming – Text processing – Patterns – Pseu				Organizat	ion: Name	list, Graph	CO2
UNIT-III	Funda	mental Algorithms and Factorir	ng Metho	ds		Period	s:9		
Base Conversion –	Character	hanging – Counting – Summing – Fa to number conversion. Factorial Me eudocode and Flow Chart.							
UNIT-IV	Array,	Merging, Sorting and Searching	g			Period	s:9		
	te – Partiti	n – Array order reversal – Array Co oning – Longest monotone. Sorting a and Flow Chart.							
UNIT-V		rocessing, Pattern Searching a	nd Recur	sive Al	gorithms	Period	s:9		
		ne Adjustment – Linear Pattern Sear ation Generation – Permutation Gen					ion:Towers	of Hanoi	CO5
Lecture Period	s:45	Tutorial Periods: -	Practic	al Peric	ods: -	٢	otal Perio	ods:45	
2014. 2. R.G. Dromey, "H 3. Vickers Paul, "Ho Reference Book 1. Kathryn Rentz, F 2. Don McAdam, R 3. V Anton Spraul, 4. Sham Tickoo "A 5. Harold Abelson	low to solve ow to Think s Paula Lentz oger Winn, 'Think Like Problem-se & Gerald J	at, "Computational Thinking for Mode e it by Computer", PHI,2008. (like a Programmer: Problem Solving a Problem-solving Approach", McG "A Problem-solving Approach", Prer a Programmer: An Introduction to C olving Approach", Delmar/Cengage L ay Sussman, "Structure and Interpre	g for the Be Graw-Hill E ntive Hall C reative Pro _earning, 20	wildered ducation anada; 2 blem So 009.	d", Cengag 1,2018. 2 nd Edition, Iving", Cer	e Learning 2017. ngage Learn	EMEA,200	8. , 2012.	
Web References									
	a.com/Busi	problem-solving ness-Skills-tutorials/Problem-Solving- n/course/problem-solving-skills-6687	Technique	\$/553700)-2.html				

3. https://www.classcentral.com/course/problem-solving-skills-6687 * TE – Theory Exam, LE – Lab Exam

L.Fr

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	-	-	1	-	-	-	1	-	-	1	3	2	3
2	2	1	-	-	1	-	-	-	-	-	-	1	3	2	3
3	2	1	-	-	1	-	-	-	-	-	-	1	3	2	3
4	2	1	-	-	1		-	-	-	-	-	1	3	2	3
5	3	2	1	1	1	-	-	-	-	-	-	1	3	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

		Continu	ious Ass	essment Marks	(CAM)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	1	0	5	5	5	75	100

*Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

1. Fr

-		outer Science and Engineering		nme: B.					
Semester	1/1		Course	<u> </u>			nd Semester		
Course Code	U23H	STC01		ods/We	r	Credit	ļ	um Mark	
			L	T	Р	C	CAM	ESE	TM
Course Name	Unive	rsal Human Values – II	2 on to all Bra	- anch)	-	2	25	75	100
Prerequisite	UHV -	```	in lo all Di	ancn)					
		mpletion of the course, the stud	ents will k	e able	to			BT Ma	
	000	-					in a the area in	(Highest	t Level)
	CO1	Evaluate the significance of value inp their life and profession					•	К	2
Course	CO2	Distinguish between values and skills the Self and the Body, Intention and					ical facilities,	К	2
Outcomes	CO3	Analyze the value of harmonious reliprofession					n their life and	К	2
	CO4	Examine the role of a human being in	ensuring h	armony	in societ	y and natu	re.	К	2
	CO5	Apply the understanding of ethical or profession.	conduct to	ormulate	e the str	ategy for e	ethical life and	К	2
UNIT - I	Introd	luction to Value Education				Periods:	: 06		
Value Education	n - Self-ex	elationship and Physical Facility (Holis xploration as the Process for Value Ed od to Fulfil the Basic Human Aspiration	ucation - B						CO1
UNIT - II	Harm	ony int he Human Being				Periods:	: 06		
•	nsure se	an Instrument of the Self-Understand If-regulation and Health ony in the Family and Society		,		Periods:			CO2
	Family -	Basic Unit of Human Interaction- 'trust			ue in Re	lationshin			····•
		gs, Justice in Human-to-Human Relati							CO3
Universal Huma	n Order.	gs, Justice in Human-to-Human Relati				mony in the	e Society-Visio		CO3
Universal Huma UNIT - IV Understanding H	n Order. Harmo Harmony		onship - Ur f-regulation	and Mut	ding Har tual Fulfi	mony in the Periods: Iment amo	e Society-Visio : 06 ng the Four Or	n for the	CO3
Universal Huma UNIT - IV Understanding H	n Order. Harmony armony ng Existe	gs, Justice in Human-to-Human Relati ony in the Nature / Existence in the Nature-Interconnectedness, seli	onship - Ur f-regulation listic Perce	and Mut	ding Har tual Fulfi Harmony	mony in the Periods: Iment amo	e Society-Visio : 06 ng the Four Or ice	n for the	
Universal Huma UNIT - IV Understanding H Nature - Realizin UNIT - V Natural Accepta Constitution and Management M	n Order. Harmony ng Existe Implic Profe nce of Hu d Univers odels-Ty	gs, Justice in Human-to-Human Relati ony in the Nature / Existence in the Nature-Interconnectedness, self nce as Co-existence at All Levels - Ho cations of the Holistic Undersi ssional Ethics uman Values - Definitiveness of (Ethica cal Human Order-Competence in Profe- pical Case Studies-Strategies for Trans-	onship - Ur f-regulation listic Perce tanding - I) Human C essional Et sition towar	and Mut ption of I A Loc Conduct - hics-Holi ds Value	ding Har tual Fulfi Harmony ok at Basis fo stic Tec a - basec	mony in the Periods: Iment amo in Existen Periods: pr Humanis hnologies,	e Society-Visio : 06 ng the Four Or ice : 06 tic Education, I Production Sy Profession	ders of Humanistic stems and	CO4
Universal Huma UNIT - IV Understanding H Nature - Realizin UNIT - V Natural Accepta Constitution and Management M Lecture Perio	n Order. Harmony ng Existe Implic Profe nce of Hu d Univers odels-Ty	gs, Justice in Human-to-Human Relati ony in the Nature / Existence in the Nature-Interconnectedness, self nce as Co-existence at All Levels - Ho cations of the Holistic Underst ssional Ethics uman Values - Definitiveness of (Ethica cal Human Order-Competence in Profe	onship - Ur f-regulation listic Perce tanding - I) Human C essional Et	and Mut ption of I A Loc Conduct - hics-Holi ds Value	ding Har tual Fulfi Harmony ok at Basis fo stic Tec a - basec	mony in the Periods: Iment amo in Existen Periods: pr Humanis hnologies,	e Society-Visio : 06 ng the Four Or ice : 06 tic Education, I Production Sy	ders of Humanistic stems and	CO4
Universal Huma UNIT - IV Understanding F Nature - Realizin UNIT - V Natural Accepta Constitution and Management Me Lecture Perio Text Book 1. R. R. G	n Order. Harmony Harmony ng Existe Implic Profes nce of Hu Univers odels-Tyj ds:30 aur, R. A	gs, Justice in Human-to-Human Relati ony in the Nature / Existence in the Nature-Interconnectedness, self nce as Co-existence at All Levels - Ho cations of the Holistic Underse ssional Ethics uman Values - Definitiveness of (Ethica cal Human Order-Competence in Profe pical Case Studies-Strategies for Trans Tutorial Periods: -	onship - Ur f-regulation listic Perce tanding - l) Human C essional Et sition towar Practic	and Mut ption of I A Loc conduct - hics-Holi ds Value al Peric	ding Har tual Fulfi Harmony ok at Basis fo stic Tec - basec ods: -	mony in the Periods: Iment amo in Existen Periods: Periods: or Humanis hnologies, I Life and F	e Society-Visio 06 Ing the Four Or Ice 06 tic Education, I Production Sy Profession Total Perio	ders of Humanistic stems and ds: 30	CO4
Universal Huma UNIT - IV Understanding H Nature - Realizin UNIT - V Natural Accepta Constitution and Management M Lecture Perio Text Book 1. R. R. G Revised Ed	n Order. Harmony Harmony Ing Existe Implic Profe Nce of Hu Univers odels-Ty ds:30	gs, Justice in Human-to-Human Relati ony in the Nature / Existence in the Nature-Interconnectedness, self nce as Co-existence at All Levels - Ho cations of the Holistic Underst ssional Ethics uman Values - Definitiveness of (Ethica cal Human Order-Competence in Profi- pical Case Studies-Strategies for Trans- Tutorial Periods: -	onship - Ur f-regulation listic Perce tanding - l) Human C essional Et sition towar Practic	and Mut ption of I A Loc conduct - hics-Holi ds Value al Peric	ding Har tual Fulfi Harmony ok at Basis fo stic Tec - basec ods: -	mony in the Periods: Iment amo in Existen Periods: Periods: or Humanis hnologies, I Life and F	e Society-Visio 06 Ing the Four Or Ice 06 tic Education, I Production Sy Profession Total Perio	ders of Humanistic stems and ds: 30	CO4
Universal Huma UNIT - IV Understanding F Nature - Realizin UNIT - V Natural Accepta Constitution and Management M Lecture Perio Text Book 1. R. R. G Revised Ed Reference Bo 1. A Nagraj, Je 2. A.N. Tripath 3. Annie Leon	n Order. Harmony ng Existe Implic Profes nce of Hu d Univers odels-Tyj ds:30 aur, R. A ition, New oks eevan Vic ni, "Huma ard, "The Karam ch	gs, Justice in Human-to-Human Relati ony in the Nature / Existence in the Nature-Interconnectedness, self nce as Co-existence at All Levels - Ho cations of the Holistic Underse ssional Ethics uman Values - Definitiveness of (Ethica cal Human Order-Competence in Profe pical Case Studies-Strategies for Trans Tutorial Periods: -	onship - Ur f-regulation listic Perce tanding - l) Human C essional Et sition towar Practic Course in H /idya: EkPa ishers, New lition, 2011.	and Mut ption of I A Loc conduct - hics-Holi ds Value al Peric luman Va arichaya' y Delhi, 3	ding Har tual Fulfi Harmony ok at Basis fo stic Tec basec ods: - alues an 2, 2013. 3rd Editio	mony in the Periods: Iment amo in Existen Periods: Profession d Profession n, 2019.	e Society-Visio 06 Ing the Four Or Ice 06 tic Education, I Production Sy Profession Total Perio onal Ethics", Ex	ders of Humanistic stems and ds: 30 ccel Books,	CO4

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* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	-	-	-	-	-	2	3	2	2	-	-	3	-	-	-
2	-	-	-	-	-	2	3	2	2	-	-	3	-	-	-
3	-	-	-	-	-	3	3	2	2	-	-	3	-	-	-
4	-	-	-	-	-	2	3	2	2	-	-	3	-	-	-
5	-	-	-	-	-	2	3	2	2	-	-	3	-	-	-

Correlation Level: 1 – Low, 2 – Medium, 3 – High

Evaluation Methods

		Contir	nuous Assess	sment Marks (CA	M)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	1	0	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

L.F.

Department	English		Program	nme: B.	Tech.				
Semester	I		Course	Categoi	y: HS	*E	Ind Semeste	er Exam Typ	be: TE
Course Code	U23ENBC01		Perio	ds/Wee	k	Credit	t Ma	ximum Mar	ĸs
Course Coue			L	Т	Р	С	CAM	ESE	ТМ
Course Name	Communicativ	Ξ	2	-	2	3	50	50	100
		(Common to ALL	Branches	except (CSBS)				
Prerequisite	Basics of Englis	h Language							
	On completion	n of the course, the stude	nts will be	able to	כ			BT Ma (Highest	
	CO1 Understar	nd the communication flow in o	organization	and its c	bjective	S		Kź	·····
_	CO2 Write the	technical contents with gramm	natically pred	cise sent	ences			Kź	2
Course	CO3 Articulate	with correct pronunciation and	dovercome	vernacu	lar impa	ct in speak	ing	K3	5
Outcomes	CO4 Express of	ppinions confidently in formal a	ind informal	commur	nicative	contexts		Kź	2
	CO5 Attend int	erview with assertiveness						Ka	6
UNIT - I	Workstead Con	nmunication				Periods:	:10		
Communication, Communication -		ss, Channels, Barriers, Stra Barriers, Enhancing Listening							CO1
UNIT - II	Common Error	s In Writing And Compreh	nension St	rategie	S	Periods:	:10		
		Modifiers, Squinting Modifiers							CO2
Prediction, and C	ontextual Meaning		- g.eer e					,	
UNIT - III	Phonetics	anta and variala. Caunda Miar		Cilente		Periods:		Castling	1
		ants and vowels, Sounds Misp Mother Tongue Influence (MTI							CO3
UNIT - IV	Communicatio		i), vanoao i	ooninqu		Periods:		onguo	
List of Exercises					<u>i</u>				
Listening: Self In									
		pore, and Role Play							CO4
	echnical Comprehe n Errors in Writing	ension Passage							
UNIT - V	-	Communication - I			Ĩ	Periods:	.15		
List of Exercises	<u>.</u>	communication - I			<u> </u>	i cilous.	. 15		I
	ch Sounds, Intervie	w Videos							
		p Discussion, and Conversatio	n						CO5
Writing: Transcri	only Confused Wor	ds							
	-	T	D		1	T	T D		
Lecture Period	S: 30	Tutorial Periods: -	Practica	I Period	1s: 30		Total Perio	0ds: 60	
Text Books									
					<u> </u>		5		
Revised F		'A textbook of English Langu	uage Comm	nunicatio	n Skills	", Macmilla	an Publishers	India Priva	te Ltd.,
	Edition 2021.	.	0						
2. Rizvi M. / 2010.	Edition 2021. Ashraf, "Effective ⁻	Technical Communication", N	ew Delhi: Ta	ata-McG	iraw-Hill	Publishing	g Company L		
 Rizvi M. 2010. Balasubra 	Edition 2021. Ashraf, "Effective ⁻ amanian T, "Englis	.	ew Delhi: Ta	ata-McG	iraw-Hill	Publishing	g Company L		
2. Rizvi M. / 2010. 3. Balasubra Reference Boo	Edition 2021. Ashraf, "Effective ⁻ amanian T, "Englis ks	Technical Communication", N	ew Delhi: Ta	ata-McG , 2nd Ec	raw-Hill lition, Tr	Publishing inity Press,	g Company L		
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Academic Curriculum and Syllabi R-2023

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
2	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
3	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
4	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
5	1	-	-	-	-	-	-	-	1	3	-	1	-	-	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

			The	eory		
	Conti	nuous Ass	essment Marks	(CAM)	End Semester	
Assessment	CAT 1	CAT 2	Model Exam	Attendance	Examination (ESE) Marks	Total Marks
Marks	10		5	5	75	60
IVIDINS	2	0(to be wei	ghted for 10 mark	s)	(to be weighted for 50 marks)	60

Practical

Continuous Assessme	ent Internal Evaluation	End Semester	Internal Evaluation	Total Marks
30(to be weig	hted for 10 marks)	30	marks	
Listening (L)*	10	Listening (L)*	10	
Speaking(S)	5	Speaking(S)	5	40
Reading(R)*	10	Reading(R)*	10	
Writing(W)*	5	Writing(W)*	5	

LRW components of Practical can be evaluated through Language Lab Software

k. W

Department	EEE a	nd ECE	Program	me: B.Tec l	h.						
Semester	1/11		Course C	ategory: E	S	End Se	mester E	xam Typ	e: LE		
Course Code	U23ES	SPC01	P	Max	Maximum Marks						
Course Coue	UZJEC		L	Т	Р	С	CAM	ESE	TM		
Course Name		s of Electrical and Electronics eering Laboratory									
		(Common to CSE, IT, MECH, CIVIL, N	MCTR, CCE,	AI&DS, FT	, CSBS E	Branches)					
Prerequisite	Mather	natics and Physics									
	On coi	npletion of the course, the students v	vill be able to)				BT Ma (Highes	apping st Level)		
	CO1	Build the different wiring for domestic a	and commerc	ial applicat	ions.			K	3		
Course	CO2	Design and analyze the domestic pow	er distribution.					K	3		
Outcomes	CO3	Estimate the performance of transform	ner and motor	s by condu	cting load	d test.		K	3		
	CO4	Describe characteristics of semicondu	ctor diode and	d utilize it fo	or differen	t applicatior	าร	K	5		
	CO5 Relate the characteristics of various transistor										
CO6 Understand Rectifiers and Regulators									2		
		List of E	xperiments	;							

Section- A Electrical Experiments

Demonstration on Power Sources, Ammeter, Voltmeter, Wattmeter and Energy meter are Pre-requisite for conducting this Electrical Engineering Lab.

- 1. Electrical safety precautions and study of tools, accessories, electrical joints and electrical symbols.
- 2. Domestic Wiring Practice
 - Staircase wiring
 - Doctor's room wiring
 - Godown wiring
 - Wiring of Ceiling fan, LED lamps and Iron Box.
- 3. Design of Domestic power distribution.
- 4. Measurement of 3-phase power using two wattmeter method
- 5. Load test on DC shunt motor.
- 6. Load test on single phase transformer.
- 7. Load test on single phase Induction Motor.

Section – B Electronics Experiments

- 1. Study of Electronic components and equipment: Resistor, Capacitor
- 2. Measurement of AC signal parameter (Peak-Peak, rms period, frequency) using CRO.
- 3. VI Characteristics of PN junction diode, Zener diode
- 4. Input and output characteristics of Common Emitter configuration of BJT
- 5. Characteristics of JFET
- 6. Measurement of Ripple factor of HWR, FWR
- 7. Voltage Regulator using Zener Diode

Lecture Periods: -	Tutorial Periods: -	Practical Periods:30	Total Periods:30

S. Gowri, T. Jeyapoovan Nadar, "Engineering Practices Lab Manual", Vikas Publishing House Private Limited, New Delhi, 5th Edition, 2014. A. Sudhakar and S. P. Shyam Mohan, "Circuits and Networks: Analysis and Synthesis", Tata McGraw Hill Publishing Company Ltd., New Delhi, 5th Edition, 2017. D. P. Kothari and I.J. Nagrath, "Electric Machines", Tata McGraw Hill, New Delhi, 5th Edition, 2017. Edward Hughes, John Hiley, Keith Brown, Ian McKenzie Smith, "Electrical and Electronics Technology", Pearson Education Limited, New Delhi, 12th Edition, 2016. S.K. Sahdev, "Fundamentals of Electrical Engineering and Electronics", Dhanpat Rai and Co, 2017.

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- 2. https://www.electronics-tutorials.ws/accircuits/series-circuit.html
- 3. https://www.allaboutcircuits.com/textbook/experiments/
- 4. https://www.electronicshub.org/measurements-of-ac-current/
- 5. http://www.electronics-tutorials.ws

* TE – Theory Exam, LE – Lab Exam

B.Tech. Computer Science and Engineering

29

COs/POs/PSOs Mapping

Cos		Program Outcomes (POs)											Prog Outo	gram Spe omes (P	ecific SOs)
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
2	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
3	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
4	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
5	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-
6	3	2	3	-	-	1	-	-	3	-	-	1	3	2	-

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Methods

		Co	ontinuous /	Assess	ment Marks (CAM)		
	Assessment	Performanc clas	e in Practie sses	cal	Model		End Semester Examination	Total Marks
		Conduction of Practical	Record work	viva	Practical Examination	Attendance	(ESE) Marks	Marks
	Marks	15	5	5	15	10	50	100

1. Fr

		g Programme: B.Tech.									
Semester	1/11	Course	Catego	ory: E	S	E	nd Semes	ter Exam ⁻	Гуре: Ll		
Course Code	U23CSPC01	Perio	ds/Wee			Credit		aximum M	arks		
		L	T	P	•	С	CAM	ESE	TM		
Course Name	Programming in C Laboratory	0	0	2	İ	1	50	50	100		
Droroquiaita	(Common to All Brand	ches Exce	ept CSB	3S an	d F I))					
Prerequisite								BTI	/lapping		
	On completion of the course, the stud	lents will	be able	e to					est Leve		
	CO1 Implement logical formulations to solve	simple pro	blems le	eadin	g to s	pecific ap	plications.	·····	K3		
Course	CO2 Execute C programs for simple applica strings.	tions makir	ng use o	of basi	c con	structs, a	rrays and		K3		
Outcomes	CO3 Experiment C programs involving funct	ions, recurs	sion, po	inters	, and	structure	3.		K3		
	CO4 Demonstrate applications using sequer	ntial and rar	ndom ac	cess	file pr	ocessing			K3		
	CO5 Build solutions for online coding challer	nges.							K3		
		of Exercis	es					L			
4. Write a C	program to check whether a given character is v program to Print the numbers from 1 to 10 along rate do—While loop in C to find the sum of 'n' nu	g with their			n-c	ase state	ment.				
 4. Write a C 5. Demonst 6. Find the f 7. Write a C 8. Write a C 9. Develop a 10. Construct 11. Implement 12. Write a C 13. Develop a 14. Write a C 15. Write a C 16. Construct 17. Write a C 18. Write a C 18. Write a C 19. Write a C 20. Write a C 	program to Print the numbers from 1 to 10 along rate do—While loop in C to find the sum of 'n' nu actorial of a given number using Functions in C. program to check whether a given string is palir program to check whether a value is prime or no a C program to swap two numbers using call by t a C program to find the smallest and largest ele- nt matrix multiplication using C program. program to perform various string handling func- a C program to remove all characters in a string program to find the sum of an integer array usin program to find the Maximum element in an integ t a C program to display Employee details using program to display the contents of a file on the no ile by getting the input from the keyboard and ret program to pass the parameter using command	g with their imbers. hdrome or r ot? value and c ement in an tions like s except alph ig pointers. eger array u Structures monitor scr trieve the c Merge the line argum	squares not? call by re array. trlen, str nabets. using po een. ontents two file nents.	s. rcpy, s inters of the conte	ce. strcat, e file u	, strcmp.	operation co				
 Write a C Demonst Find the f Write a C Write a C Develop a Construct Implement Write a C Develop a Develop a Write a C Develop a Write a C 	program to Print the numbers from 1 to 10 along rate do—While loop in C to find the sum of 'n' nu actorial of a given number using Functions in C. program to check whether a given string is palin program to check whether a value is prime or nu a C program to swap two numbers using call by t a C program to find the smallest and largest ele nt matrix multiplication using C program. program to perform various string handling funce a C program to remove all characters in a string program to find the sum of an integer array usin program to find the Maximum element in an integer t a C program to display Employee details using program to display the contents of a file on the r ile by getting the input from the keyboard and ret program to pass the parameter using command command the parameter using command to the parameter using command to the parameter using command the parameter using comman	g with their imbers. hdrome or r ot? value and c ement in an tions like s except alph g pointers. eger array c Structures monitor scr trieve the c Merge the	squares not? call by re array. trlen, str nabets. using po een. ontents two file nents.	s. rcpy, s inters of the conte	ce. strcat, e file u	, strcmp.	operation co				
 Write a C Demonst Find the f Write a C Write a C Develop a Construct Implement Write a C Write a C Develop a Construct Implement Write a C 	program to Print the numbers from 1 to 10 along rate do—While loop in C to find the sum of 'n' nu actorial of a given number using Functions in C. program to check whether a given string is palir program to check whether a value is prime or no a C program to swap two numbers using call by t a C program to find the smallest and largest elect the matrix multiplication using C program. program to perform various string handling funce a C program to remove all characters in a string program to find the sum of an integer array usin program to find the Maximum element in an integ t a C program to display Employee details using program to display the contents of a file on the no ile by getting the input from the keyboard and ret program to pass the parameter using command command to command the parameter using command command to the parameter using command to the parameter using command command to the parameter using command to the parameter using com	g with their imbers. adrome or r ot? value and c ement in an tions like s except alph ig pointers. eger array u Structures monitor scr trieve the c Merge the line argum Practic	squares not? call by re array. trlen, str nabets. using po een. ontents two file eents. al Peric	s. eferen rcpy, s vinters of the conte	ce. strcat, file u ents to	, strcmp. sing file o	operation co ingle file Total Per	iods:30			
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 Write a C Demonst Find the f Write a C Write a C Develop a Construct Implement Write a C Write a C Develop a Construct Implement Write a C Develop a Write a C Develop a Write a C Write a C<	program to Print the numbers from 1 to 10 along rate do—While loop in C to find the sum of 'n' nu actorial of a given number using Functions in C. program to check whether a given string is palin program to check whether a value is prime or nu a C program to swap two numbers using call by t a C program to find the smallest and largest ele- nt matrix multiplication using C program. program to perform various string handling func- a C program to remove all characters in a string program to find the sum of an integer array usin program to find the Maximum element in an integ t a C program to display Employee details using program to display the contents of a file on the n ile by getting the input from the keyboard and ret program to create two files with a set of values. program to pass the parameter using command s: - Tutorial Periods: - (S haw," Learn C the Hard Way: Practical Exerce Addison Wesley,2016. el and Ajay Mittal," Computer Fundamentals and Sprankle, Jim Hubbard," Problem Solving and P th Kanethkar, "Let us C", BPB Publications, 13th nighan and D.M. Ritchie, "The C Programming L	g with their imbers. adrome or r ot? value and c ement in an ctions like s except alph ig pointers. eger array u Structures monitor scr trieve the co Merge the l line argum Practica ises on the programmin a Edition, 20	squares not? call by re array. trlen, str nabets. using po een. ontents two file eents. al Peric e Comp ing in C ng Conce 008.	eferen rcpy, s vinters of the conte ods:3 outatic ;", Pea epts,"	ce. strcat, file u ents to 50 arson Pear	, strcmp. sing file o form a s Gubjects Educatic son, 9 th E	operation co ingle file Total Per You Keep / n, First editi idition, 2011	iods:30 Avoiding on, 2011.			

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)												ram Spe omes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	-	-	3	-	-	-	-	-	-	-	3	-	3
2	2	1	-	-	3	-	-	-	-	-	-	-	3	-	3
3	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3
4	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3
5	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

	С	ontinuous	Asses	sment Marks (CA	M)		
Assessment	Performand cla	ce in practi Isses	cal	Model		End Semester	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	Examination (ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

L. W

Department	Mechanical Engineering	3.Tech.									
Semester	1/11	Course	e Categ	ory: ES	End	Semeste	er Exam T	ype: LE			
Course Code		Per	iods/We	eek	Credit	Max	ximum Ma	arks			
Course Code	U23ESPC03	L	Т	Р	С	CAM	ESE	TM			
Course Name	Engineering Graphics Using AutoCAD	-	-	2	1	50	50	100			
	(Common	to all Bra	nches)								
Prerequisite	Nil										
Course Code U23ESPC03 Periods/Week Credit M Course Name Engineering Graphics Using AutoCAD - 2 1 50 (Common to all Branches) Prerequisite Nil On completion of the course, the students will be able to Course Outcomes CO2 Perform drawing of basic geometrical constructions and multiple views of objects. Outcomes CO3 Visualize the isometric and perspective sections of simple solids. CO4 Connect side view associate on front view. CO5 Correlate sectional views and lateral surface developments of various solids. List of Experiments 1. Study of capabilities of software for Drafting and Modeling – Coordinate systems (absolute, relative, polar, simple figures like polygon and general multi-line figures. 2. Drawing a Title Block with necessary text and projection symbol. 3. Drawing front view and top view of simple solids like prism, pyramid, cylinder, cone, etc., and Dimensioning 5. Drawing a plan of residential building (Two bed rooms, kitchen, hall, etc.) 7. Drawing a plan of sectional views of prism, pyramid, cylinder, cone, etc.,											
Course CO2 Perform drawing of basic geometrical constructions and multiple views of objects.											
	CO4 Connect side view associate on front vie	ew.			l	K 4					
	CO5 Correlate sectional views and lateral sur	face deve	lopmen	ts of variou	is solids.		l	K 4			
List of Exper	ments										
 Drawing Drawing Drawing Drawing Creating Note: Plot 	sectional views of prism, pyramid, cylinder, cone, lateral surface development of prism, pyramid, cy isometric projection of simple objects. 3D model of simple object and obtaining 2D mult tting of drawings must be made for each exercise	etc, rlinder, co i-view dra	ne, etc,								
Lecture Per			ched to		s written by	······					
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 NS Parthas M.B Shah, Bhatt N.D a Jeyapoova 2016. 	poks ethune, "Engineering Graphics with AutoCAD", A arathy and Vela Murali, "Engineering Drawing", C 'Engineering Graphics", ITL Education Solutions nd Panchal V.M, "Engineering Drawing: Plane ar	Practic Spectrur Dxford uni Limited, F nd Solid G AutoCAD"	ched to al Perio n book 1 versity p Pearson eometry , Vikas I	ods: 30 Ist Edition, press, 2015 Education /", Charota	Macromedi i. In Publicatior Ir Publishing	Total a Press, P n, 2011. House, 20	9earson, 20 017.)20.			
 NS Parthas M.B Shah, Bhatt N.D a Jeyapoova 2016. C M Agraw 	boks bethune, "Engineering Graphics with AutoCAD", A arathy and Vela Murali, "Engineering Drawing", C 'Engineering Graphics", ITL Education Solutions and Panchal V.M, "Engineering Drawing: Plane ar in T, "Engineering Drawing and Graphics Using A	Practic Spectrur Dxford uni Limited, F ad Solid G AutoCAD"	n book 1 versity p earson eometry , Vikas I	ods: 30 Ist Edition, oress, 2015 Educatior (", Charota Publishing	Macromedi 5. n Publicatior r Publishing House Pvt	Total a Press, P n, 2011. House, 20	9earson, 20 017.)20.			
 NS Parthas M.B Shah, Bhatt N.D a Jeyapoova 2016. C M Agraw Dhananjay 	boks Bethune, "Engineering Graphics with AutoCAD", A arathy and Vela Murali, "Engineering Drawing", C 'Engineering Graphics", ITL Education Solutions Ind Panchal V.M, "Engineering Drawing: Plane ar In T, "Engineering Drawing and Graphics Using A al, Basant Agrawal, "Engineering Graphics", McG	Practic Spectrur Dxford uni Limited, F nd Solid G AutoCAD" Graw Hill, 2 Stion To C	n book 1 versity p earson eometry , Vikas I	ods: 30 Ist Edition, oress, 2015 Educatior (", Charota Publishing	Macromedi 5. n Publicatior r Publishing House Pvt	Total a Press, P n, 2011. House, 20	9earson, 20 017.)20.			
 NS Parthas M.B Shah, Bhatt N.D a Jeyapoova 2016. C M Agraw Dhananjay James Leas Web Reference http://vlabs http://www http://www http://www 	boks bethune, "Engineering Graphics with AutoCAD", A arathy and Vela Murali, "Engineering Drawing", C 'Engineering Graphics", ITL Education Solutions and Panchal V.M, "Engineering Drawing: Plane ar in T, "Engineering Drawing and Graphics Using A al, Basant Agrawal, "Engineering Graphics", McG A. Jolhe, "Engineering Drawing: With An Introduc ch, "AutoCAD 2017 Instructor", SDC Publications es sitb.ac.in/vlabs-dev/labs/mit_bootcamp/egraphics nptelvideos.in/2012/12/computer-aided-design.ht ch.litm.ac.in/meiitm/course/cad-in-manufacturing/	Practic Spectrur Dxford uni Limited, F ad Solid G AutoCAD" Graw Hill, 2 Stion To C , 2016. _lab/labs/	ched to f al Perio n book 1 versity p Pearson reometry , Vikas I 2012. AD",Mc0	ods: 30 Ist Edition, oress, 2015 Educatior (", Charota Publishing Graw Hill, 2	Macromedi 5. n Publicatior r Publishing House Pvt	Total a Press, P n, 2011. House, 20	9earson, 20 017.)20.			
 NS Parthas M.B Shah, Bhatt N.D a Jeyapooval 2016. C M Agraw Dhananjay James Leas Neb Reference http://vlabs http://www https://mei https://auto 	boks ethune, "Engineering Graphics with AutoCAD", A arathy and Vela Murali, "Engineering Drawing", C 'Engineering Graphics", ITL Education Solutions and Panchal V.M, "Engineering Drawing: Plane ar h T, "Engineering Drawing and Graphics Using A al, Basant Agrawal, "Engineering Graphics", McG A. Jolhe, "Engineering Drawing: With An Introduc ch, "AutoCAD 2017 Instructor", SDC Publications es s.iitb.ac.in/vlabs-dev/labs/mit_bootcamp/egraphics .nptelvideos.in/2012/12/computer-aided-design.ht	Practic Spectrur Dxford uni Limited, F ad Solid G AutoCAD" Graw Hill, 2 Stion To C , 2016. _lab/labs/	ched to f al Perio n book 1 versity p Pearson reometry , Vikas I 2012. AD",Mc0	ods: 30 Ist Edition, oress, 2015 Educatior (", Charota Publishing Graw Hill, 2	Macromedi 5. n Publicatior r Publishing House Pvt	Total a Press, P n, 2011. House, 20	9earson, 20 017.)20.			

k. M

* TE – Theory Exam, LE – Lab Exam

B.Tech. Computer Science and Engineering

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)												Program Specific Outcomes (PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3			
1	3	1	-	-	3	-	-	-	3	-	-	2	3	3	3			
2	3	1	-	-	3	-	-	-	3	-	-	3	3	3	3			
3	3	1	-	-	3	-	-	-	3	-	-	3	3	3	3			
4	3	1	-	-	3	-	-	-	3	-	-	2	3	3	3			
5	3	1	-	-	3	-	-	-	3	-	-	3	3	3	3			

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

	Co	ntinuous A	ssessi	ment Marks (CA	M)				
Assessment	Performan cla	ce in practi asses	ical	Model		End Semester Examination	Total Marks		
	Conduction of practical	Record work	viva	Practical Examination	Attendance	(ESE) Marks			
Marks	15	5	5	15	10	50	100		

L.Fr

Department	Computer Science and Engineering	Progra	amme: E	B.Tech.				
Semester	I	Course Category: Al Periods/Week			End	Semeste	er Exam T	ype: -
	Pe	riods/We	ek	Credit	Ma	ximum Ma	arks	
Course Code	U23CSC1XX	L	Т	Р	С	CAM	ESE	ТМ
Course Name	Certification Course – I	-	-	4	-	100	-	100

Students shall choose an international certification course offered by the reputed organizations like Google, Microsoft, IBM, Texas Instruments, Bentley, Autodesk, Eplan and CISCO, etc. The duration of the course is 40-50 hours specified in the curriculum, which will be offered through Centre of Excellence. Pass /Fail will be determined on the basis of participation, attendance, performance and completion of the course. If a candidate Fails, he/she has to repeat the course in the subsequent years. Pass in this course is mandatory for the award of degree.

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 50	Total Periods: 50	
	L	1	4	

k.M

Department	Computer Science and Engineering	Programme: B.Tech.					
Semester	1	Course Category: MC End Semester Exam Type:					
Course Code	U23CSM101	Periods/Week	Credit C	Maximum Marl		ks TM	
Course Name	Induction Programme	2 Weeks	Non-Credit	-	-	-	
Prerequisite	NIL	1		LL			
	On completion of the course, the students will be able to BT Mappir (Highest Level)						
						{2	
Course	CO2 Acquire grammar skills and capable to write and speak English confidently K2						
Outcomes	CO3Understand the basic concepts in Mathematics and ProgrammingKaCO4Know about the art and culture, language and literature of this vastsecularnationKa					\2 {2	
Outcomes							
CO5 Identify the inherent talent and develop it professionally K3 UNIT - I Universal Human Values Periods:12							
	ntroductions - Getting to know each other, As						
	Family, Peers, Society, Nation, Fixing one's Go						
	Management, Anger, Stress Personality Development, Self-improvement, Health - Health issues, Healthy diet, Healthy lifestyle,						
Hostel life, Relationships - Home sickness, Gratitude towards Parents, Teachers and others Ragging and interaction, Competition and Cooperation, Peer Pressure, Society - Participation in Society, Natural Environment - Participation in Nature,							
Sum Up - Role of Education, Need for a Holistic Perspective, Self-evaluation and Closure - Sharing and feedback.							
UNIT - II Proficiency in English Periods:12							
Communication skills – Prognosticteston Grammar - Synonyms, Antonyms, Tenses, Sentence Completion, Idioms and							
Phrases, One-word Substitution, Homophones, Homonyms, Use of Prepositions, Subject – verb - Agreement - Writing – CO2							
UNIT - III	g, Letter writing, Essay writing, Story Developme Bridge Course in Mathematics and C P		Periods:12				
Mathematics:	Bridge Course in Mathematics and C P	rogramming	Perious.12				
Fundamentals of differential and integral calculus: Theory and Practice, Limit of function - Fundamental results on limits -							
	ontinuity of a function - Concept of differentiation - Concept of derivative - Slope of a curve -Differentiation Techniques -						
	rivatives of elementary functions from first principle – Derivatives of inverse functions – Logarithmic differentiation – Method of						
	ubstitution –Differentiation of parametric functions – Differentiation of implicit functions –Higher order derivatives. Integrals of						
functions containing linear functions -Method of integration (Decomposition method, method of substitution, integration by parts)-							
	Definite integrals. Simple definite integrals – Properties of Definite integrals – Reduction formulae - Area and volume - Length of curve -surface area of a solid.						
C Programming:							
Features of C and its basic Structure - Keywords - constants - variables - operators - Data types - Formatted input and output							
statements - Control and Looping statement - Arrays - Functions - Strings - writing simple C programs.							
UNIT - IV Literary Activities Periods:12							
Team building activities - Quiz - Oral Exercises - Group discussion, Debate, Extempore, Role play, சிறப்பு ச8ொற்சபொழிவு – தமிழர் மரபு மற்றும் தமிழர் சதொழில் நட்பம்.						CO4	
UNIT - V Creative Arts Periods:12							
						CO5	
Classical, Cinematic -Mimicry -Mime.							
Lecture Period		Practical Periods: -	То	tal Period	s:60		
Reference Boo	-						
	R. Asthana, G.P. Bagaria," A Foundation Cours	e in Human Values and Pr	ofessional Ethic	s", Excel B	ooks, New	Delhi,	
2 nd Revised Edition, 2019.							
	Kumar Mohan R, "English Grammar for all (Functional and Applied Grammar)", Unicare Academy, 2022. Seely, John," Oxford A-Z of Grammar and Punctuation, Oxford Publication, 2013.						
	 B.V. Ramana," Higher Engineering Mathematics", Tata McGraw – Hill, New Delhi, 6th Edition, 2018. 						
	Singaravelu, "Engineering Mathematics - I", Meenakshi publications, Tamil Nadu, 2019.						
	 E. Balagurusamy, "PROGRAMMING IN ANSI C", Mc Graw Hill, 8th Edition, 2019. 						
7. Dr. K.K. Pillay, "Social Life of Tamils", A joint publication of TNTB & ESC and RMRL							
	alakrishnan, "Journey of Civilization", Rojamuthiah research publishers, 1 st Edition 2019.						
	ரலொறு - மக்களும்பண் பொடும், பிள்ளள, கக. கக. , ச8ன் ளன : உலகத்தமிழொரொய் B்சிநிறுவனம் , 2002. ' சமிம், முன்னவாடு ல சுக்காம், லிசுடன் பிசுசாம்						
10. கணினித்தமிழ் - முளனவரஇ்ல.சுந்தரம், விகடன் பிரசுரம். 11. கீழடி – ளவளக நதிக்களரயில் Bங்ககொல நகர நொகரிகம், தமிழக சதொல்லியல் துளற.							
Web Reference			<u>بر</u>				
	newsociety.com/Books/S/Slow-isBeautiful						
	/.aplustopper.com/formal-letter/						
	.javatpoint.com/c-programming-language-tutorial						
		I					
 4. http://www. 5. https://educesian 	math.cum.edu/~wn0g/2ch6a.pdf cation.nsw.gov.au/teaching-and-learning/curriculu						

1. Fr

36

SEMESTER II

Department	Mathe	matics	Programme:	B.Tech.					
Semester	II		Course Categ	ory: BS		End Se	emester Ex	am Type: TE	
	110014		Periods/Weel	k		Credit	Max	kimum Marks	5
Course Code	UZSIVI	ATC02	L	Т	Р	С	CAM	ESE	TM
Course Name	Engin	eering Mathematics – II	3	1	-	4	25	75	100
	<u>i</u>	(Common t	o ALL Branches E	xcept CS	BS, FT)		i.	L	1
Prerequisite	Basic I	Mathematics							
	On co	mpletion of the course, the st	udents will be ab	le to				BT Maj (Highest	
	CO1	Convert a periodic function in	to series form.					K2	2
Course	CO2	Compute Fourier transforms of	of various function	S.				K	8
Outcomes	CO3	Solve Differential Equations u	sing Laplace trans	sforms.				K	8
	CO4	Apply inverse Laplace transfo	orm of simple funct	ions.				Ka	3
	CO5	Solve difference equations us	•					K3	3
UNIT – I		er Series	3			Periods:12			
		neral Fourier series - Odd and E	Even functions - H	alf-Range	sine ser	ies and cosir	ne series - C	Change of	CO1
intervals – Parse UNIT – II		entity. er Transforms				Periods:12			
••••		s inverse – Properties of Fourie	r Transform (with	out proof	– Fouri		osino Tran	eforme and	I
their properties (outpioor	- Foun			SIOITIS anu	CO2
UNIT – III	Lapla	ce Transforms				Periods:12			
		mentary functions and Periodic	c functions - Basi	c properti	es (exclu	uding proof) -	 Laplace tr 	ansforms of	CO3
derivatives and ir UNIT – IV		Initial and final value theorems. se Laplace Transforms				Periods:12			
		lace Transforms – Convolution	theorem (exclud	lina proof) – Solut		ar Ordinary	/ Differential	
		er with constant coefficients.			,			Dinoronida	CO4
UNIT – V		ansforms				Periods:12			ę
Z-transforms - E equations using Lecture Period	JZ-tran	y Properties - Inverse Z-trans sform. Tutorial Periods:15			n and R	-	olution of		CO5
Lecture Period	5:40	Tutorial Periods:15	Practical Pe	rioas:-		I	otal Period	15:00	
	n "Engin	eering Mathematics", Tata McG			n 2011				
2	· •	am Singh. M. Kumar, "Engineeri		•		Tata McGray		Dalbi 2nd Ed	ition
2016.	Shiee N	anı Singn. M. Rumar, Engineen		JI Semest	erroan,		w i iii, inew	Denn,z · Eu	nion,
3. H.K. Dass, "A	Advanco	d Engineering Mathematics", S.	Chand Now Dolhi		on 2010				
-				,22 Luit	011 2019	•			
Reference Book I. N.P. Bali an Edition, 2016	d Dr. Ma	nish Goyal, "A TEXTBOOK OF	ENGINEERING	MATHEM	IATICS",	UNIVERSIT	Y SCIENC	E PRESS,In	idia, 8t
		as and C. Vijayakumari, "Engine	eering Mathematic	s", Pearso	on India	Education se	rvices Pvt.	Ltd, India 1 st 2	2017.
		anced Engineering Mathematics	-						
I. G. Balaji, "Er	ngineerin	g Mathematics - Transforms and	Partial Differentia	al Equation	าs", G. B	alaji Publishe	ers, 18 th Edi	tion, 2022.	
6. B.V. Ramana	a, "Highe	r Engineering Mathematics", Tat	a McGraw Hill, Ne	w Delhi,2	017.	-			
Neb References	5								
2. https://nptel.a	ac.in/cour	ses/111105121/ ses/111105035/							
•		ses/11110711							
• •	•	/nd1_noc20_ma17/preview							
5. https://nptel.a	ac.in/cour	ses/111/103/111103021/							
TE – Theory E	xam I F	– Lah Exam							

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* TE – Theory Exam, LE – Lab Exam

COs					Pro	gram C	utcom	es (POs)					Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
1	3	2	2	-	-	1	-	-	-	-	-	1	1	-	-	
2	3	2	1	1	-	1	-	-	-	-	-	1	3	-	-	
3	3	2	1	1	-	1	-	-	-	-	-	1	3	-	-	
4	3	2	1	1	-	1	-	-	-	-	-	1	3	-	-	
5	3	2	1	1	-	1	-	-	-	-	-	1	3	-	-	

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Co	ontinuous Ass	essment Marks (CAN	/1)	End Semester	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100



Semester	Physics / Chemistry	Tiogram	me: B.Te	ch.						
Course Code	U23BSTC01	Perio	ds/Week		Credit	Maxim	um Marks			
Course Coue	023001001	L	Т	Р	С	CAM	ESE	TM		
Course Name	Physical Science for Engineers	3	-	-	3	25	75	100		
	(Comr	non to all Brar	iches)							
Prerequisite	Physics of 12 th standard or equivalent / Che	mistry of 12 th s	standard	or equiv	alent.					
	On completion of the course, the stude	nts will be ab	le to				BT M (Highe	apping st Leve		
	CO1 Understand the basic of properties of	of magnetic, di	electric a	nd supe	erconductors	5.	ł	(2		
	CO2 Identify the wave nature of the partic	cles, physical s	significan	ce of w	ave function	S	H	(3		
Course	CO3 Understand the basic principles of la	aser and fiber of	optics co	mmunic	ation		H	(2		
Outcomes	CO4 Understand and familiar with the wate	er treatment.					H	(2		
	CO5 Understand the electrode potential f uses of various batteries.	or its feasibility	y in elect	rochemi	ical reaction	and	ł	(2		
	CO6 Understand the specific operating cor suggest a method to control corrosion		vhich cor	rosion c	occurs and		ŀ	(2		
	SECTI	ON A - PHYS	SICS							
UNIT - I	Magnetic, Dielectric and Supercondu	cting Materi	als		Periods: 8	3				
	Quantum Mechanics de Broglie Wavelength - Uncertainty Princip	le -Physical S	Significan	ce of w	Periods: 7		ingor wow			
Equation - Time	Dependent - Time Independent - Application to	p Particle in a	•				inger wave	C0,		
Equation - Time	Dependent - Time Independent - Application to	o Particle in a	•			nel Diode.	inger wave			
UNIT-III	Dependent - Time Independent - Application to Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Em		One Dim	ensiona	l Box - Tunr Periods: 7	nel Diode.				
UNIT-III Lasers - Principl Action -compone	Laser and Fiber Optics	iissions - Eins 1 ₂ laser, GaAs	One Dim tein's Co Laser F	ensiona efficient iber Op	l Box - Tunr Periods: 7 s - Populati tics - Princi	nel Diode. on Inversion ple and Pro	and Laser pagation of			
UNIT-III Lasers - Principl Action -compone	Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Em ents of laser - Types of Lasers - NdYAG, CO per - Numerical aperture and acceptance angle	iissions - Eins 1 ₂ laser, GaAs	One Dim tein's Co Laser F tical fiber	ensiona efficient iber Op	l Box - Tunr Periods: 7 s - Populati tics - Princi	nel Diode. on Inversion ple and Pro	and Laser pagation of			
UNIT-III Lasers - Principl Action -compone light in optical fit	Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Em ents of laser - Types of Lasers - NdYAG, CO per - Numerical aperture and acceptance angle SECTIO Water and its Treatment	nissions - Eins 1 ₂ laser, GaAs - Types of op 1 N B – CHEMI	One Dim tein's Co Laser F tical fiber STRY	ensiona efficient iber Op s (mate	I Box - Tunr Periods: 7 s - Populati tics - Princi rial, refractiv Periods: 8	nel Diode. on Inversion ple and Pro re index, mo	and Laser pagation of de)			
UNIT-III Lasers - Principl Action -compone ight in optical fit UNIT-IV Vater: Sources ilkalinity, TDS, n boiler - Treate	Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Em ents of laser - Types of Lasers - NdYAG, CO per - Numerical aperture and acceptance angle SECTIO	aissions - Eins 2 laser, GaAs - Types of op N B – CHEMI efinition and s a water: Rev (phosphate, c	One Dim tein's Co Laser F tical fiber STRY ignificand erse osi olloidal, s	ensiona efficient iber Op s (mate ce of-cc mosis-d sodium	Il Box - Tunr Periods: 7 is - Populati tics - Princi rial, refractiv Periods: 8 plor, odour, isadvantage	nel Diode. on Inversion ple and Pro ve index, mo turbidity, pl- es of using	and Laser pagation of de) I, hardness,	CO:		
UNIT-III Lasers - Principl Action -compone ight in optical fit UNIT-IV Vater: Sources ilkalinity, TDS, n boiler - Treate	Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Ements of laser - Types of Lasers - NdYAG, COper - Numerical aperture and acceptance angle SECTIO Water and its Treatment and impurities, Water quality parameters: Decoper and BOD. Desalination of brackishment of boiler feed water: Internal treatment	hissions - Eins - Iaser, GaAs - Types of op N B – CHEMI efinition and s h water: Rev (phosphate, c ation and zeol	One Dim tein's Co Laser F tical fiber STRY ignificand erse osi olloidal, s	ensiona efficient iber Op s (mate ce of-cc mosis-d sodium	Il Box - Tunr Periods: 7 is - Populati tics - Princi rial, refractiv Periods: 8 plor, odour, isadvantage	nel Diode. on Inversion ple and Pro /e index, mo /e index, mo /e index, mo /e index, pr s of using and Calgon	and Laser pagation of de) I, hardness,	CO:		
UNIT-III Lasers - Principl Action -compone light in optical fit UNIT-IV Vater: Sources alkalinity, TDS, n boiler - Treatr conditioning) and UNIT-V	Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Ements of laser - Types of Lasers - NdYAG, COper - Numerical aperture and acceptance angle SECTIO Water and its Treatment and impurities, Water quality parameters: Decoper and BOD. Desalination of brackishment of boiler feed water: Internal treatment d External treatment-lon exchange demineralization	issions - Eins - Types of op N B – CHEMI efinition and s water: Rev (phosphate, c ation and zeol evices	One Dim tein's Co Laser F tical fiber STRY ignificant erse osi olloidal, si ite proces	ensiona efficient iber Op s (mate ce of-cc mosis-d sodium ss.	I Box - Tunr Periods: 7 is - Populati tics - Princi rial, refractiv Periods: 8 plor, odour, isadvantage aluminate a Periods:	nel Diode. on Inversion ple and Pro ve index, mo turbidity, ph s of using and Calgon 8	and Laser pagation of de) I, hardness, hard water	CO:		
UNIT-III Lasers - Principl Action -compone ight in optical fit UNIT-IV Vater: Sources Ilkalinity, TDS, h boiler - Treatr conditioning) and UNIT-V Galvanic cells, neasurement. N and fuel cells: 1	Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Ements of laser - Types of Lasers - NdYAG, COper - Numerical aperture and acceptance angle SECTIO Water and its Treatment and impurities, Water quality parameters: Decoper and BOD. Desalination of brackishment of boiler feed water: Internal treatment d External treatment-lon exchange demineralization Electrochemical Cells and Storage Decomposition	aissions - Eins 2 laser, GaAs - Types of op N B – CHEMI efinition and s a water: Rev (phosphate, c ation and zeol evices de potential, Reference ele	One Dim tein's Co Laser F tical fiber STRY ignificant erse osi olloidal, s ite proces electroce	ensiona efficient iber Op s (mate ce of-cc mosis-d sodium ss. hemica hydroge	I Box - Tunr Periods: 7 is - Populati tics - Princi rial, refractiv Periods: 8 olor, odour, isadvantage aluminate a Periods: 1 I series. E en, calomel	nel Diode. on Inversion ple and Pro ve index, mo turbidity, pl- es of using and Calgon 8 MF of a c and Ag/AgC	and Laser pagation of de) I, hardness, hard water ell and its I. Batteries			
UNIT-III Lasers - Principl Action -compon- ight in optical fit UNIT-IV Vater: Sources Ilkalinity, TDS, n boiler - Treatr conditioning) and UNIT-V Galvanic cells, neasurement. N and fuel cells: 1 pplications.	Laser and Fiber Optics les of Laser - Spontaneous and Stimulated Ements of laser - Types of Lasers - NdYAG, COper - Numerical aperture and acceptance angle SECTIO Water and its Treatment and impurities, Water quality parameters: Decoper and BOD. Desalination of brackishment of boiler feed water: Internal treatment of External treatment-Ion exchange demineralization Electrochemical Cells and Storage Decoperation. Single electrode potential, standard electron Iternst equation. Electrolyte concentration cell. Types of batteries- alkaline battery-lead stora	aissions - Eins 2 laser, GaAs - Types of op N B – CHEMI efinition and s a water: Rev (phosphate, c ation and zeol evices de potential, Reference ele	One Dim tein's Co Laser F tical fiber STRY ignificant erse osi olloidal, s ite proces electroce	ensiona efficient iber Op s (mate ce of-cc mosis-d sodium ss. hemica hydroge Imium I	I Box - Tunr Periods: 7 is - Populati tics - Princi rial, refractiv Periods: 8 olor, odour, isadvantage aluminate a Periods: I series. E en, calomel pattery- fuel	nel Diode. on Inversion ple and Pro ve index, mo turbidity, pl- s of using and Calgon 8 MF of a c and Ag/AgC	and Laser pagation of de) I, hardness, hard water ell and its I. Batteries			
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BookZZ.org%29.pdf

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs					Program Specific Outcomes (PSOs)										
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-
2	3	2	3	2	-	-	-	-	-	-	-	-	-	-	-
3	3	2	3	2	-	-	-	-	-	-	-	-	-	-	-
4	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
5	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-
6	3	1	-	-	-	-	-	-	-	-	-	-	-	-	-

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Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Contir	nuous Assessi	ment Marks (CA	M)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Artificial Intelligence and Data Science	Program	me: B.T	ech				
Semester	11/111	Course (Category	': ES	E	nd Semester	Exam Type	: TE
Course Code	U23ADTC01	Perio	ds/Week	κ.	Credit	Ma	ximum Mark	S
	025701001	L	Т	Р	С	CAM	ESE	TM
Course Name	Programming in Python	3	0	0	3	25	75	100
	(Common	to All Bran	nches)					
Prerequisite	NIL							
	On completion of the course, the students w	vill be able	e to				BT Ma (Highes	tLeve
	CO1 Interpret the basic concepts of Python pr	ograms.					К	2
Course Outcomes	CO2 Articulate the concepts of Sets, Dictionar	ies and Ol	oject-Ori	ented c	oncepts.		К	2
Outcomes	CO3 Experiment with Numpy package.						к	3
	CO4 Apply and analyze Data Manipulation wit	h Pandas.					ĸ	3
	CO5 Illustrate programming concept for Visua			otlib			к	3
UNIT - I	Introduction To Python				Periods:	09	L	-
	non Program - Underlying mechanism of Module	Execution	n - Bran	china a			olvina Usina	n
	ops - Functions - Lambda Functions - Lists and M							ຶດວ
UNIT - II	Sequence Datatypes and Object-Oriente	ed Progra	mming	J	Periods:	09		
	pping and Sets - Dictionaries. Classes: Classes a	and Instan	ces - Inh	eritanc	e - Exception	n Handling -	Introduction	со
o Regular Expre	ssions using "re" module.							
UNIT - III	ssions using "re" module. Using Numpy				Periods:	09		
UNIT - III Basics of NumPy	Using Numpy - Computation on NumPy - Aggregations - Compu						an	
UNIT - III Basics of NumPy Arrays - Fancy In	Using Numpy - Computation on NumPy - Aggregations - Computed Data: NumPy'				risons - Mas	ks and Boole	an	
UNIT - III Basics of NumPy Arrays - Fancy In UNIT - IV	Using Numpy - Computation on NumPy - Aggregations - Compu- dexing - Sorting Arrays - Structured Data: NumPy' Data Manipulation with Pandas	s Structur	ed Array		risons - Mas Periods:	ks and Boole 09		
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UNIT - III Basics of NumPy Arrays - Fancy In UNIT - IV Introduction to Pa- dierarchical Indervith Time Series UNIT - V Basic functions of Customizing Plot ecture Periods Text Books 1. Jake Va 2. Zhang, V 3. Wesley Reference Book 1. John Pa 2. Jesus R 3. Brian Da Langua 4. Mark Lu 5. Gowrish Neb References 1. https://m 2. https://w	Using Numpy - Computation on NumPy - Aggregations - Computation on NumPy - Aggregations - Computation Arrays - Structured Data: NumPy' Data Manipulation with Pandas andas Objects - Data indexing and Selection - Opxing - Combining Data Sets. Aggregation and Gro - High Performance Pandas - eval() and query(). Visualization With Matplotlib f Matplotlib - Simple Line Plot - Scatter Plot - Dens Legends - Colour Bars - Three-Dimensional Plotti - Mutorial Periods: InderPlas, "Python Data Science Handbook - Esse ("An Introduction to Python and Computer Prograd J Chun, "Core Python Programming", Pearson Ed Independent Publishing Platform Independent Publishing Platform ge, "Python Programming A Complete Guide fo ge, CreateSpace Independent Publishing Platform Independent Publishing Platform Interoduction to Python Programming Py Interoduction to Python Pro	s Structur erating on uping - Piv sity and Co ng in Matu Practica ential Tools mming", S ucation, 2' nce for Du (thon", CR r Beginnen n, 2016. thon", O'R mming", C	ed Array Data in yot Table ontour Pl olotlib. Il Period s for Wor Springer d Editior mmies", C Press rs to Mas eilly Med	Pandas es -Vect lots - Hi Is:- king wi Publica n, 2006. 2 nd Edi Taylor ster anc	risons - Mas Periods: - Handling orized String Periods: stograms - E th Data", O'F tions, 2016. tion, John W and Francis Become an Edition, 2006	ks and Boole 09 Missing Data Operations 09 Binnings and Total Perior Reily Media Ir Reily Media Ir Group, 2017. Expert in Py	- Working Density - ds:45 hc, 2016. 2019.	
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UNIT - III Basics of NumPy Arrays - Fancy In UNIT - IV Introduction to Pa dierarchical Indevith Time Series UNIT - V Basic functions of Customizing Plot ecture Periods Text Books 1. Jake Va 2. Zhang.V 3. Wesley Reference Book 1. John Pa 2. Jesus R 3. Brian Di Languag 4. Mark Lu 5. Gowrish Veb References 1. https://w 3. https://w 3. https://w	Using Numpy - Computation on NumPy - Aggregations - Computation on NumPy - Aggregations - Computation Arrays - Structured Data: NumPy' Data Manipulation with Pandas andas Objects - Data indexing and Selection - Opxing - Combining Data Sets. Aggregation and Gro - High Performance Pandas - eval() and query(). Visualization With Matplotlib f Matplotlib - Simple Line Plot - Scatter Plot - Dens Legends - Colour Bars - Three-Dimensional Plotti - Mutorial Periods: InderPlas, "Python Data Science Handbook - Esse ("An Introduction to Python and Computer Prograd J Chun, "Core Python Programming", Pearson Ed Independent Publishing Platform Independent Publishing Platform ge, "Python Programming A Complete Guide fo ge, CreateSpace Independent Publishing Platform Independent Publishing Platform Interoduction to Python Programming Py Interoduction to Python Pro	s Structur erating on uping - Piv sity and Co ng in Matu Practica ential Tools mming", S ucation, 2' nce for Du (thon", CR r Beginnen n, 2016. thon", O'R mming", C	ed Array Data in yot Table ontour Pl olotlib. Il Period s for Wor Springer d Editior mmies", C Press rs to Mas eilly Med	Pandas es -Vect lots - Hi Is:- king wi Publica n, 2006. 2 nd Edi Taylor ster anc	risons - Mas Periods: - Handling orized String Periods: stograms - E th Data", O'F tions, 2016. tion, John W and Francis Become an Edition, 2006	ks and Boole 09 Missing Data Operations 09 Binnings and Total Perior Reily Media Ir Reily Media Ir Group, 2017. Expert in Py	- Working Density - ds:45 hc, 2016. 2019.	CC CC CC

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1. Vr

COs					Pre	ogram C	outcome	s (POs)					Pro Out	cific 60s)	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	-	-	3	-	-	-	-	-	-	-	3	-	3
2	2	2	1	3	-	-	-	-	-	-	-	2	2	2	3
2	3	2	2	3	-	-	-	-	-	-	-	2	3	2	3
3	3	3	2	3	-	-	-	-	-	-	-	3	3	3	3
2	3	3	2	3	-	-	-	-	-	-	-	2	3	3	3
3	3	3	2	3	-	-	-	-	-	-	-	3	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Methods

		Со	ntinuous Assess	ment Marks (CAM)		End	Tatal
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

1. W

Department	Computer Science and Engineering	Programm	ie: B.Tec	h				
Semester	11/111	Course 0	Category	ES	End	Semester	Exam Type	: TE
Course Code		Perio	ds/Week		Credit	Max	kimum Marks	S
	U23CSTC03	L	Т	Р	С	CAM	ESE	ТМ
Course Name	Data Structures	3	0	0	3	25	75	100
	(Common to All Bra	inches exce	ot CSBS	and FT)				
Prerequisite	Any Programming Knowledge							
	On completion of the course, the students						BT Ma (Highest	Level)
<u> </u>	CO1 Compute time and space complexity for		lems				K	
Course Outcomes	CO2 Demonstrate stack, queue and its oper CO3 Illustrate the various operations of link						K	
Outcomes	CO4 Use the concepts of tree for various ap						K	-
	CO5 Outline the various Tables, Graphs and		ques.				K	
UNIT - I	Basic Terminologies of Data Structures				Periods:09			
	sic Terminologies – Asymptotic Notations: Cor		alysis. A	ray and	its operation	ns - Searc	hing: Linear	•
Search and Bir	ary Search Techniques. Sorting: Bubble So Comparison among the sorting methods.							
UNIT - II	Stack and Queue Operations				Periods:09			
	ies: ADT Stack and its operations. Applications on s. Types of Queue: Simple Queue – Circular Q					uation. AD	T Queue	CO2
UNIT - III	Linked List Operations				Periods:09			
	gly linked list: Representation in memory. Algorit						nsertion -	
	representation of Stack and Queue. Doubly linke	ed list: opera	tions. Ci	rcular Lin		erations.		CO3
UNIT - IV	Trees				Periods:09			
Tree Traversals ·	e Terminologies. Different types of Trees: Binary - AVL Tree- Red Black Tree.	Tree - Thre	aded Bir	ary Tree	- Binary Sea	rch Tree -	Binary	CO4
UNIT - V	Graphs, Tables and Sets				Periods:09			
	minologies and Representations - Graph travers				nt types of ta	bles - Hasł	Table and	CO5
Lecture Periods	:45 Tutorial Periods:	Practica	I Period	s:-	Т	otal Period	ds:45	
Text Books								
2. Thomas H. Co	Sartaj Sahni," Fundamentals of Data Structures' reman, Charles E. Leiserson, Ronald L. Rivest a Jeffrey D. Ullman, John E. Hopcroft, "Data Struc s	nd Clifford S	stein, "Int	roductior	n to Algorithm		hird Edition, 2	2010.
	Classic Data Structures", Prentice-Hall of India, S	· · - ···	n 2012					
2. Robert Kruse,	C.L. Tondo and Bruce Leung, "Data Structures a				rentice-Hall o	of India,		
2. Robert Kruse, Second Edition	C.L. Tondo and Bruce Leung, "Data Structures a n, 2007.	and Program	Design	in c".Pi				
2. Robert Kruse, Second Edition 3. Mark Allen We	C.L. Tondo and Bruce Leung, "Data Structures a n, 2007. siss, "Data Structures and Algorithm Analysis in C	and Program C", Pearson I	Design Educatio	in c".Pi n, Secon	d. Edition,20	06.	Addison-We	eslev
2. Robert Kruse, Second Edition 3. Mark Allen We 4. Mark Allen N Publishing Con	C.L. Tondo and Bruce Leung, "Data Structures a n, 2007. biss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F mpany, 1995.	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		,
2. Robert Kruse, Second Edition 3. Mark Allen We 4. Mark Allen N Publishing Con 5. Mark Allen We	C.L. Tondo and Bruce Leung, "Data Structures an, 2007. h; 2007. hiss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		,
 Robert Kruse, Second Edition Mark Allen We Mark Allen Me Publishing Con Mark Allen We Edition, 1995. 	C.L. Tondo and Bruce Leung, "Data Structures a n, 2007. iiss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F mpany, 1995. iiss," Algorithms, Data Structures and Problem S	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		
 Robert Kruse, Second Edition Mark Allen We Mark Allen We Mark Allen We Mark Allen We Edition, 1995. Web References 	C.L. Tondo and Bruce Leung, "Data Structures an, 2007. biss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F mpany, 1995. biss," Algorithms, Data Structures and Problem S	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		,
 Robert Kruse, Second Edition Mark Allen We Mark Allen We Publishing Con Mark Allen We Edition, 1995. Web References https://www.ge 	C.L. Tondo and Bruce Leung, "Data Structures an, 2007. biss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F mpany, 1995. biss," Algorithms, Data Structures and Problem S b beksforgeeks.org/data-structures/	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		,
 Robert Kruse, Second Edition Mark Allen We Mark Allen We Mark Allen We Mark Allen We Edition, 1995. Web References https://www.ge https://www.jav 	C.L. Tondo and Bruce Leung, "Data Structures a n, 2007. eiss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F mpany, 1995. eiss," Algorithms, Data Structures and Problem S s eksforgeeks.org/data-structures/ vatpoint.com/data-structure-tutorial/	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		
 Robert Kruse, Second Edition Mark Allen We Mark Allen We Publishing Con Mark Allen We Edition, 1995. Web References https://www.ge https://www.jav https://www.stu 	C.L. Tondo and Bruce Leung, "Data Structures an, 2007. biss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F mpany, 1995. biss," Algorithms, Data Structures and Problem S b beksforgeeks.org/data-structures/ vatpoint.com/data-structure-tutorial/ udytonight.com/data-structures/	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		
 Robert Kruse, Second Edition Mark Allen We Mark Allen We Publishing Con Mark Allen We Edition, 1995. Web References https://www.ge https://www.jaw https://www.stu https://www.tut 	C.L. Tondo and Bruce Leung, "Data Structures a n, 2007. eiss, "Data Structures and Algorithm Analysis in C Weiss," Algorithms, Data Structures and F mpany, 1995. eiss," Algorithms, Data Structures and Problem S s eksforgeeks.org/data-structures/ vatpoint.com/data-structure-tutorial/	and Program C", Pearson P Problem So	Design Educatio Iving wi	in c" . Pi n, Secon th C++"	d. Edition,20 , Illustrated	06. Edition,		

1. Kr

COs					Pro	gram O	utcome	es (POs)						gram Spe comes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3
2	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3
3	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3
4	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3
5	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

		Continu	ous Asse	ssment Marks (CAM)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	1	.0	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

1. W

Department	Infor	mation Technology	Programme: B.Tech.									
Semester	II		Course			*End	······,	Exam Ty				
Course Code	11231	FTC01		ds/Wee		Credit	į	ximum Ma				
			L	Т	P	C	CAM	ESE	TM			
Course Name	Digit	al Design and System Architecture	3	0	0	3	25	75	100			
		(Common	to CSE a	nd IT)								
Prerequisite	Basic	mathematics, Basics of Electrical and	d Electron	ics Eng	ineering							
	On c	ompletion of the course, the studen	nts will be	e able to	D			BT Ma (Highes	apping st Leve			
	CO1	Demonstrate simplifications of Boolean fu	unctions.					k	(2			
Course	CO2	Describe various combinational logic circ	uits.					k	(2			
Outcomes	CO3 Illustrate various sequential circuits. K2											
•	CO4	Narrate the basic components and comp	uter organ	zation				٢	(2			
	CO5	Explain memory types and I/O organization	on					k	(2			
UNIT - I	Revie	ew of Number Systems				Periods:09)					
magnitude repres	entatio	ems - Conversion of Number systems - B on and Compliment representations - Binar ean function: Theorems and laws, K-Map	ry codes - I	Boolean	Algebra	- Boolean fun						
UNIT - II	Logi	c Gates and its Types				Periods:09)					
		tional circuits - Design procedures of C Carry look ahead adder - Decoder - Enco					actors - Bi	nary parall	^{el} CO			
UNIT - III	Sequ	ential Logic Design				Periods:09)		i			
Flip-Flops - Excit	tation t	al Circuits - Latches - Types of Latches: Sf able of Flip-Flops - Counters : Asynchro t registers : SISO,SIPO,PISO,PIPO and U	nous Cou	nters - S	Synchron	ous counters	- Mod co	unters - Sh	lift			
UNIT - IV	Fund	amentals Of Computer Organization	n			Periods:09)					
nstructions, Inpu	t – Out	Computer, Organization and Design: Ins tput and Interrupt, ALU design, Execution ed control, Pipelining: Basic concepts, Dat	of a com	olete inst	ruction-l	Multiple bus o	organizatio	n, Hardwire	d CO			
UNIT - V	Mem	ory And I/O Organization				Periods:09)		i			
memory, input-ou	itput in	in memory, Memory chip Organization, terface, asynchronous data transfer, Mod (PCI, SCSI, USB), Case study – Advance	es of trans	fer, Prio								

Lecture Periods:45	Tutorial Periods: -	Practical Periods:-	Total Periods:45	
Text Books				

 M. Morris Mano and Michael Ciletti, Digital Design, Sixth Edition, Pearson India Education Services, Pvt. Ltd., 2018
 Stephen Brown and ZvonkoVranesic, "Fundamentals of Digital Logic with VHDL Design", Tata McGraw Hill Education Pvt. Ltd., 3rd Edition, 2012.

3. M.Moris Mano, Computer System Architecture, Third Edition, Pearson Education, 2017: The Complete Reference", McGraw Hill, FourthEdition,2014

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1.11

Reference Books

- 1. Tocci R J and Widmer N S, "Digital Systems Principles and Applications", Prentice Hall of India, New Delhi, 11th Edition, 2010.
- 2. John F. Wakerly, "Digital Design Principles and Practices", Pearson Education, 4th Edition, 2006.
- 3. Carl Hamacher, ZvonkoVranesic and SafwatZaky, "Computer Organization", 5th edition, Tata McGraw Hill Education, 2011.
- David A. Patterson and John L. Hennessey, "Computer Organization and Design", 5th edition, Morgan Kauffman /Elsevier, 2014
 Roger Tokhiem, "Schaum's Outline of Digital Principles", McGraw Hill publication, 3rd Edition, 1994.
- 5. Roger Tokniem, "Schaum's Outline of Digital Principles", McGraw Hill publication, 3rd Edition, 1994.

Web References

- 1. https://www.geeksforgeeks.org/digital-electronics-logic-design-tutorials/
- 2. https://nptel.ac.in/courses/117/105/117105080/
- 3. https://nptel.ac.in/courses/106/105/106105163/
- 4. https://www.javatpoint.com/computer-organization-and-architecture-tutorial
- 5. http://www.ee.surrey.ac.uk/Projects/CAL/digital-logic/gatesfunc/
 - * TE Theory Exam, LE Lab Exam

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
1	2	1	2	-	1	-	-	-	-	1	-	-	3	-	-	
2	2	1	2	-	1	-	-	-	-	1	-	-	3	-	-	
3	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-	
4	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-	
5	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-	

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

Accomment		Continuous	s Assessment	Marks (CAM)		End Semester	Total	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Marks	
Marks	1	0	5	5	5	75	100	

*Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

1.11

Department	English		Progran	nme: B.	Tech.				
Semester	II		Course	Catego	ry: HS	*E	Ind Semeste	er Exam Ty	pe: TE
Course Code	U23ENBC02		Peric	ds/Wee	ek	Credit	Max	kimum Marl	s
Course Coue	UZJENBCUZ		L	Т	Р	С	CAM	ESE	TM
Course Name	Communicative	English-II	2	-	2	3	50	50	100
	i	(Common to A	LL Branches	except	CSBS)		i		.i
Prerequisite	Basics of English	······			,				
	On completion	of the course, the stu	Idents will be	able to	D			BT Mar (Highest	
	CO1 Draft effec	tive written communica	ation in profes	sional e	environm	nent		Kź	2
Course	CO2 Apply the	mechanics of creative	writing with pr	ecision	and clar	ity		K	}
Outcomes		nguage skills profess various etiquettes in r			e overal	personalit	y through	Kź	2
	CO4 Develop la	inguage fluency and ga	ain self-confid	ence				Ka	\$
	CO5 Express th	oughts and ideas with	clarity and for	cus				Kź	2
UNIT - I	Business Corres	pondence				Periods:1	0		
	a quotation, Placin	ar / Home Loans / Joining g Order, Letter of Comp					e', Job Applic		CO1
_	<u>.</u>	-	··· 0····· ··· · ··· · · · · · · · · ·	·	-1		-		1
	•	cture , Art of condensatio ing, Techniques of Essay	•	•			or phrase and	clause in	CO2
UNIT - III	Etiquettes		, Whang, ballio			Periods:1	0		
-		Etiquette, Meeting Etique	tte. Telephone	Etiquette	e. Email		-	tiquette.	000
	Communication Etiqu		,		-,	,		,	CO3
JNIT - IV	Communication	Practice-II				Periods:1	5		
	writing tips Minute, Impromptu S of examples for Mo	Speech, Contemporary Is des of Writing	ssues						CO4
UNIT - V	7	ommunication-II				Periods:1	5		
ist of Exercises									
Speaking: Tear Reading: Phra	os on different typ n Presentation, Ne ses and Clauses	egotiation Skills							CO5
-		topic, Paraphrasing P			•			•	
ecture Periods	:30	Futorial Periods: -	Practica	l Perio	ds:30		Total Perio	ds:60	
 Kumar, Sa Raman, M 	anjay, Pushpalatha," leenakshi & Sangee	ng Official and Business Communication Skills". (tha Sharma," Communica	Oxford Universi	ty Press	, 2018.	-			
Reference Bool		—							
 Gerson SI Grussender 	haron J, Steven M. C orf, Marion, "English	em,, "The book of Etique Gerson, "Technical Writin for Presentations". Oxfor e to Writing and Speaking	g Process and rd University Pr	Product" ess, Oxf	', Pearso ord, 2007	n Education 7.			

4.

Seely John, "The Oxford Guide to Writing and Speaking", Oxford University Press, 2006. R.C. Sharma, Krishna Mohan, "Business Correspondence and Report Writing", Tata McGraw Hill &Co.Ltd., New Delhi, 2001. 5.

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1. 11

Web References

- 1. https://www.indeed.com/career-advice/finding-a-job/how-to-write-an-application-letter
- 2. https://owlcation.com/humanities/Four-Types-of-Writing
- 3. https://targetstudy.com/languages/english/paragraph-writing.html
- 4. https://www.businessnewsdaily.com/8262-email-etiquette-tips.html
- 5. https://www.youtube.com/watch?v=UOceysteljo

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
1	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-	
2	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-	
3	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-	
4	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-	
5	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-	

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

			The	eory		
	Conti	nuous Ass	sessment Marks	(CAM)	End Semester	
Assessment	CAT 1	CAT 2	Model Exam	Attendance	Examination (ESE) Marks	Total Marks
Marks	10		5	5	75	60
WAIKS	20	0(to be we	ighted for 10 mar	ks)	(to be weighted for 50 marks)	00

		Practical		
Continuous Assessme	nt Internal Evaluation	End Semester I	nternal Evaluation	Total Marks
30(to be weigh	ted for 10 marks)	30 r		
Listening (L)*	10	Listening (L)*	10	
Speaking(S)	5	Speaking(S)	5	40
Reading(R)*	10	Reading(R)*	10	
Writing(W)*	5	Writing(W)*	5	

LRW components of Practical can be evaluated through Language Lab Software

1.11

Department	Mech	anical Engineering	Progran	nme: B.	Tech.					
Semester	I/II		Course	Catego	ry: ES	*End	Semester I	Exam Ty	pe: LE	
0	1100-00	-DC02	Perio	ds/Wee	Max	Maximum Marks				
Course Code	U23ES	PC02	L	Т	Р	С	CAM	ESE	TM	
Course Name	Desig	n Thinking and IDEA Lab	-	-	2	1	50	50	100	
		(Сог	mmon to ALL Bra	nches)	5					
Prerequisite	Basic I	Knowledge of Science								
	On c	ompletion of the course, the	students will b	be able	to			BT Ma (Highes	apping st Level	
	001	ed with the	ľ	(2						
	CO2 Develop proficiency in ideation techniques to generate creative and innovative solutions for various design challenges and problems									
Course Outcomes	CO3	Acquire practical knowledge of me hands-on experience with machine assembly of physical components	ery, tools, and teo					k	(3	
	CO4	Cultivate the skills necessary for d ability to integrate user needs, ma design process.						k	(4	
	CO5	K4								

Design process: Traditional design, Design thinking, Existing sample design projects, Study on designs around us, Compositions/structure of a design, Innovative design: Breaking of patterns, Reframe existing design problems, Principles of creativity Empathy: Customer Needs, Insight-leaving from the lives of others/standing on the shoes of others, Observation

Design team-Team formation, Conceptualization: Visual thinking, Drawing/sketching, New concept thinking, Patents and Intellectual Property, Concept Generation Methodologies, Concept Selection, Concept Testing, Opportunity identification Prototyping: Principles of prototyping, Prototyping technologies, Prototype using simple things, Wooden model, Clay model, 3D printing; Experimenting/testing.

Sustainable product design, Ergonomics, Semantics, Entrepreneurship/business ideas, Product Data Specification, Establishing target specifications, Setting the final specifications. Design projects for teams.

List of Lab Activities and Experiments

- 1. Schematic and PCB layout design of a suitable circuit, fabrication and testing of the circuit.
- 2. Machining of 3D geometry on soft material such as softwood or modelling wax.
- 3. 3D scanning of computer mouse geometry surface. 3D printing of scanned geometry using FDM or SLA printer.
- 4. 2D profile cutting of press fit box/casing in acrylic (3 or 6 mm thickness)/cardboard, MDF (2 mm) board using laser cutter & engraver.
- 5. 2D profile cutting on plywood /MDF (6-12 mm) for press fit designs.
- 6. Familiarity and use of welding equipment.
- 7. Familiarity and use of normal and wood lathe.
- 8. Embedded programming using Arduino and/or Raspberry Pi.
- 9. Design and implementation of a capstone project involving embedded hardware, software and machined or 3D printed enclosure.
- 10. Discussion and implementation of a mini project.
- 11. Documentation of the mini project (Report and video).

Lecture Periods:-	Tutorial Periods: -	Practical Periods:30	Total Periods:30	
Text Books				

1. Tim Brown, Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation, HarperCollins Publishers Ltd.

1.11

2. Workshop / Manufacturing Practices (with Lab Manual), Khanna Book Publishing.

Reference Books

- 1. Ulrich and Eppinger, Product Design and Development, 3rd Edition, McGraw Hill, 2004
- 2. The Big Book of Maker Skills: Tools & Techniques for Building Great Tech Projects. Chris Hackett. Weldon Owen; 2018.
- 3. The Total Inventors Manual (Popular Science): Transform Your Idea into a Top-Selling Product. Sean Michael Ragan, Weldon Owen; 2017.
- 4. The Art of Electronics. 3rd edition. Paul Horowitz and Winfield Hill. Cambridge University Press.
- 5. Practical Electronics for Inventors. 4th edition. Paul Sherz and Simon Monk. McGraw Hill.
- 6. Make Your Own PCBs with EAGLE: From Schematic Designs to Finished Boards. Simon Monk and Duncan Amos. McGraw Hill Education.
- 7. Programming Arduino: Getting Started with Sketches. 2nd edition. Simon Monk. McGraw Hill.
- 8. Venuvinod, PK., MA. W., Rapid Prototyping Laser Based and Other Technologies, Kluwer
- 9. Chapman W.A.J, "Workshop Technology", Volume I, II, III, CBS Publishers and Distributors, 5th Edition, 2002.

Web References

1. https://onlinecourses.nptel.ac.in/noc23_mg72

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs					Pro	gram O	utcome	es (POs)					Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
1	3	2	2	2	2	2	-	-	2	-	3	2	-	-	-	
2	3	3	3	2	2	2	-	-	2	-	3	2	-	-	-	
3	3	3	3	2	3	2	-	-	2	-	3	2	-	-	-	
4	3	3	3	2	3	2	-	-	2	-	3	2	-	-	-	
5	3	3	3	2	3	2	-	-	2	-	3	2	-	-	-	

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Continuou	s Assessm	ent Marks (CAM)			
Assessment	Performance	in practical	classes	Model		End Semester Examination	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	(ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

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Department	Arun	cial Intelligence and Data Science	riogiai	nme: B.1					
Semester	II		1	Categor		En	d Semeste		
Course Code	11230	DPC01	Perio	ods/Weel		Credit	-	ximum Ma	-
			L	T	P	C	CAM	ESE	TM
Course Name	Prog	ramming in Python Laboratory	0	0	2	1	50	50	100
		(Common	to All Bra	nches)					
Prerequisite	NIL								
	On c	ompletion of the course, the studer	nts will b	e able to)			BI Ma (Highes	apping
	CO1	Describe common Python functionality a	nd feature	s used for	r data sc	ience.		¥¥¥	(2
Course	CO2	Query Data Frame structures for cleanin	a and proc	essina.				k	(2
Outcomes	CO3	Configure your programming environmer	• •	3					(3
		Experiment the concept using data visua							(3
		Analyze real time datasets,						-	(3
ist of Exercise								•	
	gram to	perform arithmetic operations using lamb							
the input list. 6. Build a pytreturns the ag 7. Build a pyt shape (set it t the area of de 8. Build a pytl 9. Build a pytl 10. Build a pytl 11. Build a py 12. Build a py 13. Build a py 14. Build a py 15. Implement	thon pro ge of the hon pro o 0 for r erived cl hon pro thon pro thon pro thon pro thon pro thon pro thon pro thon pro thon pro	gram that takes a list of numbers as inpu- gram to create a class called Car with a car in years. gram to create a base class called Shap ow). Then, create two derived classes Re asses. gram to implement aggregation using Nur gram to perform Indexing and Sorting. ogram to perform Handling of missing data ogram to perform usage of Pivot table usin ogram to perform use of eval () and query ogram to perform Scatter Plot ogram to perform 3D plotting bication to process a real time data.	ut and retu uttributes C be that ha ectangle an npy. a. ng Titanic ()	rns a nev Company, s a metho nd Circle t datasets	model, od callec that inhe	and year. In I area which rit from the S	nplement a returns the Shape class	method that e area of th to calcula	at
the input list. 6. Build a pytreturns the ag 7. Build a pytrshape (set it t the area of de 8. Build a pytr 9. Build a pytr 10. Build a py 11. Build a py 12. Build a py 13. Build a py 14. Build a py 15. Implement	thon pro- thon pro- o 0 for r erived cl hon pro- thon pr	gram that takes a list of numbers as inpu- gram to create a class called Car with a car in years. gram to create a base class called Shap low). Then, create two derived classes Re asses. gram to implement aggregation using Nur gram to perform Indexing and Sorting. ogram to perform Handling of missing data ogram to perform usage of Pivot table usin ogram to perform use of eval () and query ogram to perform Scatter Plot ogram to perform 3D plotting	ut and retu uttributes C be that ha ectangle an npy. a. ng Titanic ()	rns a nev Company, s a metho nd Circle t	model, od callec that inhe	and year. In I area which rit from the S	nplement a	method that e area of th to calcula	at ne
the input list. 6. Build a pytreturns the age 7. Build a pytreturns the age 7. Build a pytreturns the age 8. Build a pytreturns the area of de 8. Build a pytreturns the area of de 9. Build a pytreturns the area of de 9. Build a pytreturns the area of de 10. Build a pytreturns the area of de 11. Build a pytreturns the area of de 12. Build a pytreturns the area of de 13. Build a pytreturns the area of de 14. Build a pytreturns the area of de 15. Implement 16. Chirag S 17. Chirag S 28. Siddhartti 30. Jake Var 41. Zhang, Y 51. Wesley J 17. Mether area of de 11. https://np 21. https://ww 31. https://ww	thon pro ge of the hon pro o 0 for r erived cl hon pro thon pro th	gram that takes a list of numbers as inpu- gram to create a class called Car with a car in years. gram to create a base class called Shap ow). Then, create two derived classes Re- asses. gram to implement aggregation using Nur gram to perform Indexing and Sorting. ogram to perform Handling of missing data ogram to perform usage of Pivot table usin ogram to perform use of eval () and query ogram to perform 3D plotting bication to process a real time data. Tutorial Periods: - Hands-On Introduction to Data Science", terjee, Michal Krystyanczuk, "Python Soci s, "Python Data Science Handbook - Esse roduction to Python and Computer Progra (Core Python Programming", Pearson Ed /courses/106/106/106106212/ sforgeeks.org/data-analysis-visualization- sera.org/learn/python-data-analysis	ut and retu ttributes C be that ha ectangle and npy. a. ng Titanic () Practic Cambridg and Media A ential Tools amming", S ucation, 20	rns a nev Company, s a metho nd Circle f datasets datasets al Perioc e Univers Analytics", s for Work Springer F	ds:30	and year. In I area which rit from the S s, 2020. ublishing, 20 Data", O'Re	Total Peric	method that e area of the to calcula	at ne
the input list. 6. Build a pytreturns the age 7. Build a pytreturns the age 7. Build a pytreturns the age 8. Build a pytreturns the area of de 8. Build a pytreturns the area of de 9. Build a pytreturns the area of de 9. Build a pytreturns the area of de 10. Build a pytreturns the area of de 11. Build a pytreturns the area of de 12. Build a pytreturns the area of de 13. Build a pytreturns the area of de 14. Build a pytreturns the area of de 15. Implement 16. Chirag S 21. Siddhartti 31. Jake Var 41. Zhang, Y 51. Wesley J Veb Reference 11. https://mp 21. https://ww 31. https://ww 32. https://ww	thon pro ge of the hon pro o 0 for r erived cl hon pro thon pro th	gram that takes a list of numbers as inpu- gram to create a class called Car with a car in years. gram to create a base class called Shap ow). Then, create two derived classes Re- asses. gram to implement aggregation using Nur gram to perform Indexing and Sorting. ogram to perform Handling of missing data ogram to perform usage of Pivot table usin ogram to perform use of eval () and query ogram to perform 3D plotting bication to process a real time data. Tutorial Periods: - Hands-On Introduction to Data Science", terjee, Michal Krystyanczuk, "Python Soci s, "Python Data Science Handbook - Esse roduction to Python and Computer Progra (Core Python Programming", Pearson Ed /courses/106/106/106106212/ sforgeeks.org/data-analysis-visualization- sera.org/learn/python-data-analysis	ut and retu ttributes C be that ha ectangle and npy. a. ng Titanic () Practic Cambridg and Media A ential Tools amming", S ucation, 20	rns a nev Company, s a metho nd Circle f datasets datasets al Perioc e Univers Analytics", s for Work Springer F	ds:30	and year. In I area which rit from the S s, 2020. ublishing, 20 Data", O'Re	Total Peric	method that e area of the to calcula	at

1. 11

COs		Program Outcomes (POs) 01 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 P											Progr Outco	ram Spe omes (P	ecific 'SOs)
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	2	2	1	3	-	-	-	-	-	-	-	2	2	2
2	2	3	2	2	3	-	-	-	-	-	-	-	2	3	2
3	3	3	3	2	3	-	-	-	-	-	-	-	3	3	3
4	3	3 3 3 3									-	3	3	3	
5	3	3	3	3	3	-	-	-	-	-	-	-	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

	Co	ntinuous A	ssess	ment Marks (CA	M)		
Assessment	Performan cla	ce in practi asses	cal	Model		End Semester	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	Examination (ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

1. 11

Department	Comp	uter Science and Engineering	Program	nme: B	.Tech.				
Semester	11/111		Course	Catego	ory: PC	*End S	Semester	Exam Typ	e: LE
Course Code	110000	2000	Peric	ds/We	ek	Credit	Ma	ximum Ma	irks
Course Code	U23CS	SPCU2	L	T	Р	С	CAM	ESE	TN
Course Name	Data S	tructures Laboratory	0	0	2	1	50	50	100
		(Common to all Bra	nches Exce	pt CSE	3S and F	T)			
Prerequisite	Basic	Programming Knowledge							
	On co	ompletion of the course, the stud	ents will b	e able 1	to			BT M (Highes	apping st Leve
	CO1	Analyse the algorithm's / program's eff	iciency in ter	ms of ti	me and s	pace complex	kity.	k	(3
Course	CO2	Solve the given problem by identifying	the appropri	ate Data	a Structur	e.		k	(3
Outcomes	CO3	Solve the problems of searching and s	orting techni	ques.				k	(3
	CO4	Solve problems in linear Data Structure	es.					K	(4
	CO5	Solve problems in non-linear Data Stru	ictures.					k	(4
List of Exerc	ses:							<u>l</u>	
 a) Insert an ele b) Delete an ele c) Search for a d) Vrite a C prog a) Preorder b) d) Write a C prog 10. Write a C prog 11. Write a C prog 	ement int lement fr a key eler iram that Inorder c iram to pe gram to i gram to ir	erform the following operations: o a binary search tree. om a binary search tree. ment in a binary search tree. use recursive functions to traverse the c) Postorder. erform the AVL tree operations. mplement Graph Traversal Techniques nplement the Set operations. n c) Difference.		tree in					
Lecture Peric		- Tutorial Periods: -	Practic	al Perio	ods: 30	T	otal Perio	ods: 30	i
Reference Boo	oks					ii			
 Tenebaum Aa Manjunath Ara India 1st Edition Reema Thareja 	ron M, "D Idhya M a on, 2017. a, "Data s	Data Structures through C [*] , BPB Publica ata Structures using C [*] , Pearson Publis and Srinivas Subramiam, "C Programm tructures using C [*] , Oxford University, 2 as and Algorithms [*] , McGraw-Hill India, 1	her, 1st Edit ing and Data nd Edition, 2	ion, 201 Structu 014.	9.	igage			
Web Referenc	es								
1. https://www.tut 2. https://www.wa 3. https://nptel.ac 4. https://swayan 5. https://nptel.ac	torialspoir Bschools. Lin/course Lgov.in/n Lin/course	d1_noc20_cs70/preview							

* TE – Theory Exam, LE – Lab Exam

1. M

COs					Prog	ram O	utcom	es (PO	s)				Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
1	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3	
2	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3	
3	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3	
4	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3	
5	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3	

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

	(Continuous	s Assess	ment Marks (CAM	1)		
Assessment	Performan cl	ice in pract asses	ical	Model		End Semester	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	Examination (ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

Department	Inforn	nation Technology	Tech.						
Semester	II		Course	Catego	ry: PC	*Er	nd Semest	er Exam	Type: LE
	LIGOIT	D004	Peric	ds/We	ek	Credit	Ma	ximum N	/larks
Course Code	U23IT	PC01	L	Т	Р	С	CAM	Maximum Ma CAM ESE 50 50 BT Ma (Highest K3 K3 K3 K3	TM
Course Name	Digita Labor	I Design and System Architecture atory	0	0	2	1	50	50	100
		(Common	n to CSE ar	nd IT)					
Prerequisite	NIL								
	On c	ompletion of the course, the stude	ents will b	e able	to				lapping est Level)
	CO1	Experiment simplifications of Boolean fu	unctions						K3
Course	CO2	Develop any combinational logic functio	ons and des	sign com	binatior	nal circuit			КЗ
Outcomes	CO3	Demonstrate the behavior of sequential							КЗ
	CO4	Simulate basic knowledge of computer of	organizatio	ns					КЗ
	CO5	Design memory unit and simulate memory	ory operation	ons					КЗ
List of Exercis	es					Periods:30)		
9. Design	of a N- b nple ALU	bit Register of Serial - in Serial - out and S bit Register of Parallel in Serial out and Pa J design and CPU design Tutorial Periods: -	-	rallel Ou	Jt.		otal Daria		
Reference Boo	-	Tutorial Periods: -	Practica	i Perio	as:30	I	otal Perio	as:30	
2018. 2. Stepher Educati 3. John F. 4. M K Go 5. Carl Ha Web Reference 1. http://ww 2. https://w	n Browr on Pvt. Wakerly oroochu macher es ww.ee.su ww.java	and Michael Ciletti , Digital Design, Six n and Zvonko Vranesic, "Fundamentals Ltd. Third Edition,2012 , "Digital Design Principles and Practices Im," Introduction to Digital Logic & Boolea , Zvonko Vranesic and Safwat Zaky, "Cor urrey.ac.uk/Projects/CAL/digital-logic/gates atpoint.com/computer-organization-and-arc rialspoint.com/digital_circuits/digital_circui	of Digital 5", Pearson an Algebra mputer Org sfunc/ chitecture-t	Logic v Educati ', Paper anizatio utorial	with VH ion, Fou back, 20	DL Design", Irth Edition,20)18.	Tata McGr 18.	aw Hill	on, 2011.
		rialspoint.com/digital_circuits/digital_circui ksforgeeks.org/hardware-description-lang		5					

1. 11/

* TE – Theory Exam, LE – Lab Exam

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COs					Pro	gram O	utcome	es (POs)					ram Spe omes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	2	-	1	-	-	-	-	1	-	-	3	-	-
2	2	1	2	-	1	-	-	-	-	1	-	-	3	-	-
3	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-
4	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-
5	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Continuous	S Assessment I	Marks (CAM)		End	
Assessment	Performa	ince in practica	l classes	Model Practical	Attendance	End Semester Examination (ESE) Marks	Total Marks
	Conduction of practical	Record work	Viva	Examination	Attendance	(ESE) Marks	
Marks	15	5	5	15	10	50	100

1. W

Department	Computer Science and Engineering	e and Engineering Programme: B.Tech.						
Semester	I	Course	e Categ	ory: AEC	End	Semeste	r Exam T	ype:-
0		Periods/Week			Credit	Maximum Marks		
Course Code	U23CSC2XX	L	Т	Р	P C		ESE	TM
Course Name	Certification Course – II	-	-	4	-	100	-	100
exas Instruments	, Bentley, Autodesk, Eplan and CISCO, etc. T	he duration	on of the	e course is	40-50 hou	rs specifie	d in the cu	urriculur
Fexas Instruments	, Bentley, Autodesk, Eplan and CISCO, etc. T	he duration	on of the	e course is	40-50 hou	rs specifie	d in the cu	urriculur
بالمتعام التنبيط المعاملا والمسا								iniounui
which will be offere	ed through Centre of Excellence.							

Lecture Periods: -	Tutorial Periods: -	Practical Periods:	50	Total Periods: 50

1.11

Academic Curriculum and Syllabi R-2023

Acade	mic Curriculum and Syllabi R-2023						59	
Department	Computer Science and Engineering	Program	me: B.	Tech.				
Semester	I	Course	Categor	y: MC	End	Semester	Exam T	уре: -
Course Code	U23CSM202	Perio	ds/Wee	k	Credit	Max	imum M	arks
Course Code	023C3W1202	L	Т	Ρ	С	CAM	ESE	TM
Course Name	Sports Yoga and NSS	0	0	2	Non-Credit	100	-	100
Prerequisite	NIL				<u>.</u>			
	On completion of the course, the stude	nts will be	able t	0				BT Mapping
	CO1 Practice Physical activities and Hatha Yo				enath. flexibility	and relaxa		Highest Level) K2
Course	CO2 Understand basic skills associated with y							
Outcomes	balance and coordination.		-				-	K2
	CO3 Develop understanding of psychological							K2
	CO4 Recognize the importance of national ser CO5 Convert existing skills into socially relevant		munity c	ievelop	ment.			K2 K2
UNIT - I	Introduction to Physical Education	IIL IIIE SKIIIS.			Periods: 06			N2
	and Objectives of Physical Education-Changing	trands in D		ducatio				
Physical Fitnes	ss, Wellness and Lifestyle: Importance of Phy Health related fitness -Components of wellness	sical Fitne	ss and V	Vellnes	s -Components			
UNIT - II	Yoga and Lifestyle				Periods: 06			
concentration a	Yoga - Elements of Yoga -Introduction - As and related Asanas (Sukhasana,Tadasana, Pa centration - Yog-nidra. Asanas as preventive	admasana	and Sha	ashanka	asana) - Relaxa	ation Tech	niques fo	or CO2
UNIT - III	Training and Planning In Sports				Periods: 06			
League/Round Psychology an Development - / and Types of /	ing up and limbering down-Skill, Technique a Robin and Combination. Id Sports - Important of Psychology in Physica Adolescent problems and their Management- Er Aggressions in Sports- Psychological benefits Aotivation, its type and techniques - Understandi	al Education notion: Cor of exercise	n and S icept, Ty e - Anxi	ports - pe and ety and	Differentiate Be Controlling of e	etween Gr motions -	owth and Concepts	1
\$	Introduction to National Service Scheme			J	Periods: 06			l
International Im voluntary blood	NSS volunteers: History, motto, symbol, awar portance- Sensitizing about the thrust areas donation-The role of SHGs and NGOs in comn ties in HEIs- various clubs and schemes like RR	and aware nunity deve	ness ac lopment	tivities- – CSR	Importance of -Life skills and	tree planta	ation and	
	Community Issues and The Use Of Tech				Periods: 06			
products- Servic survey- Initiative	ems of rural India- Technology development an ce learning and youth volunteering -Shramdaar as to clean and green environment- preservation	of water be	leaning- odies in a	- Field v adopted	visit to nearby c d villages.	ommunitie	s- village	
LecturePeriod Reference Boo		Practica	Period	ls:30	То	tal Perio	ds: 30	
 Brar Ajmer Sin, Publishers, 6th B.K.S. Iyengar, Joseph, Siby K Barman Pratee Prof R.B.S. Ver Sibereisen, K, I Hoshiar Singh, Web Reference http://www.the http://en.wikipe 	gh, Gill Jagtar Singh, Bains Jagdish, "Modern Te Edition, 2014. , "Light on Yoga: The Definitive Guide to Yoga Pr , Mahodaya, "Bharat Essays on Conflict Resolut eti, Goswami, "Document on Peace Education", 1 rma, "Field Work Practicum in Social Work-Emer Richard M, "Lerner Approaches to Positive Youtl "Administration of Rural Development in India", S betterindia.com/140/national-service-scheme-nse edia.org/wiki/national-service-scheme 19=http://r	ractice", Th tion", Institu Friveni Akar rging Conce h Developm Sterling Pu	orsons F te of Ga Isha Pul erns", Ra hent", Sa blisher, 1	Publishe ndhian olishing apid Pul ge Pub the Univ	ers, Thorsons Cl Studies Publishe House, New De blisher, Lucknov lications, New D	assics edit ers, 2007. elhi, 2009. v, 2020. velhi, 2007	tion, 2015	5.
	in rknss.org/about.html I on Youth published by SAGE: http://you.sagep	ub.com						

1. Vr

Evaluation methods

Assessment		Continuous	Assessment Marks (CAM)	Total Marks
	Attendance	MCQ Test	Presentation / Activity / Assignment	
Marks	10	30	60	100

1. M

SEMESTER III

Department	Mathemati	cs	Program			······•			
Semester			Course		·······		End Semest		
Course Code	U23MATCO)3		ds/Wee	۲	Credi		ximum Ma	rks
			L	Т	Р	С	CAM	ESE	TM
Course Name	Probability	and Statistics	3	1	-	4	25	75	100
	•	(Common to Al	l Branches E	xcept C	SBS)				
Prerequisite	Basic Prob	•							
	On comp	letion of the course, the	students w	vill be a	ble to			BT Ma	
-	CO1 Un	derstand the concept of probabil	ity.					(Highes K	
Course Outcome	CO2 Sol	ve the problem on Random varia	ables.					к	3
Outcome	CO3 Un	derstand the concepts of Analys	is of variance.					к	3
	CO4 Lea	arn the applications of Large Sar	nples.					к	3
	CO5 Ana	lyze the problems in small samp	les.					к	3
UNIT – I		Probability				Periods	:12		•
Random Experin	nents - Sampl	e Space - Exhaustive events- A	xioms of prol	oability –	Conditi			probability	-
Bayes theorem.									C01
UNIT – II	Random V					Periods			
		nomial distribution – Poisson dis Derivation of Mean, Variance and		tinuous F	Random	Variable -	- Exponential	distribution	- CO2
UNIT – III	Statistics	& Analysis of Variances				Periods	:12		
Correlation – Ra	nk correlation	and Regression. Analysis of vari	iance: One-wa	ay classif	cations	and two-	way classifica	tions.	
									CO3
	Large San		<u></u>		.,,	Periods			
Large Samples: Deviations.	Single Propos	sitions – Difference of Proportio	ns – Single IV	iean – D	ifferenc	e of Mean	– Difference	of Standar	a CO 4
UNIT – V	Small Sam	-				Periods			
	and Difference	Mean – Test for Ratio of Varia	nces – Chi-S	quare tes	st for G	odness o	f Fit and Inde	ependence o	of CO5
Attributes. Lecture Perio	ds:45	Tutorial Periods:15	Practica	al Perio	ls: -		Total Perio	ods:60	
Text Books	40.10		11404100					540.00	
	"Probability								
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COs					Prog	gram O	utcome	es (POs)				Prog Out	ram Spe comes (cific PSOs)
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	-	-	-	-	1	2	1	1
2	3	2	1	1	-	-	-	-	-	-	-	1	2	1	1
3	2	2	-	-	-	1	-	-	-	-	-	1	2	1	1
4	3	2	1	1	-	1	-	-	-	1	-	1	2	1	1
5	3	2	1	1	-	1	-	-	-	1	-	1	2	1	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Conti	nuous Assessme	nt Marks (CAM)		End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	10	0	5	5	5	75	100

Department	Comp	outer Science and Engineering	Program	nme: B.	Tech.				
Semester	111		Course	Catego	ry Code	: PC *En	d Semest	er Exam Ty	pe: TE
			Perio	ds / We	ek	Credit	Max	kimum Mark	٢S
Course Code	U23C	ST301	L	Т	Р	С	CAM	ESE	ТМ
Course Name	Embeo Interfa	dded Systems Architecture and cing	3	0	0	3	25	75	100
Prerequisite	Digita	I Design and System Architecture							
	On c	ompletion of the course, the stude	nts will b	e able 1	o			BT Maj (Highest	
	C01	Understand the Basics of Embedded Sys	stems.					K2	2
	CO2	Familiarize the basic concepts of 8086 ir	structions.					Kź	2
Course Outcome	CO3	Learn the Interface modules using 8086.						K	3
	CO4	Attain knowledge on 8051 microcontrolle	r instructio	ns and	Interfacin	ıg.		Kź	2
	CO5	Learn and apply the concepts of real tim	e applicatio	ons usin	g RTOS.			K	3
Unit- I	Basio	s of Embedded Systems				Periods: 0	9	<u>i</u>	
Embedded Syste	ms - Er	d Systems - Processor in an Embedded hbedded hardware units and devices, Er system design process.							
Unit- II		Microprocessor				Periods: 0	-		
language prograr	nming -	icroprocessor architecture - Addressing Modular Programming - Linking and Relo d String Manipulation.							
Unit- III	Inter	acing with 8086				Periods: 0	9		
timer/counter, 82		I Devices - 8237 DMA Controller, 8255 ammable interrupt controller, 8251 USAR			eripheral		-	ogrammable	CO3
Unit- IV	8051	Microcontroller				Periods: 0	9		
Timers - Serial F	ort Prog	Pins Ports - Instruction set - Addressing gramming - Interrupts Programming - LC e- Stepper Motor and Waveform generation	D & Keyb						CO4
Unit- V	Real-	Гime Operating System (RTOS)				Periods: 0	9		
	bugging	Embedded System - Choosing RTOS - N - Case Study: Washing Machine - Applica							
Lecture Period	s: 45	Tutorial Periods:	Practica	al Peric	ods: -	T	otal Perio	ods: 45	
Technica 2. Ramesh 3. Raj Kam 4. Shibu K 5. Wayne V in Comp 6. Mohame	al Public Gaonka nal, "Eml V," Intro Nolf "Co uter Arc ed Ali Ma ly and C	A P Godse, "Microprocessors & Microcont ations, 2020. ar, "Microprocessor Architecture, Program bedded systems Architecture, Programmi duction to Embedded Systems", McGraw mputers as components: Principles of En hitecture and Design, 2013. azidi, Janice Gillispie Mazidi, Rolin McKinl ", 2 nd Edition, Pearson education, 2011.	nming, and ng and Des / Hill Educa nbedded C	Applicat sign", Ta ation (Ind omputin	tions with ata McGra dia) Priva g System	n the 8085", 6 aw - Hill, 2016 ate Limited, 20 n Design", The	^h Edition 2 5. 14. e Morgan k	019. Kaufmann Se	
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2. Lyla B. I 3. Krishna PHI, 201 4. Doughla 5. Marilyn	Das," En Kant, "M I4. s V.Hall Wolf, "C	mbedded Systems Design", EDN Series, nbedded Systems an Integrated Approach licroprocessors and Microcontrollers - Ar , —Microprocessors and Interfacing, Prog omputers as Components – Principles of ankaj Gupta " Embedded Real Time Syste	n", Pearsor chitectures gramming a Embedded	, Progra and Haro I Compu	amming a dware, TI iting Syst	and System D MH 2012. tem Design", ⁻	Third Editic		1, 8096",

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- 5. https://developer.arm.com/products/architecture/cpu-architecture

COs/POs/PSOs Mapping

COs					Prog	gram O	utcome	es (POs)					jram Spe omes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	2	1	-	-	-	-	-	1	1	2	3	3	2
2	2	1	2	1	-	-	-	-	-	1	1	2	3	3	2
3	2	2	3	2	-	-	-	-	-	1	1	2	3	3	2
4	2	1	2	1	-	-	-	-	-	1	1	2	3	3	2
5	2	2	3	2	-	-	-	-	-	1	1	2	3	3	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Continuous	s Assessment M	Marks (CAM)		End Semester	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Marks
Marks	1	0	5	5	5	75	100

Department	Compt	Iter Science and Engineering	Progran	nme: B.T	ech.	••••••			
Semester			Course	Category	PC	Enc	d Semester	Exam Type:	TE
Course Code	U23CS	ST302	Perio	ods/Week	(Credit	Max	kimum Mar	ks
			L	Т	Р	С	CAM	ESE	TN
Course Name	Softwa	re Engineering and Testing	3	-	-	3	25	75	100
Prerequisite	NIL								
	On co	ompletion of the course, the stu	idents wil	l be able	e to			BT Maı (Highest	
	CO1	Perform Software engineering proce	esses.					K	2
Course Outcomes	CO2	Make use of software design.						K	2
Outcomes	CO3	Apply different software testing strat	tegies.					K	3
	CO4	Illustrate different testing techniques	5.					K	3
	CO5	Apply the different levels of testing.						K	3
UNIT - I		are Engineering Processes	· · · ·		<u>L</u>	Periods:0			
-	-	pts – Development activities – Softwa	-		-			-	
	-	ntion – Scheduling – Risk managem ques – Staffing Level Estimation – Sch			-	-	-	-	e
Requirements spe	ecification.								
UNIT - II	Softw	are Design				Periods:09	9		
Characteristics of	a Good Sc	oftware Design – Coupling and Cohes	sion – Struc	tured Ana	alysis – D	ata Flow Dia	agrams – St	ructured an	d
liagrams – state	chart diagr	ams – Object Oriented Analysis and		thodoloa	/ – Chara	cteristics of	ction diagra	r Interface	
Types – A User Ir UNIT - III	nterface De Softw	ams – Object Oriented Analysis and sign methodology. are Testing ing – Psychology of Testing – Princir	Design me			Periods:0	a good Üse 9		_
Types – A User Ir UNIT - III ntroduction to Sc	nterface De Softw oftware test – Software	sign methodology. v are Testing ing – Psychology of Testing – Princip e Testing Life Cycle.	Design me		ting – Det	Periods:0 fects – Defe	a good Üse 9 ct Preventic		s
Types – A User Ir UNIT - III ntroduction to Sc Role of a tester UNIT - IV	nterface De Softw oftware test – Software Testir	sign methodology. vare Testing ing – Psychology of Testing – Princip Testing Life Cycle. ng Techniques and Testing Toc	Design me bles of Soft	ware Test	ting – Det	Periods:09 fects – Defe Periods:09	a good Üse 9 ct Preventic 9	on Strategie	s CO:
Types – A User Ir UNIT - III ntroduction to Sc Role of a tester UNIT - IV Testing Techniqu and Dynamic Tec	nterface De Softw oftware test – Software Testin es – Verific chniques –	sign methodology. vare Testing ing – Psychology of Testing – Princip Testing Life Cycle. ng Techniques and Testing Toc cation vs Validation – Software Testin Informal Reviews, Walkthroughs, Te	Design me oles of Soft ols ng Methodo echnical Re	ware Test blogies – views, In	ting – Dei White Bo	Periods:09 fects – Defe Periods:09 x, Black Bo	a good Use 9 ct Preventic 9 x and Grey	on Strategie Box – Stati	s CO:
Types – A User Ir UNIT - III ntroduction to Sc Role of a tester UNIT - IV Testing Techniqu and Dynamic Tec	nterface De Softw oftware test – Software Testin es – Verific chniques – erienced Ba	sign methodology. vare Testing ing – Psychology of Testing – Princip Testing Life Cycle. ng Techniques and Testing Toc cation vs Validation – Software Testin	Design me oles of Soft ols ng Methodo echnical Re	ware Test blogies – views, In	ting – Dei White Bo spection	Periods:09 fects – Defe Periods:09 x, Black Bo	a good Use 9 ct Preventic 9 x and Grey Technique	on Strategie Box – Stati	s CO:
Types – A User Ir UNIT - III ntroduction to Sc - Role of a tester UNIT - IV Testing Technique and Dynamic Techniques, Expe UNIT - V Levels of Testing Testing – Unit, Int	nterface De Softw oftware test – Software es – Verific chniques – erienced Ba Level – Test Ca tegration, S	sign methodology. vare Testing ing – Psychology of Testing – Princip Testing Life Cycle. Ing Techniques and Testing Too cation vs Validation – Software Testin Informal Reviews, Walkthroughs, Te ased Techniques. Testing Tools: Sele s of Testing use Design – Building Test Cases – ystem, Acceptance, Regression, Ret	Design me oles of Soft ols ng Methodo echnical Re enium – Jm Test data r rest – Non F	ware Test blogies – views, In eter. nining –	ting – Der White Bo spection Test exec	Periods:09 fects – Defe Periods:09 x, Black Bo – Structural Periods:09 cution – Tes	a good Use ct Preventic x and Grey Technique st reporting	on Strategie Box – Stati s, Black Bo – Functiona	s CO: x CO:
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COs		Program Outcomes (POs)												Program Outcomes (POs)										gram Spo comes (F	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3										
1	3	3	3	2	-	-	-	-	2	-	-	1	3	1	1										
2	3	3	3	2	-	-	-	-	2	-	-	1	3	1	1										
3	3	3	3	2	2	-	-	-	2	-	-	1	3	1	1										
4	3	3	3	2	2	-	-	-	2	-	-	1	3	1	1										
5	3	3	3	2	2	-	-	-	2	-	-	1	3	1	1										

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Con	tinuous Assess	sment Marks (CAI	M)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

	Comp	uter Science and Engineering	Programn	ne: B.Tec	sh.				
Semester	III		Course Ca	tegory: P	C	E	nd Semester E	xam Type: TE	
Course Code	U23CS	DC01	Period	s/Week		Credit	Max	kimum Marks	
	02300		L	Т	Р	С	CAM	ESE	ТМ
Course Name	Automa	ata and Compiler Design	3	-	-	3	25	75	100
		(Commo	n to CSE and A	I&DS)					
Prerequisite	NIL								
	On co	mpletion of the course, the studer	nts will be ab	le to				BT Mapp (Highest Le	-
	CO 1	Understand the concept of Finite A	utomata, NF	A and DI	- A.			K2	
Course	CO2	Understand about Context Free La	inguage and I	Normal F	orms			K2	
Outcomes	CO3	Construct Push Down Automata ar	nd Turing Mag	chine				K3	
	CO4	Explain the concept of Lexical Ana			vsis			K3	
	CO5	Describe the Intermediate code ge	-		-	nd Codo C	anaration	K3	
UNIT - I		<u></u>			ı∠au∪∏∂	Periods:		r.J	
	Ł	Automata and Regular Expressio a – Deterministic Finite Automata – I		victic Ein	ita Autor				[
		a – Deterministic Finite Automata – I							CO1
		pression to DFA (Direct / Indirect me				nom Kegu	iai Expressio		
UNIT - II		xt-Free Grammar and Normal For				Periods:	9		L
		ky's hierarchy of languages -Contex	-	nar (CF	G) – Der			s – Ambiauity	
• •		s – Chomsky Normal Form – Greiba		-	2) 201	ivationio ai		, anoiguity	CO2
UNIT - III		lown Automata and Turing Machin			Ĩ	Periods:0)9		
	ata (PDA): Definition of the Pushdown Autom	ata - Langua	nes of pi	Ishdown	automata	- CEG to PD	A -Turina	
	-	for regular languages- Turing machi						, i di i i g	CO3
UNIT - IV	<u>i</u>	al Analysis and Syntax Analysis				Periods:	-		
		ompiler – Lexical analysis – The role up Parser – Shift Reduce Parser - C						Down Parse	CO4
UNIT - V		nediate Code Generation, Code Op	otimization a	nd Cod	e	Periods:(9		
Intermediate Code	Generati	ation on: Intermediate Languages. Code C	Intimization:	Princinle	SOURCES	of optimiz	ation – Loon	Ontimization	
Code Generation:	Issues in	the design of code generator - Sin	mple code ge	enerator					
	Basic Bloc	k - Generating code form DAGs - Pe	ephole optim	ization.					
	E		· · ·	Dariad	~ •		Total Darias		
_ecture Periods:4	5	Tutorial Periods: -	Practica	l Period	s: -		Total Period	ls:45	
_ecture Periods:4	5		· · ·	l Period	s: -		Total Period	15:45	
_ecture Periods:4 Fext Books	duction to	Tutorial Periods: - Automata Theory, Languages, and	Practica Computation'	, Pearso	on, 3 rd Ed		3.		
Lecture Periods:4 Text Books 1. Hopcroft, 'Introd 2. Alfred Aho, V. F	duction to Ravi Sethi	Tutorial Periods: - Automata Theory, Languages, and , and D. Jeffery Ullman, "Compilers	Practica Computation' Principles, T	', Pearso echnique	on, 3 rd Eo es and T	ools", Add	3. lison-Wesley,		2007.
Lecture Periods:4 Text Books 1. Hopcroft, 'Introd 2. Alfred Aho, V. F	duction to Ravi Sethi	Tutorial Periods: - Automata Theory, Languages, and	Practica Computation' Principles, T	', Pearso echnique	on, 3 rd Eo es and T	ools", Add	3. lison-Wesley,		2007.
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Lecture Periods:4 Fext Books 1. Hopcroft, 'Introd 2. Alfred Aho, V. F 3. John C. Martin, Reference Books	duction to Ravi Sethi "Introduc	Tutorial Periods: - Automata Theory, Languages, and , and D. Jeffery Ullman, "Compilers	Practica Computation' Principles, To f Computation	', Pearso echnique ns", McG	on, 3 rd Ed es and T Graw Hill,	ools", Add 3 rd Editior	3. iison-Wesley, a, 2007.	2 nd Edition, 2	2007.
ecture Periods:4 Fext Books Hopcroft, 'Intro Alfred Aho, V. F John C. Martin, Reference Books Kamala Krithiva	duction to Ravi Sethi "Introduc	Tutorial Periods: - Automata Theory, Languages, and , and D. Jeffery Ullman, "Compilers tion to Languages and the Theory of	Practica Computation' Principles, To f Computation ges Automata	r, Pearso echnique ns", McG n Theory	on, 3 rd Ed es and T Graw Hill, and Cor	ools", Ado 3 rd Editior mputation"	3. ison-Wesley, n, 2007. Pearson, 20	2 nd Edition, 2	2007.
ecture Periods:4 ext Books . Hopcroft, 'Introd . Alfred Aho, V. F . John C. Martin, Reference Books . Kamala Krithiva . Peter Linz, "An . Anil Malviya, M	duction to Ravi Sethi "Introduc asan, Ran Introducti alabika D	Tutorial Periods: - Automata Theory, Languages, and , and D. Jeffery Ullman, "Compilers tion to Languages and the Theory of na R, "Introduction to Formal language on to Formal Languages and Autom atta, "Theory of Computation & Appl	Practica Computation' Principles, To f Computation ges Automata ata", Jones 8 ications - Aut	r, Pearso echnique ns", McG a Theory a Bartlett omata T	on, 3 rd Ed es and T araw Hill, and Cor , 6th Edi heory Fo	ools", Add 3 rd Editior mputation" tion, 2016. prmal Lang	3. lison-Wesley, 1, 2007. Pearson, 20	2 nd Edition, 2	
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Lecture Periods:4 Text Books . Hopcroft, 'Introd 2. Alfred Aho, V. F 3. John C. Martin, Reference Books . Kamala Krithiva 2. Peter Linz, "An 3. Anil Malviya, M 4. Charles N. Fisc 5. Mishra K.L.P, " Neb References 1. https://www.cs 2. https://www.cs 3. https://www.gu 4. https://www.ja	duction to Ravi Sethi "Introducti asan, Ran Introducti alabika D ther and F Theory of s se.iitb.ac.i se.iitb.ac.i se.iitb.ac.i se.iitb.ac.i	Tutorial Periods: - Automata Theory, Languages, and , and D. Jeffery Ullman, "Compilers tion to Languages and the Theory of na R, "Introduction to Formal language on to Formal Languages and Autom atta, "Theory of Computation & Appl Richard J. Leblanc, "Crafting a Comp	Practica Computation' Principles, Tr f Computation ges Automata ata", Jones 8 ications - Aut iler with C", E uages and C	r, Pearso echnique ns", McG Theory Bartlett omata T Benjamin omputat	on, 3 rd Ed es and T iraw Hill, and Cor , 6th Edi heory Fo Cummi	ools", Add 3 rd Edition mputation" tion, 2016. prmal Lang ngs, 2009.	3. lison-Wesley, n, 2007. Pearson, 20 uages", BPB	2 nd Edition, 2 19. publications,	2015

COs					Prog	gram O	utcome	es (POs)				Program Specific Outcomes (PSOs)		
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	3	2	3	3	1	1	-	2	-	-	-	3	2	2
2	3	3	3	2	3	1	2	-	2	1	-	2	3	2	2
3	2	3	2	3	2	2	-	-	3	-	-	-	3	2	2
4	3	3	2	3	3	1	-	-	2	-	-	-	3	2	2
5	2	3	3	2	2	2	1	-	2	-	-	-	3	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Conti	End				
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	10		5	5	5	75	100

Department	Compu	iter Science a	and Engineering	Prog	Programme: B.Tech.									
Semester				Cour	Course Category Code: PC *End Semester E									
Course Code	U23CS	ST303		Р	eriods / We	ek	Credit	Maxi	mum Ma	rks				
			L	Т	Р	С	CAM	ESE	TM					
Course Name	Compu	uter Network	ί S	3	-	-	3	25	75	100				
Prerequisite	Nil													
	On completion of the course, the students will be able to													
Course	CO1	network for	e functions of each network communica	ations						K2				
Outcome	CO2	control mec		-	•		•			K2				
	CO3	algorithms	various network lay	•	-	-			-	K3				
	CO4	solution	e the transport lay	•				•		K3				
	CO5	Analyze the	functional working of	of different prot	ocols of app	olication			/	K4				
UNIT-I			d Physical Layer				Periods: 9	-						
	le Netwo transmis	orks: ARPANE ssion.	vorks - Network han T, Internet - Physic											
UNIT-II		Link Layer					Periods: 9							
and wait protoco	ol for an e	error-free cha	r detection and corre innel, A simplex stop		ocol for nois	sy chann								
on sharing window	w protoco	ol, A protocol	using Go-Back-N, A		Selective I	Repeat.	-							
UNIT-III	·····	ol, A protocol /ork Layer	using Go-Back-N, A		Selective I	Repeat.	Periods: 9							
UNIT-III Network Layer [Netw Design is	v ork Layer ssues - Routi	using Go-Back-N, A ng algorithms: Sho Control Algorithms	A protocol using	ng, Floodir	ıg, Hiera	rchical routing			st, CO3				
UNIT-III Network Layer [Netw Design is Routing	v ork Layer ssues - Routi	ng algorithms: Sho Control Algorithms	A protocol using	ng, Floodir	ıg, Hiera	rchical routing	net: IPV4 vs I						
UNIT-III Network Layer E Distance Vector UNIT-IV The Transport So	Netw Design is Routing Tran ervice - I	ork Layer ssues - Routi - Congestion sport Layer Elements of T	ng algorithms: Sho Control Algorithms	A protocol using rtest path routi -Internetworkin - Connection m	ng, Floodir g - The Net anagemen	ig, Hiera work laye	rchical routing er in the interr Periods: \$	net: IPV4 vs I)	PV6.	CO3				
UNIT-III Network Layer E Distance Vector UNIT-IV The Transport So	Netw Design is Routing Tran ervice - B	York Layer ssues - Routi - Congestion sport Layer Elements of T nection release	ng algorithms: Sho Control Algorithms ransport protocols -	A protocol using rtest path routi -Internetworkin - Connection m Remote Proce	ng, Floodir g - The Net anagemen	ig, Hiera work laye	rchical routing er in the interr Periods: \$	net: IPV4 vs I) eader, TCP	PV6.	CO3				
UNIT-III Network Layer D Distance Vector UNIT-IV The Transport So Establishment, T UNIT-V	Netw Design is Routing Tran ervice - I CP Con Appl	vork Layer ssues - Routi - Congestion sport Layer Elements of T nection releas ication Lay	ng algorithms: Sho Control Algorithms r ransport protocols - se - UDP protocols:	A protocol using rtest path routi -Internetworkin - Connection m Remote Proced Security	ng, Floodir g - The Net anagemen dure call.	ig, Hiera work layo :: The TC	rchical routing er in the interr Periods: 	het: IPV4 vs I eader, TCP	PV6.	co3 on co4				
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COs					Pro	ogram O	utcome	s (POs)					Program Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3			
1	1	2	-	3	-	-	-	-	-	-	-	-	3	-	2			
2	-	1	-	2	-	-	-	-	-	-	-	-	3	-	1			
3	-	-	1	2	3	-	-	-	-	-	-	-	3	-	1			
4	-	1	-	2	-	-	-	-	-	-	-	-	3	-	2			
5	1	1	-	2	2	-	-	-	-	-	-	-	3	1	2			

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Method

		Conti	End				
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	10		5	5	5	75	100

Dynamic Programming: Applications – Multistage graphs – 0/1 knapsack problem, All pairs shortest path problem – Traveling sales person problem Periods:10 Backtracking: General method. Applications – N – queen problem – Sum of subsets problem – Graph coloring – Hamiltonian cycle // Knapsack Problem. CO3 Backtracking: General method. Applications – N – queen problem – Sum of subsets problem – O/1 knapsack problem – LC Branch and Bound Solution Periods:10 CO3 UNIT - IV Laboratory Exercises Periods:15 CO4 Implementation of Finding Maximum and Minimum using Divide-and-Conquer technique. Implementation of Finding Maximum and Minimum using Divide-and-Conquer technique. CO4 Implementation of Finding Maximum and Minimum using Divide-and-Conquer technique. Implementation of Single-Source Shortest Paths algorithms using Greedy technique. CO4 Implementation of Single-Source Shortest Paths algorithms using Greedy technique. Implementation of Single-Source Shortest Paths algorithms using Gregaramming technique. CO5 Implementation of source Shortest Paths using Dynamic Programming technique. Implementation of source shortest path approach of Backtracking. CO5 Implementation of source Shortest Paths using Dynamic Programming technique. CO5 CO5 Implementation of source Shortest Paths algorithms", Pearson Education India, 1st Edition, 2019. CO5 Implemen	Department	Compu	Iter Science and Engineering	Programme: B.Tech.									
Course Name Design and Analysis of Algorithms L T P C CAM ESE TM Course Name Design and Analysis of Algorithms 2 3 50 100 (COMMON TO CSE, CCE and Al&DS) Problem Solving Approaches BT Mapping (Highest Level) (Highest Level) Course Course On completion of the course, the students will be able to BT Mapping (Highest Level) (CO Adaption of the course, the students will be able to BT Mapping Course Course COI Analyze and improve the efficiency of algorithms and esimale the partomance of algorithm cleagin stuaten calls for it. CO3 Namestrate programs using Divia and Conquer, Greedy paradigms, when an algorithmic design stuaten calls for it. CO3 Namestrate programs using Divia and Conquer, Greedy paradigms, when an algorithmic design stuaten calls for it. CO3 Namestrate programs using Divia and Conquer, Greedy paradigms, and explain K3 UNIT - I Introduction - Algorithm and Divide and Conquer Periods:10 Cortication and Life on claaton. K2 UNIT - I Greedy Method and Oynamic Programming Periods:10 Cortication and Algorithm analysis of Algorithm. Cortication and Algorithm analgorithm analgorithm and and Bound Cortication	Semester			Course	Catego	ry: PC	End	Semester	Exam Ty	be: TE			
Course Name Design and Analysis of Algorithms 2 - 2 3 50 50 100 (COMMON TO CSE, CCE and Al8DS) Problem Solving Approaches BT Mapping (Highest Level) Course (BT Mapping) (COI // Analyze and improve the efficiency of algorithms and estimate the performance of algorithm and Divide and Conquer. (BT Mapping) (Course CO2 Determine the Greedy paradigms, Dynamic Programming and explain when an algorithmic design situation calls for it. (CO3 Interpret the Backtracking paradigms, Branch and Bound, NP-Hard paradigms and explain K3 (CO1 Mainterpret the Backtracking paradigms, Dynamic Programming, Backtracking and Branch and Bound. K2 (CO3 Interpret the Backtracking paradigms, Dynamic Programming, Sachtracking and Branch and Bound. K2 (CO4 Demonstrate programs using Dynamic Programming, Sachtracking and Branch and Bound. K2 (CO4 Demonstrate programs using Dynamic Programming, Sachtracking and Branch and Bound. K2 (DN14) Interpret the Backtracking and Branch and Bound. K2 (DN17) I Greedy Method and Dynamic Programming. Periods:10 (DN17) I Greedy Method and Dynamic Programming and Problem – Traveling Sales paroblem – Ut knapsack problem – Traveling Sales paroble	Course Code	U23CS	BC01	Perio	ds/Wee	ek	Credit	Maxi	mum Mar	ks			
(COMMON TO CSE, CCE and Al&DS) Prerequisite Problem Solving Approaches BT Mapping On completion of the course, the students will be able to BT Mapping COURSE CO1 Analyze and improve the efficiency of algorithms and estimate the performance of algorithm and Divide and Conquer. K2 COURSE CO2 Determine the Greedy paradigms, Dynamic Programming and explain when an algorithmic design situation calls for it. K3 CO3 Interpret the Backtracking paradigms, Branch and Bound, NP-Hard paradigms and explain when an algorithm design situation calls for it. K3 CO4 Demonstrate programs using Dynamic Programming, Backtracking and Branch and Bound. K2 UNIT - 1 Introduction - Digo on notation – Omega notation – Theta notation and Little on notation. Notation – Big on notation – Omega notation – Theta notation and Little on notation. Work and Conguer method. Barry Search – Migreg sont – Quick sont. Periods:10 CO1 UNIT - II Greedy Method and Dynamic Programming. Periods:10 CO2 Dynamic Programming: Applications – Multistage graphs – O'1 knapsack problem. All pairs shortest path problem – Traveling sales person problem – Graph coloring – Hamiltonian cycle CO2 On Comparition of Intrage and Explications – Traveling sales person problem – O'1 knapsack problem – LC Branch and Bound Solution – Sim of subsets problem – Craph coloring				L	Т	Р	С	CAM	ESE	TM			
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 https://swayam.gov.in/nd1_noc20_cs71/preview

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs					Pro	ogram O	utcome	s (POs)						gram Spe comes (PS	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
2	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
3	3	3	2	2	2	-	-	-	1	1	2	-	2	1	1
4	3	3	3	3	2	-	-	-	2	1	2	-	2	1	2
5	3	3	3	3	2	-	-	-	3	1	2	-	2	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

			Cor	ntinuous Asse	ssment	Marks (CAM) -	- Maximui	n 50 M	arks			
	C	ontinuo	ous Asse	essment (Theo	ry)	Conti	nuous As	sessm	ent (Pra	ictical)	#End	
Assessment	CAT 1	CAT 2	Model	Attendance	Total	Conduction of Practical	Report	Viva	Total	#End Semester Examination (ESE) Marks (Practical- Internal Evaluation)	Semester Examination (ESE) Marks (Theory)	Total Marks
Marks	5	5	5	5	20*	15	10	5	30*	20	75**	100
*To	o be wei	ghted f	or 10 Mar	ŕks	10	*To be weight	ted for 10	Marks	10	30	*To be weighted for 50 Marks	

Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Comestar	English	Progran	nme: B.	Tech.				
Semester	II	Course	Catego	ry Code	e: HS *End	d Semester	Exam Ty	pe: P
Course Code	U23ENPC01	Periods	Week		Credit	Maxi	mum Ma	rks
		L	Т	Р	С	CAM	ESE	TM
Course Name	General Proficiency- I	0	0	2	1	50	50	100
	(Common to ALL E	Branches	except	CSBS)				
Prerequisite	Basics of English Language							
	On completion of the course, the stude	nts will b	e able t	0			BT Ma (Highes	
Course Outcome	CO1 Interpret meaning and apply reading	strategies	s in tech	nical ar	nd non-techr	nical contex	K	3
Cutoonic	CO2 Develop interpersonal communication	on skills p	ofessio	nally			K	4
	CO3 Demonstrate various forms of forma	l writing					K	3
·	CO4 Decode graphical data coherently						ĸ	2
	CO5 Apply the techniques of verbal aptitu	ide in con	petitive	exams	;		K	3
UNIT- I	Comprehension Analysis				Periods:6			
	ue based on social contexts (IELTS based)							
Video Recording Vocabulary: Syno	 Reading: Reading technical passage (IEI onyms (IELTS) 	LTS base	d) - Wri	ting: W	riting Task: 2	2 (IELTS Ad	ademic)	-
UNIT- II	Personality Development				Periods:6			
U	ogue about the everyday social issues (IEL					0 1		:
•	sh Card (IELTS based) - Reading: Britis	h & Ame	rican V	ocabul	ary - Writing	g: SWOT /	Analysis	-
	ms and Phrases (IELTS)							
	Inferential Learning		. = ~ .		Periods:6			
	ersation between 4 people regarding educ TS based) - Reading: Distinguish betwe							
	different context - Vocabulary: Phrasal Verb					<i>i)</i> , - vviitii	g. vviiting	J
UNIT- IV	Interpretation and Functional Writing				Periods:6			
-	ogue on an academic subject (IELTS based). Group	Discuss	ion vide		na: Group E	Discussio	n CO4
Practice - Read	ing: Read and review (Books, Magazines pription) - Vocabulary: Collocations (IELTS)							
UNIT-V					Deriedare			
-	Verbal Aptitude - I ncement: Articles, Preposition, Conjunction	~			Periods:6			
	ncement: Anicles, Preposition, Conjunction	N						CO5
Verbal Ability E	nhancement: Ordering of sentences, Bloc e Improvement, Word Analogy, Word Group	od Relatio		pleting	Statements	- Cloze test	, Spotting	9
Verbal Ability E	e Improvement, Word Analogy, Word Group	od Relatio)			- Cloze test otal Period	-	9
Verbal Ability E Errors - Sentence Lecture Periods	e Improvement, Word Analogy, Word Group :: - Tutorial Periods: -	od Relatio os (GATE)				-	9
Verbal Ability E Errors - Sentenco Lecture Periods Reference Book 1.Lewis, Norman 2.Patterson, Kerr	e Improvement, Word Analogy, Word Group : - Tutorial Periods: - (s a, "Word Power Made Easy".Goyal Publishe ry, Joseph Grenny,Ron McMillan, Al Switzle	od Relations os (GATE Practic ers and Dia) al Peric stributor	o ds:30 rs Pvt.L	T td., Latest E	otal Perioc	ls:30	J
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Verbal Ability E Errors - Sentence Lecture Periods Reference Book 1.Lewis, Norman 2.Patterson, Kerr Kindle Publicatio 3.Comfort, Jerer Press, Cambridg 4.Agarwal, R. S. 5.Wren, Percival Web References 1.https://www.ielf 2.https://ieltsfocu 3.https://www.fre	e Improvement, Word Analogy, Word Group : - Tutorial Periods: - (s , "Word Power Made Easy".Goyal Publishery, Joseph Grenny,Ron McMillan, Al Switzler n,2nd Edition, 2011. my,et.al. "Speaking Effectively: Developing le: Reprint 2011. "A Modern Approach to Verbal & Non Verb Christopher, and Wren Martin. "High School s ts-exam.net/grammar/ ls.com/2017/08/02/collocations-ielts/ sherslive.com/online-test/blood-relations-qu	od Relation os (GATE Practica rs and Di- r, "Crucial g Speakin al Reason ol English) al Perio Stributor Conver g Skills ning". S Gramm	eds:30 rs Pvt.L rsation for Bu . Chanc har and	td., Latest E Tools for tal usiness Eng I, 2010. Composition	otal Perioc dition, 2020 king when \$ lish", Caml	l s:30 Stakes ar pridge Ur	e High"
Verbal Ability E Errors - Sentence Lecture Periods Reference Book 1.Lewis, Norman 2.Patterson, Kerr Kindle Publicatio 3.Comfort, Jerer Press, Cambridg 4.Agarwal, R. S. 5.Wren, Percival Web References 1.https://www.ielf 2.https://www.ielf 3.https://www.fre 4.https://www.top	e Improvement, Word Analogy, Word Group : - Tutorial Periods: - (s , "Word Power Made Easy".Goyal Publishe y, Joseph Grenny,Ron McMillan, AI Switzler n,2nd Edition, 2011. ny,et.al. "Speaking Effectively: Developing le: Reprint 2011. "A Modern Approach to Verbal & Non Verb Christopher, and Wren Martin. "High School s ts-exam.net/grammar/ ls.com/2017/08/02/collocations-ielts/	od Relation os (GATE Practica rs and Di- r, "Crucial g Speakin al Reason ol English uestions-a ompreher) al Perio Stributor Conver g Skills ning". S Gramm Ind-ans Ision/clo	eds:30 rs Pvt.L rsation for Bu . Chanc har and	td., Latest E Tools for tal usiness Eng I, 2010. Composition	otal Perioc dition, 2020 king when \$ lish", Caml	l s:30 Stakes ar pridge Ur	e High"

COs					Prog	ram O	utcom	es (PC	Ds)					ram Spo omes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
2	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
3	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
4	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
5	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-

Correlation Level: 1-Low, 2-Medium, 3-High

Evaluation Method

		Conti	nuous Assessme	nt Marks (CAM)		End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	10)	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Mathe	ematics		Progran	nme: B	Tech.					
Semester				Course	Catego	ry Code	: BS	*En	d Semest	er Exam 🛛	Гуре: LE
Course Code	U23N	IAPC01		Perio	ods/We	ek	Cre	dit	Ma	ximum N	larks
				L	Т	Р	C		CAM	ESE	TM
Course Name	Engin	eering N	lathematics Laboratory	0	0	2	1	L	50	50	100
			(Common to al	l Branches E	xcept C	SBS)			<u>-</u>		
Prerequisite	Matr	ices, Fou	rier Transforms, Laplace T	ransforms							
			-								
	On c	completi	on of the course, the stud	dents will b	e able	to					lapping
	CO1	Perform	and evaluate Matrix Operatio	ns						· · · · · · · · · · · · · · · · · · ·	st Level K3
Course			-								-
Outcome	CO2		ifferential and Integral Equation		(4)!··	6					K3
	CO3		ct Fourier series and Fourier T Measures of Central tendence		the give	en functio	on				K3
	CO4			-							K3
	CO5	Analyze	Correlation and Regression li	nes							КЗ
List of Experim											
		-	en values and Eigen Vectors o	of the matrix.							
			ial equation.								
3. Find the in	tegratio	n of $\int_a^b f(x)$	(x) dx.								
4. Find the F	ourier se	eries of f(x).								
5. Find the Fe	ourier Tr	ransform o	of f(x).								
6. Find the La	aplace T	ransform	of f(x).								
7. Find the M	lean, Me	edian and	Mode.								
8. Construct	the Pie a	and Bar D	iagram.								
9. Find the C			-								
10. Find the R	earessic	on lines.									
Lecture Perio	•		Tutorial Periods: - Nil	Practica	al Perio	ds: 30		т	otal Perio	ds .30	
Reference Boo		•				431.30				45.50	
	ijan, "En	gineering	Mathematics, Tata McGraw H	lill Education	(India)	Private L	imited C	henna	ai 2nd Edit	ion Paperb	oack – 1
		n, "Engin	eering Mathematics, The Natio	onal Publishii	ng Com	bany, Ma	dras, 20	16.			
3. Dr. A. Sing	garavelu	, "Probabil	ity and Statistics", Meenakshi Ag	ency, Paperba	nck – 1, 2	019.					
Veb Reference											
• • • •			western.edu/documents/studer					•			
2. https://www	w.nrigro	upindia.cc	m/niist/wp-content/uploads/si	tes/6/2022/02	2/lab-ma	inual-it40)6matlab	.pdf			

https://www.nrigroupindia.com/niist/wp-content/upioads/sites/b/2022/02/lab-manual-it406matiab.pdi
 https://www.studocu.com/row/document/comsats-university-islamabad/signals-and-systems/lab-lab-manual/38332410.

COs/POs/PSOs Mapping

COs					Pro	gram O	utcome	es (POs)						gram Spe comes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	1	1	-	1	-	-	-	-	-	1	1	1	1
2	3	2	1	1	-	1	-	-	-	-	-	1	1	1	1
3	2	1	-	-	-	1	-	-	-	-	-	1	1	1	1
4	2	1	-	-	-	1	-	-	-	-	-	1	1	1	1
5	3	2	1	1	-	1	-	-	-	-	-	1	1	1	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

	Co	ntinuous A	ssess	ment Marks (CA	M)	En d	
Assessment	Performan cla	ce in pract asses	ical	Model Practical	Attendance	End Semester Examination	Total Marks
	Conduction of practical	Record work	viva	Examination	Attendance	(ESE) Marks	marks
Marks	15	5	5	15	10	50	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Computer Science and Engineering	Progran	nme: B.	Tech.				
Semester	III	Course	Catego	ry Code	: PC *End	d Semeste	er Exam T	ype: LE
Course Code	U23CSP301	Peric	ods / We	ek	Credit	Ma	ximum Ma	arks
Course Code	02303F301	L	Т	Р	С	CAM	ESE	TM
Course Name	Embedded System Architecture and Interfacing Laboratory	0	0	2	1	50	50	100
Dec es en la ita	Divited Design and Quetam Architestum							
Prerequisite	Digital Design and System Architecture							
0	On completion of the course, the stude						(Highes	
Course Outcome	CO1 Acquire knowledge on operations o		-	essor se	t of instructi	on.	K	(3
Outcome	CO2 Familiarize the basic concepts of 80	086 instruc	tions.				K	(3
	CO3 Learn the Interface modules using a	assembly I	anguag	e progra	am.		ĸ	(3
	CO4 Attain knowledge on 8051 microcor	ntroller inst	ructions	5.			K	(3
	CO5 Apply the concepts on real time app	olications					K	(4
	List	of Exercis	es				<u>.</u>	
	orm Bulk memory operations using DMA co	ntroller inte				le.		
Assembly Lang To perform To find Write a mterfacing Exec Interfac Interfac Construction Interfac Interfac Interfac Programming S. Flashing	orm interfacing with 8251 USART or RS232 guage Program Exercises Using 8051 Mi orm Bit Manipulations using Boolean and Lo the largest / smallest number in an array of program to generate a delay using timer / c ercises Using 8051 Microcontroller Train e ADC Module to 8051 Microcontroller Train te different waveforms (sine, square, Trial r Trainer kit. e stepper motor / DC Motor Module with 80 e Traffic Light controller Module with 8051 M / Interfacing using RTOS g of LEDs using RTOS. e Temperature using sensor and write to dis	C. crocontro ogical oper numbers. ounter. er Kit and ner kit. ngular, Ra 51 Microco dicrocontro	interfactions.	cing Mo c.,) by i Trainer ainer Kit	odule odules nterfacing [ule to 805	51
Assembly Lang To perform To find Write a mterfacing Exec Interfac Interfac O. Genera Microcontroller 1. Interfac 2. Interfac Programming 3. Flashing 4. Measur ecture Period	guage Program Exercises Using 8051 Miborm Bit Manipulations using Boolean and Lothe largest / smallest number in an array ofprogram to generate a delay using timer / cercises Using 8051 Microcontroller Trainee ADC Module to 8051 Microcontroller Trainee ADC Module to 8051 Microcontroller Trainee ADC Module to 8051 Microcontroller Trainete different waveforms (sine, square, Trianer kit.e stepper motor / DC Motor Module with 8051 Microcontroller Module With 80	C. crocontro ogical oper numbers. ounter. er Kit and ner kit. ngular, Ra 51 Microco dicrocontro	interfactor interfactor ontroller oller Tra	cing Mo c.,) by i Trainer ainer Kit	odules odules nterfacing [Kit.			51
Assembly Lang To perform To find Write a mterfacing Exec Interfacing Exec Interfac Interfac Interfac Interfac Programming S. Flashing A. Measur A. Measur	guage Program Exercises Using 8051 Miborm Bit Manipulations using Boolean and Lothe largest / smallest number in an array ofprogram to generate a delay using timer / cercises Using 8051 Microcontroller Trainee ADC Module to 8051 Microcontroller Trainee Trainer kit.e stepper motor / DC Motor Module with 8051 Nof LEDs using RTOSg of LEDs using RTOS.e Temperature using sensor and write to diss: -Tutorial Periods: -ks	C. crocontro ogical oper numbers. ounter. er Kit and ner kit. ngular, Ra 51 Microco Microcontro splay using Practic	interfactor interfactor imp, etco ontroller oller Tra g RTOS al Perio	cing Mo c.,) by i Trainer ainer Kit	odules nterfacing [Kit. T	DAC Modu	ods: 30	51
Assembly Lang . To perform . To find . Write a . Interfacing Exec . Interfac 0. Genera Microcontroller 1. Interfac 2. Interfac Programming 3. Flashing 4. Measur . Ecture Period Reference Boo 1. "Embedd 2. "Arduind 3. "8085 M Edition.2 4. "Microco 5. "The 805	guage Program Exercises Using 8051 Mi form Bit Manipulations using Boolean and Lo the largest / smallest number in an array of program to generate a delay using timer / c ercises Using 8051 Microcontroller Trainer e ADC Module to 8051 Microcontroller Trainer te different waveforms (sine, square, Trianer kit. e stepper motor / DC Motor Module with 80 e Traffic Light controller Module with 8051 N / Interfacing using RTOS. g of LEDs using RTOS. e Temperature using sensor and write to dises: - ks ded Systems Architecture, Programming and Deport beginners: Essential Skills Every Maker Needor Scores Architecture Application and Processors Architecture Appli	C. crocontro ogical oper numbers. ounter. er Kit and ner kit. ngular, Ra 51 Microco Microcontro splay using Practica sign", Rajka eds", John E ogramming"	amal, TA Baichtal, I Rames Controller Control Controller Controlle	cing Ma cing Ma c.,) by i Trainer ainer Kit c. ods: 30 TA McG Person E h S. Goa e, 2000.	odules odules nterfacing [Kit. Taw-Hill, 2 nd Education, Inc	DAC Modu	5 . n, 2013.	51
Assembly Lang To perfect To find Write a mterfacing Exec Interfac Interfac Interfac Interfac Interfac Interfac Interfac Interfac Interfac Interfac Interfac Interfac Programming I. Interfac Programming I. Interfac Programming I. Interfac Programming I. Interfac Programming I. Interfac I. Interfac Programming I. Interfac I. In	guage Program Exercises Using 8051 Mi form Bit Manipulations using Boolean and Lo the largest / smallest number in an array of program to generate a delay using timer / c ercises Using 8051 Microcontroller Traine e ADC Module to 8051 Microcontroller Traine e ADC Module to 8051 Microcontroller Traine te different waveforms (sine, square, Trialer trainer kit. e stepper motor / DC Motor Module with 8051 Microcontroller Using RTOS g of LEDs using RTOS. e Temperature using sensor and write to dises: s: - the ded Systems Architecture, Programming and Defense of or beginners: Essential Skills Every Maker Need icroprocessors Architecture Application and Program 2002. ontroller Projects in C for the 8051", Dogan Ibrah 51 Microcontroller", Kenneth J. Ayala, Cangage	C. crocontro ogical oper numbers. ounter. er Kit and ner kit. ngular, Ra 51 Microcontro Splay using Practica esign", Rajka eds", John E ogramming" im, Elsevier learning, 3 rd	eller Tra rations. interfac ump, etc ontroller oller Tra g RTOS al Perio amal, TA Baichtal, I , Rames ' Science d Edition,	cing Ma cing Ma c.,) by i Trainer ainer Kit c. ods: 30 TA McG Person E h S. Goa e, 2000.	odules odules nterfacing [Kit. Taw-Hill, 2 nd Education, Inc	DAC Modu	5 . n, 2013.	51
Assembly Lang To perfect To find Write a mterfacing Exec Interfac Inte	guage Program Exercises Using 8051 Mi form Bit Manipulations using Boolean and Lo the largest / smallest number in an array of program to generate a delay using timer / c ercises Using 8051 Microcontroller Traine e ADC Module to 8051 Microcontroller Traine e to different waveforms (sine, square, Trianer kit. e stepper motor / DC Motor Module with 8051 Microcontroller Using RTOS g of LEDs using RTOS. e Temperature using sensor and write to distance s: - the ded Systems Architecture, Programming and Deport beginners: Essential Skills Every Maker Needor for beginners: Essential Skills Every Maker Needor using Projects in C for the 8051", Dogan Ibrah 51 Microcontroller", Kenneth J. Ayala, Cangage es ed 8085 Microprocessor Simulator (web8085.ap	C. crocontro ogical oper numbers. ounter. er Kit and ner kit. ngular, Ra 51 Microcontro splay using Practic sign", Rajka eds", John E ogramming" im, Elsevier learning, 3 rd opspot.com	eller Tra rations. interfactor imp, etc ontroller oller Tra g RTOS al Perio Baichtal, I , Rames Science	tiner Mo cing Mo c.,) by i Trainer ainer Kit ods: 30 TA McG Person E h S. Goa e, 2000.	odules odules nterfacing E Kit. Taw-Hill, 2 nd Education, Inc inkar, Penrar	DAC Modu	5 . n, 2013.	51
Assembly Lang To perfect To find Write a hterfacing Exec Interfac Interfac Controller Interfac Controller Interfac Programming Secture Period Reference Boo I. "Embedd C. "Arduinc Seference Boo I. "Embedd C. "Arduinc Seference Boo I. "Embedd C. "Arduinc S. "The 808 Veb Reference I. Web bas C. https://ex S. https://w	guage Program Exercises Using 8051 Mi form Bit Manipulations using Boolean and Lo the largest / smallest number in an array of program to generate a delay using timer / c ercises Using 8051 Microcontroller Traine e ADC Module to 8051 Microcontroller Traine e ADC Module to 8051 Microcontroller Traine te different waveforms (sine, square, Trialer trainer kit. e stepper motor / DC Motor Module with 8051 Microcontroller Using RTOS g of LEDs using RTOS. e Temperature using sensor and write to dises: s: - the ded Systems Architecture, Programming and Defenter Defenter of or beginners: Essential Skills Every Maker Need icroprocessors Architecture Application and Programs 2002. ontroller Projects in C for the 8051", Dogan Ibrah 51 Microcontroller", Kenneth J. Ayala, Cangage es sed 8085 Microprocessor Simulator (web8085.app	C. crocontro ogical oper numbers. ounter. er Kit and ner kit. ngular, Ra 51 Microco Microcontro splay using Practic sign", Rajka eds", John E gramming" im, Elsevier learning, 3 rd opspot.com	and-asse	cing Ma cing Ma c.,) by i Trainer ainer Kit ods: 30 TA McG Person E h S. Goa e, 2000. 1991. mbly-lan	odules odules nterfacing E Kit. Taw-Hill, 2 nd Education, Inc inkar, Penrar	DAC Modu	5 . n, 2013.	51

*TE – Theory Exam, LE – Lab Exam

COs					Prog	gram O	utcome	es (POs)					jram Spe omes (P	
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	2	2	3	2	2	-	-	1	-	-	1	3	2	2
2	2	2	2	3	2	2	-	-	1	-	-	1	3	2	2
3	2	2	2	3	3	1	-	-	1	-	-	1	3	2	2
4	2	2	2	3	2	2	I	-	1	-	-	1	3	2	2
5	3	2	3	3	3	2	-	1	2	1	2	2	3	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Continuous	Assessm	ent Marks (CAM))	End Semester	
Assessment	Performance	in practical	classes	Model		End Semester Examination	Total Marks
	Conduction of practical	Record work	viva	Practical Examination	Attendance	(ESE) Marks	
Marks	15	5	5	15	10	50	100

Department	Computer Science and Engineering	Program	me: B.T	ech.				
Semester		Course C	Category	: PC	End	l Semester	Exam Type:	LE
Course Code		Perio	ds/Week	k	Credit	Ma	ximum Mar	ks
Course Code	U23CSP302	L	Т	Р	С	CAM	ESE	T№
Course Name	Software Engineering and Testing Laboratory	0	0	2	1	50	50	100
Prerequisite	NIL							
	On completion of the course, the stud						BT Ma (Highest	
	CO1 Apply and practice test on websites	s using Se	elenium.				K	3
Course	CO2 Apply and practice different tests o	n website	s using	JMeter.			K	3
Outcomes	CO3 Build test reports using Beautiful S	Soup.					K	3
	CO4 Apply Unit testing on software mod	lule					К	3
	CO5 Apply Integration testing on softwar	re module	s				к	3
List of Exercise	ls						i.	
 Test and prov Introduction t 	o JMeter Response Assertion and Assert Respon vide the results for the given API using postman. o Unit Testing Framework and Unit Testing. nit tests and Integration Tests.	nse from W	ied Page	Э.				
ecture Periods:	- Tutorial Periods: -	Practic	al Perio	ods:30	Т	otal Perio	ods:30	I
eference Books	5							
 Rahul Shende Elfriede Dustir While Raising Lisa Crispin, J 2008. Lee Copeland 	ers, Corey Sandler, Tom Badgett," The Art of Sof "Software Automation Testing Tools for Beginne , Thom Garrett, and Bernie Gauf, "Implementing Quality", Addison-Wesley Professional, 1 st Editio anet Gregory" Agile Testing: A Practice Guide for , "A practitioner's guide to Software Test Design"	ers", Arizon Automateo n, 2009. r Testers a	a Busine d Softwa nd Agile	ess Alliano ire Testino Teams",	ce, 2012 g: How to Sa Addison-We	ave Time ar		
	outube.com/watch?v=5ELldrBa_\//Eo							
. https://intellip	outube.com/watch?v=5FUdrBq-WFo aat.com/blog/tutorial/selepium-tutorial/							
	outube.com/watch?v=5FUdrBq-WFo aat.com/blog/tutorial/selenium-tutorial/ outube.com/watch?v=mXGcBvWYI-U							

- 4. 5. 6. https://octoperf.com/blog/2018/03/29/jmeter-tutorial/ https://www.youtube.com/watch?v=87Gx3U0BDlo
- https://www.guru99.com/unit-testing-guide.html
- 7. https://www.youtube.com/watch?v=4_lk8eb2ln0

* TE – Theory Exam, LE – Lab Exam

COs	Program Outcomes (POs)													ram Spe omes (F	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	2	3	-	-	-	3	-	-	1	3	2	3
2	3	3	3	2	3	-	-	-	3	-	-	1	3	2	3
3	3	3	3	2	3	-	-	-	3	-	-	1	3	2	3
4	3 3 3 2 3 - - 3 - - 1											1	3	2	3
5	3	3	3	2	3	-	-	-	3	-	-	1	3	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

	С	ontinuous	Asses	sment Marks (CA	M)		
Assessment	Performanc cla	ce in practi Isses	cal	Model		End Semester	Total
Assessment	Conduction of practical	Record work	viva	Practical Examination	Attendance	Examination (ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

Department	Computer Science and Engineering	Progran	nme: B .	Tech.						
Semester	III	Course	Catego	ry Code	e: MC *Er	nd Semest	ter Exam T	ype: -		
Course Code	U23CSM303	Peric	ds/Wee	ek	Credit	Ma	ximum Mar	ks		
Course Code	0230311303	L	Т	Р	С	CAM	ESE	ТМ		
Course Name	Climate Change	2	0	0	-	100	-	100		
Prerequisite	-									
	On completion of the course, the students	will be able	e to				BT Ma (Highest	••••		
	CO1 Inspect the characteristics and Temper	ature profile	of the a	itmosph	ere		K	2		
Course	CO2 Analyze past climate, human influence	on global w	arming,	and pre	dict future clim	nates	K	3		
Outcome	Analyze the impact of climate change and the risk of Irreversible Changes									
	CO4 Outline the carbon credits and evidence	nt	~							
	CO5 Acquire knowledge on clean developme	ent mechan	sm and	mitigatio	on technologie	es	K2			
UNIT- I	ATMOSPHERE AND ITS COMPONENTS				Periods:06		i.			
mportance of Atm	nosphere - Physical Chemical Characteristics of									
of the atmosphere inversion on pollut	- Atmospheric stability - Temperature profile of	the atmosp	nere - La	apse rate	es - Temperat	ure inversio	on - effects o	f CO1		
UNIT- II	GLOBAL CLIMATE				Periods:06					
Account of past c	limate - Environmental indicators and instrume	ental records	- Huma	an Foot		al warming	- Predicting	CO2		
	emperature regime - Extreme climate events.						-	CO2		
UNIT- III	IMPACTS OF CLIMATE CHANGE e change : Change of Temperature in the envi				Periods:06	-				
	s and Scenarios - Projected Impacts for Different Irreversible Changes. OBSERVED CHANGES AND ITS CAUSES	ent Regions	- Unce	rtainties	in the Projec	cted Impac	ts of Climate	CO3		
-	Ind Carbon credits - Initiatives in India-Kyoto F	Protocol – li	nter aov	ernment		imate chan	ae - Climate	د		
	edbacks - The Montreal Protocol - UNFCCC - I									
UNIT- V	CLIMATE CHANGE AND MITIGATION MEA	SURES			Periods:06					
Friendly Plastic -	ent Mechanism - Carbon Trading- examples of Alternate Energy - Hydrogen - Bio-fuels - Mit Practices - Carbon sequestration - Carbon capt es.	tigation Effo	rts in In	idia and	Adaptation f	unding. K	ey Mitigation			
Lecture Periods	s:30 Tutorial Periods:-	Practica	I Period	ls:-	Т	otal Perio	ds:30			
 Andrew Dess 2019. J. David Neel Robin Moilveel 	Ild, "Greenovation: Urban Leadership on Climate ler and Edward A. Parson, "The Science and Po lin, "Climate change and climate modelling", Car en, "Fundamentals of weather and climate", Oxf Kumar, "Climate Change – An Indian Perspectiv	blitics of Glo mbridge Uni ford Univers	oal Clim versity p ity Press	ate Char oress, 20 s, 2 nd Ec	nge", Cambric 011. Jition, 2010.	lge Univers		Edition		
 Jason Smerde Adaptation and J.M. Wallace Jan C. van Date Meb References 	I, "The Global Warming Reader: A Century of wi on, "Climate Change: The Science of Global Wa and mitigation of climate change-Scientific Techni and P.V. Hobbs, "Atmospheric Science", Elsevid am, Impacts of "Climate Change and Climate Va	arming and ical Analysis er/ Academi	our Ener , Cambr c Press,	rgy Futu ridge Un , 2006.	re", Columbia iiversity Press	University, , 2006.		2003.		
2. https://www.w	c.in/courses/105102089/ /armheartworldwide c.in/content/storage									

COs		Program Outcomes (POs)													cific SOs)
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	2	-	3	3	-	-	-	-	2	1	1	1
2	3	3	2	2	-	3	3	-	-	-	-	2	1	1	1
3	3	3	2	2	-	3	3	-	-	-	-	2	1	1	1
4	3	3	2	2	-	3	3	-	-	-	-	2	1	1	1
5	3	3	2	2	-	3	3	-	-	-	-	2	1	1	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

SEMESTER IV

Department	Mather	matics		Program	nme : E	3.Tech.					
Semester	IV			Course	Catego	ory Code	: BS	*Enc TE	Semest	ter Exam	Гуре:
Course Code	U23MA	TC05		Perio	ods/We	ek	Cred	dit	Ma	ximum Ma	arks
				L	Т	Р	С		CAM	ESE	TM
Course Name	DISCR THEOF		EMATICS AND GRAPH		1	-	4		25	75	100
			(Common to CSE	E, IT, AI&	DS and	CCE)					
Prerequisite		Mathematic									-
	On co	ompletion c	of the course, the stude	nts will b	e able	to					apping
Course	C01	Construct	t Mathematical argument	s usina la	nical co	onnectiv	es and tr	uth t	ables	······	st Level (3
Outcome			-	-	-						
	CO2	-	correctness of an argum	•		-	quantifiei	rs.			(3
	CO3	•	blems using counting teo	•	n Lattic	es.				ł	(3
	CO4	Familiariz	te the different types of G	Fraphs.						ł	(3
	CO5	Understar	nd the Applications of Sho	ortest pat	h algori	thms.				ł	(3
UNIT – I		CS AND PF					Period				
			ment formulae - Truth ta						atement	formulae	
	·····•		plications – Principal con	junctive a	nd disju	unctive r					C01
UNIT – II	<u>i</u>						Period		- f		000
UNIT – III			of Inference theory – Cor	iditional p	0001 – I	nairect r	nethod c Period		or.		CO2
			asse Diagram – Lattice		oto	Droporti		-	e Sui		
Complemented				5 d5 FU8	5005 -	Fioperii		anice	s – Sui	Janices	_ CO3
UNIT – IV	•••••										
	GRAF	PH THEOR	Y				Period	s:12			
-		-		phs – Iso	morphis	sm – Co			hs – Eul	er graphs	- CO4
Graphs and typ Hamilton paths	bes of Gr	raphs – Mat	r trix representation of gra	phs – Iso	morphis	sm – Co	nnected	grap	hs – Eul	er graphs	- CO4
Graphs and typ Hamilton paths UNIT – V	bes of Gr and circ TREE	raphs – Mat cuits. S	trix representation of gra		morphis	sm – Co		grap	hs – Eul	er graphs	
Graphs and typ Hamilton paths UNIT – V Frees – Proper	bes of Gr and circ TREE ties of Tr	raphs – Mat cuits. : S rees – Algoi	trix representation of gra rithm – Kruskal's algorith	m.			nnected	grap s:12			
Graphs and typ Hamilton paths UNIT – V Frees – Proper LecturePerio	bes of Gr and circ TREE ties of Tr	raphs – Mat cuits. : S rees – Algoi	trix representation of gra				nnected	grap s:12	hs – Eul talPerio		
Graphs and typ Hamilton paths UNIT – V Frees – Proper LecturePerio Fext Books	ties of Gi TREE ties of Ti ds:45	raphs – Mat cuits. S rees – Algoi T	trix representation of gra rithm – Kruskal's algorith utorialPeriods:15	m. Practic	al Peri	ods:-	nnected Period	grap s:12 To	talPerio	ods:60	CO5
Graphs and typ Hamilton paths UNIT – V Frees – Proper LecturePerio Fext Books	ties of R ds:45 y and R.	raphs – Mat cuits. S rees – Algon T Manohar, "	trix representation of gra rithm – Kruskal's algorith utorialPeriods:15 'Discrete Mathematical st	m. Practic	al Peri	ods:-	nnected Period	grap s:12 To	talPerio	ods:60	CO5
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* TE – Theory Exam, LE – Lab Exam

COs		Program Outcomes (POs)													ecific /SOs)
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	1	-	-	-	-	-	-	-	1	1	-	1
2	3	3	2	1	-	-	-	-	-	-	-	1	1	-	-
3	3	3	2	1	-	-	-	-	-	-	-	1	1	-	-
4	3	3	2	1	-	1	-	-	-	1	1	1	1	-	-
5	3	3	2	1	-	1	-	-	-	1	1	1	1	-	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Contir	nuous Assessi	ment Marks (CA	M)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	1	0	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Information Technology	Program	nme: B.	Tech.	••••			
Semester	IV	Course	Catego	ry Code	ES *End	Semester	[.] Exam Ty	pe: TE
		Perio	ods / We	ek	Credit	Ma	ximum Ma	arks
Course Code	U23ITTC02	L	Т	P	С	CAM	ESE	TM
Course Name	Programming in Java	3	0	0	3	25	75	100
	(Comm	non to All Brar	iches)					
Prerequisite	Programming Skills							
	On completion of the course, the stu	dents will b	e able t	O				apping st Leve
	CO1 Articulate the concept of Java fun	damentals () OPs ar	nd String	IS		·····	SI LEVE
	Demonstrate the principles of inbo					eal time		< 2
_	applications	ontanoo, pac	nagee e				-	
Course	CO3 Create real time applications usin	g exception	handling	and thr	ead program	nming.		∢ 3
Outcome	CO4 Build distributed applications usin						I	{3
	CO5 Design and build simple GUI prog	grams using	AWT, S	wings ar	nd build data	abase	I	{ 3
	applications	_						
	duction						Periods:	09
	lava: History – Features – JVM - JRE – JD		•			• •		
	bes, Expressions, Assignment Statement					stem clas	SS,	
•••••	Primitives to Primitives), Conditional and It				•	•		
	a: Introduction to OOPs Concepts - Class	•					-	CO
-	ects, Object Life-Cycle - Garbage Collect	ion-Construc	ctors - tr	nis – sta	tic – Array	of Objects	s –	
Vested Classes								
	Class– Built-in Methods – StringBuilder - St	tringBuffer						
Jnit- II Inhe	ritance, Interfaces and Packages						Periods:	09
Jnit- II Inhei nheritance: T	ritance, Interfaces and Packages ypes of Inheritance – is-a Relationship,	has-a Rela	•		er keyword	– final ke		09
Jnit-II Inhe nheritance: T Polymorphism	ritance, Interfaces and Packages ypes of Inheritance – is-a Relationship, - Method overloading and Method overrid	has-a Rela ling – Abstra	ct Class		-		eyword –	
Jnit- II Inhei nheritance: T Polymorphism nterfaces: Dei	ritance, Interfaces and Packages ypes of Inheritance – is-a Relationship, - Method overloading and Method overrid fine – Extend – Implement – Access - Inte	has-a Rela ling – Abstra	ct Class		-		eyword –	
Jnit- II Inher nheritance: T Polymorphism nterfaces: Def Objects vice-ve	ritance, Interfaces and Packages ypes of Inheritance – is-a Relationship, - Method overloading and Method overrid fine – Extend – Implement – Access - Inte ersa): Autoboxing and Auto unboxing.	has-a Rela ling – Abstra	ct Class		-		eyword –	
Jnit- II Inher nheritance: T Polymorphism nterfaces: Def Dbjects vice-ve Packages: Def	ritance, Interfaces and Packages ypes of Inheritance – is-a Relationship, - Method overloading and Method overrid fine – Extend – Implement – Access - Inte ersa): Autoboxing and Auto unboxing. ine – Create – Access – Import.	has-a Rela ling – Abstra	ct Class		-		eyword – rimitives to	• CO2
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 Steven Holzner, "Java 2 Black book", Dreamtech Press, 2011.

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- 2. https://docs.oracle.com/en/java/
- 3. https://www.studytonight.com/java/
- 4. https://onlinecourses.nptel.ac.in/

COs/POs/PSOs Mapping

COs						ıram Spe omes (P									
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	1	1	-	1	-	-	-	-	-	-	2	3	2	1
2	3	3	3	-	3	-	-	-	-	-	-	2	3	2	1
3	3	3	3	1	3	-	-	-	-	-	-	2	3	2	1
4	3													2	1
5	3	3	3	1	3	-	-	-	-	-	-	2	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Continuous	s Assessment N	Marks (CAM)		End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	1	0	5	5	5	75	100

Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Comp	outer Science and Engineering	Program						
Semester	IV		Course	<u> </u>		Enc	Semester		
Course Code	U23C	STC04	k	Credit		imum Marl	7		
			<u> </u>	Т	Р	С	CAM	ESE	ТМ
Course Name	Datat	base Management Systems	3	-	-	3	25	75	100
Drozo guioito	C		to CSE, IT a	nd CCE)					
Prerequisite	Comp	outer Programming and Data Str	ructures					BT Map	nina
	On co	ompletion of the course, the stud	dents will	be able	eto			(Highest	
	CO1	Explain the concepts of Database Relationship model and Relations					ntity	K2	
Course	CO2	Manipulate and build database qu					age and	1/0	
Outcomes	002	relational algebra		3				K3	6
	CO3	Use data normalization principles	s to develo	p a norr	malized	database fo	or a given	K3	6
	CO4	application	dragovary	tooboio				К2	•
	CO4	Illustrate various transactions and			•	application		K3	
UNIT - I		Apply tools like NoSQL, MongoD	D, Cassan	uia 011 f	······	Periods:		n.j)
		Models – System Structure-Datal	base Svste	em Arch				/lodel - ER	
		Model - ER into Relational Mode							
Database Scher	na, Keys,	Tables.							
					·····	Darlada.0	A		•••••••••••••••••••••••••••••••••••••••
UNIT - II	Datab	oase Languages				Periods:0	19		
_			onal Calcu	lus - SC	L		-	- Integrity	CO 2
Relational Algeb	ora - Exte	oase Languages			ຊL: Intro	duction - E	-	- Integrity	CO2
Relational Algeb Constraints - Se UNIT - III	ora - Exte t Operatio Relat	base Languages ended-Relational Algebra - Relation ons - Joins - Nested Queries - View ional-Database Design and Data	w- Trigger I Storage	- Stored	QL: Intro d Procec	duction - E lures. Periods:0)DL - DML 19		CO2
Relational Algeb Constraints - Se UNIT - III Relational Data Dependencies -	ora - Exte t Operatio Relat base Des Normal F	base Languages ended-Relational Algebra - Relatic ons - Joins - Nested Queries - Viev	w- Trigger Storage cy - Lossle 4NF.	- Stored	QL: Intro d Procec	duction - E lures. Periods:0 strong's ax	DDL - DML 1 9 ioms - Fund		CO2
Relational Algeb Constraints - Se UNIT - III Relational Data Dependencies - Data Storage: F UNIT - IV	ra - Exte t Operatio Relat base Des Normal F AID - File Trans	base Languages ended-Relational Algebra - Relation ons - Joins - Nested Queries - View ional-Database Design and Data sign: Domain and Data Dependence forms - 1NF, 2NF, 3NF, BCNF and e Organization - Indexing: Types of eactions	w- Trigger Storage cy - Lossle 4NF. f Indexing.	- Storec	QL: Intro d Procec	duction - E lures. Periods:0 strong's ax Periods:0	DDL - DML 19 ioms - Fund	ctional	CO2
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Web References

- 1. http://www.database.com/
- 2. http://cassandra.apache.org/
- 3. https://www.mongodb.com/
- *

COs					Pro	gram C	outcom	ies (PC)s)					gram Spe comes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3

Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

2	1	-	-	-	-	-	-	-	-	-	-	3	3	2
3	2	1	1	3	-	-	-	-	-	-	-	3	3	2
3	2	1	1	-	-	-	-	-	-	-	-	3	3	2
2	1	-	-	-	-	-	-	-	-	-	-	3	3	2
3	2	1	1	3	-	-	-	-	-	-	-	3	3	2
<u> </u>														

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Methods

		Con	tinuous Assess	ment Marks (CA	VI)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

TE –

Department	Comp	Iter Science and Engineering	Progra	mme: E	B.Tech.				
Semester	IV		Course	Categ	ory Co	de: PC *End	Semester	Exam Typ	e: TE
Course Code	U23CS	TC05	Peri	ods / W	r	Credit	····•	imum Mar	7
Course Name	Opera	ing Systems	 3	Т 0	P 0	C 3	CAM 25	ESE 75	ТМ 100
	opera		n to CSE ar		U	J	23	75	100
Prerequisite	Nil								
								BT Ma	poina
	On co	ompletion of the course, the stude	ents will b	e able t	to			(Highest	
	CO1	Describe the various OS functionalities	, structures	, and lay	/ers			K2	2
Course	CO2	Usage of system calls related to OS ma process states and process scheduling	anagement a	and inter	rpreting	different stage	s of various	K4	
Outcome	CO3	Apply and explore the communication	between inte	er proce	ss and	Deadlock avoi	dance.	K3	5
	CO4	Implement page replacement algorithm	ns, memory	manage	ement p	oblems and se	egmentatior	K2	2
	CO5	Apply various disk scheduling algorithm	ns and I/O H	lardwar	е			K4	
Unit- I	Introd	uction to Operating Systems				Periods: 0	9		
		tems (OS), Generations of OS, Types	of OS, OS S	Services	s, Interru			Calls, Basic	
architectural cond OS.	cepts of	an OS, Concept of Virtual Machine, Re	source Man	ager vie	ew, proc	ess view and	hierarchica	view of an	CO1
Unit- II	Proce	ess Management and Scheduling	Algorithm	6		Periods: 0	۵		
		ocess Relationship, Different states of a				<u>i</u>	5		
Process Sched Throughput, Turn	uling: F around	CB), Context switching. oundation and Scheduling objectives Time, Waiting Time, Response Time. Pre-emptive and non-pre-emptive, FCF			ulers, S	Scheduling cri	teria: CPU	utilization,	CO2
Unit- III	Proces	s Synchronization, Threads and Deadl	ocks			Periods: 0	9		
Solution, The Pro Writer Problem, E Concurrent Prog process (CSP); D Types of threads	oducer / Dinning F g rammir eadlocks , Conce	cation: Critical Section, Race Conditions Consumer Problem, Event Counters, M hilosopher Problem. g: Critical region, conditional critical reg	lonitors, Me	ssage F	assing,	Classical IPC anguages, cor	Problems:	Reader's &	
	_	- prevention, avoidance, detection, and ot of multithreads. Deadlocks: Definition Avoidance: Banker's algorithm, Deadl	recovery. T on, Necessa	ary and	sufficie	nt conditions f			CO3
Unit- IV	Memo	ot of multithreads. Deadlocks: Definition	recovery. T on, Necessa	ary and	sufficie	nt conditions f	or Deadlock		CO3
Memory Manage Fixed and variabl Virtual Memory: Paging, Page fau	ement: E e partitio Basics o It, Worki	ot of multithreads. Deadlocks: Definition Avoidance: Banker's algorithm, Deadle	recovery. T on, Necessa ock detectio lress maps, and Compac ol structures	Ary and on and R Memory otion. S – Loca	sufficien ecovery y allocat	nt conditions f Periods: 0 .ion: Contiguou ference, Page	or Deadlock 9 us Memory allocation,	allocation –	CO3
Memory Manage Fixed and variabl Virtual Memory: Paging, Page fau	ement: E e partitio Basics o It, Worki d (NRU)	ot of multithreads. Deadlocks: Definition Avoidance: Banker's algorithm, Deadle bry Management asic concept, Logical and Physical add n– Internal and External fragmentation a of Virtual Memory – Hardware and contro- ng Set, Segmentation, Demand paging,	recovery. T on, Necessa ock detectio lress maps, and Compac ol structures	Ary and on and R Memory otion. S – Loca	sufficien ecovery y allocat	nt conditions f Periods: 0 .ion: Contiguou ference, Page	or Deadlock 9 us Memory allocation, First In Firs	allocation –	CO3

Lecture Periods: 45	Tutorial Periods: -	Practical Periods: -	Total Periods: 45
Text Books			
1.Abraham Silberschatz, Peter	B. Galvin, "Greg Gagne-Operatir	ng System Concepts", Wiley, 10th E	dition, 2019.

2. William Stallings, "Operating Systems: Internals and Design Principles", Pearson, 9th Edition, 2018.

3. Andrew S. Tanenbaum, "Modern Operating Systems", Pearson, 4th Edition, 2016.

4. Tanenbaum, Andrew S., and Albert S. Woodhull. "Operating systems: design and implementation", Vol. 68. Englewood Cliffs: Prentice Hall, 1997.

Reference Books

1.Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau, "Operating Systems: Three Easy Pieces", Arpaci-Dusseau Books, Inc 2015.

- 2. Thomas Anderson and Michael Dahlin, "Operating Systems principles and practicell", Wiley, 2nd Edition, 2014.
- 3. Gary Nutt," Operating System, A modern perspective", 3rd Edition, Addison Wesley, 2004.
- 4. B.L. Stuart, "Principles of Operating Systems Cengage learning", India Edition, 2004.
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- 2. http://www.tcyonline.com/tests/operating-system-concepts
- 3. http://www.galvin.info/history-of-operating-system-concepts-textbook
- 4. https://www.cse.iitb.ac.in/~mythili/teaching/cs347_autumn2016/index.html
- 5. https://www.cse.iitk.ac.in/pages/CS330.html

COs/POs/PSOs Mapping

COs					Prog	ram O	utcom	es (PO	s)					ram Spe omes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	-	1	-	1	1	1	1	-	-	-	-	-	2	1	2
2	-	2	-	2	2	2	2	-	-	-	-	2	2	1	2
3	2	2	2	2	2	-	-	-	-	-	2	-	2	1	2
4	3	3	-	3	3	3	3	3	-	-	3	3	2	1	2
5	3	3	3	3	3	3	3	3	-	3	-	3	2	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

Accordment		Continuou	s Assessmer	nt Marks (CAM)		End Semester	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Marks
Marks	1	0	5	5	5	75	100

*Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Comp	Iter Science and Engineering	Program	me: B.Te	ech.				
Semester	IV		Course C	ategory	: PC	End	d Semester	Exam Type:	TE
Course Code	U23CS	B401	Perio	ds/Week	(Credit	Ma	ximum Mark	S
	02300		L	Т	Р	С	CAM	ESE	TⅣ
Course Name	Andro	d Programming	2	-	2	3	50	50	100
Prerequisite	NIL								
	On co	ompletion of the course, the stu	dents will	be able	e to			BT Map (Highest I	
	CO1	To Learn about Android Operatir	ng System	and its	tools			K2	2
Course	CO2	Discuss and analyze about vario	us Android	IU I				K2	2
Outcomes	CO3	Know the concepts of API Storin applications using SQLite Databa		and ret	rieving	data in And	oid	K	6
	CO4	Create the designs for software of		nt using	g Andro	id SDK		K 4	ļ
	CO5	Design software applications with	n files and	databas	se conr	ectivity		K4	ļ
UNIT – I		luction to Android Operating Sy				Periods:1			
		ndroid Platform, Android SDK, Eclipse Ins	tallation, An	droid Ins	tallation,	Building you I	irst Android	application,	со
UNIT - II		Android Architecture.				Periods:1	0		
-		Activity life cycle, multiple screen size	es. User Ir	terface	Design			lds, Layouts	
		s, Spinners(Combo boxes),Images, M			U	Ū	·		со
UNIT - III	Andro	bid API and Database				Periods:1	D		
-Hello World in t	Worldll ap he middle	bid Programming: List Of Exper olication. That will display —Hello Wo of the screen in the Android Phone. login module. (Check username and	rldll in the n		the scre	Periods:1 een in the em		display	со
3. Create spinner change.	with string	s taken from resource folder (res >> v ons and and selected option should a	alue folder)	and on	changin	g the spinne	value, Ima	ge will	
		oid Programming: List Of Exper				Periods:1	5		.i
he bottom of the	screen.	in your college and on selecting a particular particular and the selecting a particular partic				-	ourse shoul	d appear at	со
. Create and Log	in applicat	three option buttons, on selecting a b ion as above. On successful login, po create, Insert, update, Delete and retri	p up the me	essage.		C C			
		neale, moert, upuale, Delete and retri				······	Catal Daria	ds:60	1
.ecture Period	s:30	Tutorial Periods: -	Practic	arreno	us. Ju		Total Peric	u3.00	
	s:30	Tutorial Periods: -	Practic		us. Ju		otal Peric	/43.00	
ext Books .Charlie Collins, .Reto Meier, —P	Michael G Professiona	Tutorial Periods: - alpin and Matthias Kappler, "Android i I Android 2 Application Development	n Practice"	, Mannin	g Public	i.			
Fext Books Charlie Collins, Reto Meier, —P Reference Boo	Michael G Professiona ks	alpin and Matthias Kappler, "Android i I Android 2 Application Developmentl	n Practice" , Wrox Wile	, Mannin ey, 2010.	g Public	i.			
Cext Books Charlie Collins, Reto Meier, —P Reference Boo .Android Notes for The Android De Professional; 2010	Michael G Professiona ks or Professi veloper's (0	alpin and Matthias Kappler, "Android i I Android 2 Application Developmentl onals. GoalKicker.com, Free Program Cookbook: Building Applications with t	in Practice" , Wrox Wile nming Book he Android	, Mannin ey, 2010. s. SDK by	g Public	ations Co., 2	012.		
2.Reto Meier, —P Reference Boo I.Android Notes for 2.The Android De Professional; 2010	Michael G Professiona ks or Professi veloper's (0 9, Beginnin	alpin and Matthias Kappler, "Android i I Android 2 Application Developmentl onals. GoalKicker.com, Free Program	in Practice" , Wrox Wile nming Book he Android	, Mannin ey, 2010. s. SDK by	g Public	ations Co., 2	012.		

6. http://developer.android.com/guide/components/fundamentals.html

COs	Progr	am Ou	tcome	s (POs)									jram Sp omes (F	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3
2	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3
3	3	2	1	1	-	-	-	-	-	-	-	-	3	2	3
4	3	3	2	1	-	-	-	-	-	-	-	-	3	2	3
5	3	3	2	1	-	-	-	-	-	-	-	-	3	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

Evaluation Method

			Cor	itinuous Asse	ssment	Marks (CAM) -	- Maximu	m 50 M	arks			
	C	ontinue	ous Asse	essment (Theo	ry)	Conti	inuous As	sessm	ent (Pra	ictical)	#End	
Assessment	CAT 1	CAT 2	Model	Attendance	Total	Conduction of Practical	Report	Viva	Total	#End Semester Examination (ESE) Marks (Practical- Internal Evaluation)	Semester Examination (ESE) Marks (Theory)	Total Marks
Marks	5	5	5	5	20*	15	10	5	30*		75**	100
*To) be wei	ghted f	or 10 Mar	ks	10	*To be weight	ted for 10	Marks	10	30	*To be weighted for 50 Marks	

Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Englis	h	Program	nme: B .	Tech.				
Semester	II/IV		Course	Catego	ry Code	e: HS *End	d Semester	Exam Ty	pe: P
Course Code	U23EN	IPC02	Perio	ds/We	ek	Credit	Max	imum Mai	·ks
			L	Т	Р	С	CAM	ESE	ТМ
Course Name	Gene	ral Proficiency- II	0	0	2	1	50	50	100
		(Common to Al	LL Branches	except	CSBS)	L	i		
Prerequisite	Basic	s of English Language							
	On co	ompletion of the course, the st	udents will b	e able	to			BT Ma	
	001	Infer ideas to attend international	l standardiza	d toot b	vbrood	oning recont	tive and	(Highes) K	
		productive skills	i stanuaruize		y bioau	ening recept	live and		L
		Interpret the types of writing in di	fferent state	of affair	S			K	3
Course	<u> </u>	Acquire meticulous exposure in s	speaking and	aot rid	of porfe	rmance any	ioty	K	.
Outcome	603		speaking and	gernu	or perio		liety	n.	2
	CO4	Articulate the ideas and opinions	effectively a	nd cohe	erently			K	2
	CO5	Progress the skills to compete in	various comp	oetitive	exams	ike GATE, G	GRE, UPSC	, K	4
		etc.							
UNIT- I	CARE	ER SKILLS				Periods:6			
Listening: Listen	ing at s	pecific contexts - Speaking: Dem	onstrative sp	eaking	practice		l aids (char	ts, graphs	, CO1
	,	and Review -Newspaper, Adverti					lelines (IEL	TS based)
- Writing: Integra		iting Task (TOEFL) - Vocabulary: ORATE SKILLS	Synonyms a	ind Anto	onyms	Periods:6			
-		lish news and reproducing in ow	n words - Sp	eaking.	Team		- Reading:	Short	CO2
		iges (cloze reading) - Writing: An							
based) - Vocabu	····								
UNIT- III		TIONAL SKILLS	a. 0. La alla d'ale a	D		Periods:6			- 000
		D Talks - Speaking: Brainstorming e Inference - Vocabulary: Word F		Presei	ntation	- Reading. T	ext Comple		- 603
UNIT- IV	··· 7	SFERRABLE SKILLS				Periods:6			
		cumentaries and making notes - S							
trends - Writing Intensifiers.	g: Agre	eing & Disagreeing Essay (IEL	.TS) - Vocat	oulary:	Eupher	nism, Redui	ndancy, Cl	ichés and	d I
UNIT-V	VFRB	AL APTITUDE - II				Periods:6			
		mmar: Tenses, Change of Voice,	. Concord			1 01104010			
Verbal Ability E	Enhanc	ement: Letter Series, Coding & (GATE), Syllogism, One-word Su	Decoding, Se				Analytical I	Reasoninę	CO 5
Lecture Period	·····	Tutorial Periods: -	Practic				otal Period	ds:30	
Reference Boo									
		Amanda French, and Vanessa	Jakeman. "T	he offic	cial Car	nbridge guid	le to IELTS	for acac	lemic &
		, Cambridge, 2014. ohan, Sinha, Uma Rani, "Objec	ctive English	for Co	ompetiti	ve Examina	itions", Tat	a Mc Gra	aw Hill:
Noida,20 3. Loughee		Barron's Writing for the TOEFL I	3T∙ With Aud	io CD"	Barron	s Education	al series 20	008	
		arion, "English for Presentations",							
5. Murphy, Cambride		nd English Grammar in Use w P,2004.	vith answers	: Refer	ence a	nd Practice	for Interm	ediate st	udents,
Web Reference	S								
1.https://www.er	nglishcli	ub.com/grammar/nouns-compour							
		bal-Test-Questions-and-Answers		omplet	ion/I3p1				
		wiz.com/phrases-and-clauses-qu niller.com/25-english-euphemism		e-situati	ons/				
		abularyexercises.com/general-vo			~ /				

COs					Prog	ram O	utcom	es (PC	Ds)					ram Spo omes (F	
	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
2	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
3	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
4	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-
5	1	-	-	-	-	-	-	1	-	3	-	2	-	-	-

Correlation Level: 1-Low, 2-Medium, 3-High

Department	Information Technology	Progran	nme: B .	.Tech				
Semester	IV	Course	Catego	ry Code	: ES *End	Semester	Exam Ty	pe: LE
Course Code	U23ITPC02	Perio	ds / W	eek	Credit	Max	imum Ma	arks
Course Code		L	Т	Р	С	CAM	ESE	TM
Course Name	Programming in Java Laboratory	0	0	2	1	50	50	100
	÷	n to All Brar	nches)					
Prerequisite	Programming Skills							
	On completion of the course, the stud	lents will b	e able	to			(Highes	apping st Leve
Course Outcome	CO1 Apply and practice logical formulat applications.	ions to solv	e simpl	e proble	ms leading	to specific	····÷····	(3
	CO2 Demonstrate the use of inheritance		·····	·····	***************************************	•••••••••••••••••••••••••••••••••••••••		(3
	CO3 Implement robust application programultithreading	rams in Jav	a using	exception	on handling	and	k	(3
	CO4 Build java distributed applications u	······································						(3
	CO5 Implement Graphical User Interfac handling features and Swing in Ja	va.		n progra	ms by utilizi	ng event	k	(3
		of Exercis	es					
	simple programs using java							
2. Develop	a java program that implements class and	d object.						
3. Write a	java program to find the frequency of a give	en characte	r in a st	tring				
4. Write a	java program to demonstrate inheritance a	nd interface	s.					
5. Develop	a java program that implements the Pack	ages.						
6. Create j	ava applications using Exception Handling	for error ha	ndling.					
7. Develop	a simple real life application program to ill	ustrate the	use of I	Multi-Th	reads.			
8. Impleme	ent simple applications using Collections.							
9. Develop	application using the concept of I/O Strea	ms						
	Java Program to demonstrate AWT and Sola a simple application and use JDBC to cor	U 1		d databa	se.			
ecture Period				ods: 30		otal Perio	ds: 30	
leference Boo	ks	<u>i</u>			I			
	Downey and Chris Mayeld, "Think Java - How	ı to Think Lik	e a Cor	nputer So	cientist", 2 nd	Edition, Gre	en Tea	
	aj, Denis, Karthik, Gajalakshmi, "JAVA Progra	amming for o	ore and	l advance	ed learners",	Universities	Press	
	_imited, 2018 orstmann and Gary Cornell, "Core Java 2", Vol	2. Advanced	l Featur	es. Pears	son Educatio	n. 7 th Edition	. 2010	
Veb Reference		_,		, . our		.,	., _0.10	
	w.ibm.com/developerworks/java/							
2. http://doo	cs.oracle.com/javase/tutorial/rmi/.							
3. IBM's tut	orials on Swings, AWT controls and JDBC.							
4. https://w	ww.edureka.co/blog.							
5. https://w	ww.geeksforgeeks.org.							

* TE – Theory Exam, LE – Lab Exam COs/POs/PSOs Mapping

COs					Prog	ram O	utcom	es (PO	s)					ram Spe omes (P	
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	3	-	-	-	-	-	-	-	3	2	1
2	3	2	1	1	3	-	-	-	-	-	-	-	3	2	1
3	3	2	1	1	3	-	-	-	-	-	-	-	3	2	1

4	3	2	1	1	3	-	-	-	-	-	-	-	3	2	1
5	3	2	1	1	3	-	-	-	-	-	-	-	3	2	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

	Co	ontinuous	Assessn	nent Marks (CA	M)		
Assessment		nce in prac lasses	tical	Model		End Semester	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	Examination (ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

Department	Computer Science and Engineering	Program	me: B.T	ech.				
Semester	IV	Course C	ategory:	PC	Enc	l Semester	Exam Type	: LE
<u> </u>	112200000	Perio	ds/Week	(Credit	Ma	ximum Ma	rks
Course Code	U23CSPC03	L	Т	Р	С	CAM	ESE	TM
Course Name	Database Management Systems Laboratory	0	0	2	1	50	50	100
	(Common t	to CSE, IT ar	nd CCE)			-		
Prerequisite	Data Structures and Algorithms							
	On completion of the course, the stud	dents will	be able	e to			BT Ma (Highes	
	CO1 Implement relational database syst							(3
	CO2 Use typical data definitions and ma				arious app	lications.		(3
Course	CO3 Demonstrate applications using Ne							(3
Outcomes	CO4 Execute various advance SQL que							(3
	CO5 Build commercial relational databa	se system	s using	trigger a	ind cursor o	concept.	k	(3
List of Exercis								
tructured Que								
	finition Language							
	nipulation Language							
	lection and Projection statements							
	te Functions							
5. Joins								
7. Nested								
8. Set Ope	rations							
9. View	tion Control Longuage							
	tion Control Language ntrol Language							
L/SQL:	nitor Language							
	PI/SQL Programs							
13. Trigger								
	Implicit Cursor and Explicit Cursor							
ecture Periods	· · ·	Practica	al Perio	ds:30	1	otal Perio	ods:30	<u>.</u>
Reference Bool		Traditio		40.00	•		-40.00	
	Developer Handbook.							
	/SQL for Oracle by P.S. Deshpande, IIT Ma	dras Dre	am Tecl	h Press				
	aulieu, Mastering SQL Fundamentals, 2 nd E							
	hatz, Korth, Sudarshan, Database System				Graw-Hill ⊢	liaher Edu	cation. 20	19
Veb Reference	· · · ·	2 51100 pt0,					22001, 20	
	acle-developer.net							
	acle.com/DBA							

COs					Pro	ogram	Outcor	nes (P	Os)					gram Spe comes (F	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	P08	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	3	2	2	1	-	2	1	-	2	2	3	2
2	3	2	3	3	2	2	1	-	2	1	-	-	3	3	3
3	3	3	3	3	2	2	2	-	2	1	-	-	3	2	3
4	3	2	3	3	2	2	1	-	2	1	-	-	3	3	3
5	3	3	3	3	2	2	2	-	2	1	-	-	3	2	3

Correlation Level: 1-Low, 2-Medium, 3-High **Evaluation Method**

	Co	ontinuous	Assessn	nent Marks (CA	M)		
Assessment		nce in prac lasses	tical	Model		End Semester	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	Examination (ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

Course Code U23CSPC04 Periods/Week Credit Maximum Marks Course Code L T P C CAM ESE TM	Department	Computer S	cience and Engineering	Program	me: B.T	ech.				
Course Code U2CSPC04 I T P C CAM ESE TM Course Name OPERATING SYSTEMS LABORATORY 0 0 2 1 50 50 100 Prerequisite NIL (Common to CSE and IT) BT Mapping BT Mapping BT Mapping (Highers Level) BT Mapping (Highers Level) CO Understand the basic commands for Linux. K2 CO CO CO Inderstand the basic concepts of Deadlock Handling procedures. K4 K4 CO3 Implement different Scheduling Algorithms. K4 K4 K4 K4 K4 List of Exercises CO4 Apply the basic concepts of Deadlock Avoidance and Prevention. K4 K4 K4 List of Exercises CO5 Simulate Disk Scheduling algorithms K4 K4 K4 List of Exercises CO5 Simulate Bankers Algorithm for Deadlock Avoidance and Prevention.	Semester	IV		Course C	ategory	: PC	Enc			
Course Name OPERATING SYSTEMS LABORATORY L I P C CAM Est IN (Common to CSE and IT) Prerequisite NIL On completion of the course, the students will be able to BT Mapping (Highest Level) COURSE COU Understand the basic commands for Linux. K2 COURSE CO2 Develop simple shell programs. K2 COURSE CO3 Implement different Scheduling Algorithms K2 COURSE CO4 Simulate Disk Scheduling Algorithms K4 List of Exercises K4 CO5 Simulate Disk Scheduling algorithms K4 Study of Basic commands to understand the system and working of Linux. Shell scripting (U,O, decision making, looping) K4 Creating Child process (using fork), Zombie, Orphan. Displaying system information using C. K4 Process synchronization (Producer Consumer / Reader Writer/Dining Philosopher using semaphores) Process synchronization Algorithms (FIFS fit, Best fit, Worst fit) Process synchronization Algorithms (FIFS LRU, Optimal) O. Disk Scheduling Algorithms (FIFS LRU, Optimal) O. Disk Scheduling Algorithms (FIFS, LRU, Optimal) Oberaditing System Principl	Course Code	1122060004		Perio	ds/Week	(Credit	Ma	iximum Ma	irks
Counce in the interval of the course, the students will be able to interval of the course of peadock handling proceedures. (Course of the course, the students will be able to interval of the course, the students will be able to interval of the course, the students will be able to interval of the course. (Kale Course of the course, the students will be able to interval of the course, the students of the course, the students of the course of the course of the course. (Cot	Course Code			L	Т	Р	С	CAM	ESE	TM
Prerequisite NIL BT Mapping (Highest Level) (Highest	Course Name	OPERATING			-	2	1	50	50	100
On completion of the course, the students will be able to BT Mapping (Highest Level) (CO2 CO1 Understand the basic commands for Linux. K2 CO2 Develop simple shell programs. K2 CO3 Apply the basic concepts of Deadlock Handling procedures. K4 CO5 Simulate Disk Scheduling Algorithms. K4 List of Exercises Simulate Disk Scheduling Algorithms. K4 Shell scripting (I/O, decision making, looping) Creating Child process (using fork), Zombie, Orphan. Displaying system information using C. K4 Write C programs to simulate the following CPU Scheduling algorithms a) FCFS b) SJF c) Round Robin d) priority Vrite a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention. FC (Threads, Pipes) Process synchronization (Producer Consumer / Reader Writer/Dining Philosopher using semaphores). Dynamic Memory Allocation Algorithms (First fit, Best fit, Worst fit) Page Replacement Algorithms. (FIFO, LRU, Optimal) 0. Disk Scheduling Algorithms. Total Periods:30 Total Periods:30 Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagner 7 th Edition, John Wiley Advanced programming in the Unix environment, W.R. Stevens, Pearson education. Remzi H. Arpaci-Dusseau Books, Inc, 2015. Operating System Principles- Abraham Silberchatz, Peter B.			(Common	to CSE an	id IT)					
Course Cold Understand the basic commands for Linux. K2 CO2 Develop simple shell programs. K2 CO3 implement different Scheduling Algorithms K3 Outcomes CO4 Apply the basic concepts of Deadlock Handling procedures. K4 CO5 Simulate Disk Scheduling Algorithms. K4 CO5 Simulate Disk Scheduling Algorithms. K4 List of Exercises Study of Basic commands to understand the system and working of Linux. Shell scripting (I/O, decision making, looping) Creating Child process (using fork), Zombie, Orphan. Displaying system information using C. . Write C programs to simulate the following CPU Scheduling algorithms . . a) FCFS b) SJF C) Round Robin d) priority . . Write C programs to simulate Bankers Algorithm for Deadlock Avoidance and Prevention. . . . IPC (Threads, Pipes) Process synchronization (Producer Consumer / Reader Writer/Dining Philosopher using semaphores) . . . Dynamic Memory Allocation Algorithms. . Total Periods: 30	Prerequisite	NIL							DT Maria	
Course Outcomes CO2 Implement different Scheduling Algorithms K2 K3 Outcomes CO3 Implement different Scheduling Algorithms K3 Outcomes CO4 Apply the basic concepts of Deadlock Handling procedures. K4 CO5 Simulate Disk Scheduling Algorithms. K4 List of Exercises Study of Basic commands to understand the system and working of Linux. K4 Shell scripting (I/O, decision making, looping) Creating Child process (using fork), Zomble, Orphan. Displaying system information using C. K4 Write C programs to simulate the following CPU Scheduling algorithms a) FCFS b) SJF c) Round Robin d) priority Write a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention. Process synchronization (Producer Consumer / Reader Writer/Dining Philosopher using semaphores) Dynamic Memory Allocation Algorithms. E O. Disk Scheduling Algorithms. FIFO, LRU, Optimal) Disk Scheduling Algorithms. E Orgerating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7 th Edition, John Wiley Advanced programming in the Unix environment, W.R. Stevens, Pearson education. Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau, Operating Systems, Three Easy Pieces, Arpaci-Dusseau, Sone, Inc, 2015. Dhandhere, Dhananjay M. Operating systems: a concept-based approach, 2E. Tata McGraw-Hilll		On comple	tion of the course, the stude	ents will I	be able	to				
Course Outcomes CO3 Apply the basic concepts of Deadlock Handling procedures. K5 CO4 Apply the basic concepts of Deadlock Handling procedures. K4 List of Exercises K4 Study of Basic commands to understand the system and working of Linux. K4 Shell scripting (I/O, decision making, looping) K4 Creating Child process (using fork), Zombie, Orphan. Displaying system information using C. K4 Write C programs to simulate the following CPU Scheduling algorithms a) FCFS b) SJF c) Round Robin d) priority Vrite a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention. IPC (Threads, Pipes) Producer Consumer / Reader Writer/Dining Philosopher using semaphores) Dynamic Memory Allocation Algorithms. (FIFO, LRU, Optimal) Practical Periods: 0 Operating System Principles-Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7 th Edition, John Wiley Advanced programming in the Unix environment, W.R.Stevens, Pearson education. Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau, Operating Systems, Three Easy Pieces, Arpaci- Dusseau Books, Inc, 2015. Ohandhere, Dhananjay M. Operating systems: a concept-based approach, 2E. Tata McGraw-Hill Education, 2006. Deitel, Harvey M., Paul J. Deitel, and David R. Choffnes. Operating systems. Delhi. Pearson Education, 2006.		CO1 Unders	stand the basic commands for Linux						K2	
Outcomes CO4 Apply the basic concepts of Deadlock Handling procedures. K4 CO5 Simulate Disk Scheduling Algorithms. K4 List of Exercises Study of Basic commands to understand the system and working of Linux. Shell scripting (I/O, decision making, looping) Creating Child process (using fork), Zombie, Orphan. Displaying system information using C.									K2	
COS Simulate Disk Scheduling Algorithms. K4 List of Exercises Study of Basic commands to understand the system and working of Linux. Shell scripting (I/O, decision making, looping) Creating Child process (using fork), Zombie, Orphan. Displaying system information using C.	Course									
List of Exercises Study of Basic commands to understand the system and working of Linux. Shell scripting (I/O, decision making, looping) Creating Child process (using fork), Zombie, Orphan. Displaying system information using C. Write C programs to simulate the following CPU Scheduling algorithms a) FCFS b) SJF c) Round Robin d) priority Write a C program to simulate Bankers Algorithm for Deadlock Avoidance and Prevention. IPC (Threads, Pipes) Process synchronization (Producer Consumer / Reader Writer/Dining Philosopher using semaphores) Dynamic Memory Allocation Algorithms (First fit, Best fit, Worst fit) Page Replacement Algorithms. Ecture Periods: - Tutorial Periods: - Practical Periods:30 Total Periods:30 Reference Books Operating System Principles- Abraham Silberchatz, Peter B. Galvin, Greg Gagne 7 th Edition, John Wiley Advanced programming in the Unix environment, W.R. Stevens, Pearson education. Remzi H. Arpaci-Dusseau, Andrea C. Arpaci-Dusseau, Operating Systems, Three Easy Pieces, Arpaci – Dusseau Books, Inc, 2015. Dhamdhere, Dhananjay M. Operating systems: a concept-based approach, 2E. Tata McGraw-Hill Education, 2006. Deitel, Harvey M., Paul J. Deitel, and David R. Choffnes. Operating systems. Delhi. Pearson Education: Dorling Kindersley, 2004. Web References https://www.geeksforgeeks.org https://www.programming.com/programs/c-programs/285-page-replacement-programs-in-c	Outcomes	CO4 Apply	the basic concepts of Deadlock Han	dling proce	dures.				K4	
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TE – Theory Exam, LE – Lab Exam COs/POs/PSOs Mapping

COs	Progr	am Ou	tcome	s (POs)									jram Spo omes (F	
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	-	1	-	1	1	1	1	-	-	-	-		-	-	2
2	-	2	-	2	2	2	2	-	-	-	-	2	-	-	2
3	2	2	2	2	2	2	-	-	-	-	2	-	-	-	2
4	2	2	2	2	3	2	-	-	-	-	2	-	-	-	2
5	2	2	2	2	3	2	-	-	-	-	2	-	-	-	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods Evaluation Method

	Co	ontinuous	Assessm	nent Marks (CA	M)		
	Performar	nce in prac	tical			End	Total
Assessment	Conduction of practical	Record work	viva	Model Practical Examination	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	15	5	5	15	10	50	100

Department	Computer Science and Engineering	Progra	mme: B. ֿ	Tech.				
Semester	IV	Course	Categor	y: AEC	End S	Semester E	xam Type	:-
Course Coolo		Peri	iods/Wee	ek	Credit	Max	imum Mai	rks
Course Code	U23CSC4XX	L	Т	Р	С	CAM	ESE	TM
Course Name	Certification Course – IV	-	-	4	-	100	-	100

Students shall choose an international certification course offered by the reputed organizations like Google, Microsoft, IBM, Texas Instruments, Bentley, Autodesk, Eplan and CISCO, etc. The duration of the course is 40-50 hours specified in the curriculum, which will be offered through Centre of Excellence. Pass /Fail will be determined on the basis of participation, attendance, performance and completion of the course. If a candidate Fails, he/she has to repeat the course in the subsequent years. Pass in this course is mandatory for the award of degree.

Lecture Periods: - Tutorial Periods: -	Practical Periods: 50	Total Periods: 50	
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Department	Computer Scie	ence and Engineering	Progran	nme: B.T	Гech.				
Semester	IV		Course	Categor	ry: AEC	*End S	Semester E	хат Туре	: -
Course Code	1122055402		Peric	ds/Wee	k	Credit	Max	imum Mar	ks
Course Code	U23CSS402		L	Т	Р	С	CAM	ESE	TN
Course Name	Aptitude – II		0	0	2	0	-	-	10
Prerequisite	NIL								
Course Con	tents								
• Nu	mber System -	- II [Advanced Level].							
• Fa	ctors [Sum, Pro	oduct, odd, Even].							
• Re	mainder Theor	rem - No of Zeros at End -	Highest Powe	r - Findi	ing the L	ast two Dig	its.		
• Tir	ne & Work, Ch	ain Rule - Working Togeth	ner.		-	-			
• Co	mbination Metl	hod - Before, After & Alter	native Method						
• Me	en & Days - Me	n, Days & Work - Efficienc	cy & Wages.						
• Eq	uation Method.								
• Pro	ofit & Loss - Ba	sics & Short Cuts - Passir	າg Through Sເ	iccessiv	e Hands	5.			
• Pu	rchase & Sellir	ng - Dishonest Shopkeepe	r.						
• Su	ccessive Disco	ount into Single Equivalent	Discount - De	aling w	ith two o	r more Par	ts.		
• Pe	rcentage - Con	version & Shortcuts - Pop	oulation, Depre	ciation	Methods	i.			
• Pe	rcentage Savir	ngs & Expenditure - Reduc	ction in Consu	mption -	- Percent	tage Relatio	onship.		
• Tir	ne, Speed & Di	istance, Trains, Boats - Re	elationship bet	ween T	/S/D.	U U			
	•	ection - Opposite Directior	•						
		Streams - Against the Stre							
Lecture Period		Tutorial Periods: -	Practical	- · ·	~~~	-	otal Periods		

Department	Computer Science and Engineering	Progran	nme: B.T	ech.								
Semester	IV		Categor		i	Semester						
Course Code	U23CSM404	Peric	ds/Weel	ĸ	Credit		mum Marl	٢S				
		L	Т	Р	С	CAM	ESE	ТМ				
Course Name	Right to Information and Good Governance	2	-	-	-	100	-	100				
	(Common to ALI	Branches	except	CSBS)								
Prerequisite	-						_					
	On completion of the course, the students will be able to											
Course	CO1 Describe and analyze concept and	l legislative	provisior	ns relate	d to RTI		K2	2				
Outcomes	CO2 Develop critical thinking skills to ide to meet their obligations	entify instan	ces whe	re public	c authorities	have failed	K3	}				
	CO3 Critically assess the challenges and Commissions							2				
	CO4 Analyze the structure and functionin national.		-			-		2				
	CO5 Analyze the impact of the RTI Ac citizen empowerment in India	ct on promo	oting tran	nsparen	•••		5 K2	2				
JNIT-I	Introduction				Periods:06							
Inder the Indian	ground – Right to know – Open Government – Ti Constitution – Article 19(1)(a) and Article 21 of the	• •	•					1				
Right to Information	ation Act, 2005- Scope and objectives.											
JNIT-II Dbligations of pu Exemption from of Section 10 - Third	ation Act, 2005- Scope and objectives. Obligation of Public Authorities blic authorities: Section 4 - Designation of Public disclosure of information: Section 8 - Grounds for d party information: Section					of request:		CO2				
JNIT-II Dbligations of pu Exemption from of Section 10 - Third I1 JNIT-III	Obligation of Public Authorities blic authorities: Section 4 - Designation of Public disclosure of information: Section 8 - Grounds for d party information: Section Central and State Information Commis	or rejection to	access i	n certain	5 - Disposal cases: Secti Periods:06	of request: : on 9 - Sever	ability:					
JNIT-II Dbligations of pu Exemption from of Section 10 - Third 11 JNIT-III Constitution of Constitution of Con	Obligation of Public Authorities blic authorities: Section 4 - Designation of Public disclosure of information: Section 8 - Grounds for d party information: Section	or rejection to ssion ms of office a	access in	n certain	5 - Disposal cases: Secti Periods:06 ervice - Rem	of request: : on 9 - Sever	ability:	CO2				
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COs		Program Outcomes (POs)											Program Specific Outcomes (PSOs)		
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
2	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
3	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
4	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-
5	1	-	-	-	-	-	-	-	-	3	-	1	-	-	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

	Theory											
	Conti	nuous Ass	sessment Marks	(CAM)	End Semester							
Assessment	CAT 1	CAT 2	Model Exam	Attendance	Examination (ESE) Marks	Total Marks						
Marks	-	-	-	-	-	100						
IVIAINS	20	0(to be we	ighted for 10 mar	ks)	(to be weighted for 50 marks)	100						

Practical										
Continuous Assessme	Total Marks									
30(to be weigh	nted for 10 marks)	30	marks							
Listening (L)*	10	Listening (L)*	10							
Speaking(S)	5	Speaking(S)	5							
Reading(R)*	10	Reading(R)*	10							
Writing(W)*	5	Writing(W)*	5							

LRW components of Practical can be evaluated through Language Lab Software

PROFESSIONAL ELECTIVES

Department	Compu	ter Science and Engineering	Programme: B.Tech.									
Semester	IV		Course Category: PE End Semes					ter Exam Type: T				
Course Code	U23CS	E401	Perio	ods/Wee	k	Credit						
	02303	E401	L	Т	Р	С	CAM		ESE	TM		
Course Name	Progra	mming in C++	3	-	-	3	25		100			
Prerequisite	Basics	s of C Programs										
	On co	On completion of the course, the students will be able to Backet of the course, the course, the course, the students will be able to Backet of the course, the students will be able to Backet of the course, t										
0	CO1	Basic concepts of C++, concepts of	f control stru	ictures ai	nd loopir	ng, arrays and	d functions	5.	k	(2		
Course Outcomes	CO2	Illustrate the concepts of OOPS							k	(2		
Outcomes	CO3	Implement Inheritance and Polymor	phism exam	ple progr	am.				K	(3		
	CO4	Demonstrate File management Ope	erations.						k	(3		
	CO5	Build the programs using Templates		ontainers	5.				k	(3		
UNIT - I		uction to C++				Periods:0	9		<u>i</u>			
		components of a C++, Data types- C										
orogram structure Data - Type castir	g - Functio				Arrays ·	- Types of Ar	rays – Pa	ssir	ng Array a	as 😶		
UNIT - II	_	ples of Object-Oriented Progra	mming ar	nd		Periods:09	Э					
	Object-O	r uctors iented Programming: Benefits of OC Pointer -Constructors and Destructo										
Operator Overload				i unctio	13 - 0141				5 11 01233	- CO		
										······		
UNIT - III	Inherit	ance and Polymorphism				Periods:09	9					
ntroduction to Inl	neritance i	n C++ – Types of Inheritance - Sin				I Inheritance	- Hybrid					
ntroduction to Inl nheritance - Point	neritance i ers - Obje					I Inheritance	- Hybrid bstract cla					
ntroduction to Inl nheritance - Point UNIT - IV ntroduction to Ex Standard input an- ne iostream - Pro	Files a Files a ception Ha d output op gramming	n C++ – Types of Inheritance - Sin cts and Pointers - Virtual Functions -	Polymorphi on Handling Standard Ing	sm - Fun Mechani out/output	sm – Th Stream	I Inheritance erloading - A Periods:0 rowing Mech Library – Or	- Hybrid bstract cla 9 anism – C ganizatior	asse Cato n Ele	es. hing - ements o	CO		
htroduction to Inl nheritance - Point UNIT - IV Introduction to Exe Standard input an he iostream - Pro Streams – Openin	Files a Files a ception Ha d output op gramming g a File –	n C++ – Types of Inheritance - Sin cts and Pointers - Virtual Functions - and Streams ndling: Exception – Basics - Exceptio perations: C++ iostream hierarchy - S using Streams – Basic Stream Conc	Polymorphi on Handling Standard Ing	sm - Fun Mechani out/output	sm – Th Stream	I Inheritance erloading - A Periods:0 rowing Mech Library – Or	- Hybrid bstract cla 9 anism – C ganizatior - Manag	asse Cato n Ele	es. hing - ements o	CO		
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COs		Program Outcomes (POs)												Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	
1	1	-	-	-	3	-	-	-	-	-	-	-	3	-	2	
2	2	1	-	-	3	-	-	-	-	-	-	-	3	-	2	
3	3	2	1	1	3	-	-	-	-	-	-	-	3	-	2	
4	3	2	1	1	3	-	-	-	-	-	-	-	3	-	2	
5	3	2	1	1	3	-	-	-	-	-	-	-	3	-	2	

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

		Cont	inuous Assess	ment Marks (CAN	/)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

* Application oriented / Problem solving / Design / Analytical in content beyond the syllabus

Department	Compu	Iter Science and Engineering	Program	nme: B.	Tech.				
Semester	IV		Course	Catego	ry: PE	End	Semeste	er Exam T	ype: TE
Course Code	U23CS	TE402	Perio	ds/Wee	ek	Credit		ximum Ma	arks
		-	L	Т	P	C	CAM	ESE	TM
Course Name	Compu	iter Graphics	3	-	-	3	25	75	100
Prerequisite	NIL								
	On co	mpletion of the course, the stu	dents will	be able	e to			(Highe	apping st Leve
Cauraa	CO1	Comprehend the basics of Com	puter Grap	hics.				I	< 2
Course Outcomes	CO2	Understand the Line Drawing ar	nd Circle Di	rawing	algorithm	s.		l	< 2
Cateonice	CO3	Illustrate Two Dimensional and ⁻	Three-Dime	ensiona	al Transfo	rmations.		I	{ 3
	CO4	Demonstrate Line Clipping Algo	rithms.					I	{ 3
	CO5	Realize Hidden Surface Remova		ıs.				I	{ 3
UNIT - I		s of Computer Graphics r Graphics - Area of Computer	<u> </u>			Periods:			
Algorithm, Brese UNIT - III Introduction to 2 Coordinates - Ma Introduction to 3	Fechnique nham's li Transf e 2D Trans atrix Repr D Transfe	rawing and Circle Drawing algo es - Qualities of good line draw ne drawing Algorithm, Circle Draw ormations formations - Translation - Rota resentation - Composite Transforr ormations - Translation - Rotation er Angles - Quaternion Rotation	wing algori wing Algori ation - Sca mations. - Scaling -	thms. aling - Sheari	Shearing	Periods:() - Reflection	ial Anal)9 on - Ho spective	mogeneo Projectior	us n - CO
Composite Trans	sformatio	ns.	Tiomog	cheous	Coordin				
UNIT - IV		ipping Algorithms				Periods:0			
		ping - Cohen-Sutherland algori prithm - Weiler-Atherton algorithm		ng-Bars	sky algori	thm - Cyru	ıs-Beck	algorithm	- CO4
UNIT - V	Hidden	Surface Removal algorithms				Periods:)9		i.
		Surface Removal - Z-buffering Scanline algorithm.	(depth bu	(ffering)) - Painte	er's algorith	nm - Bi	nary spa	ce CO
Lecture Periods	:45	Tutorial Periods: -	Practica	al Perio	ods: -	Тс	otal Perio	ods:45	
. Peter Shirley, 2. Edward Angel 3. Tomas Akenin 4. Donald Hearn	and Dav e-Möller, and M. F	arschner, "Fundamentals of Comp e Shreiner, "Interactive Computer Eric Haines, and Naty Hoffman, Pauline Baker, "Computer Graphics: F Hughes, "Computer Graphics: F	r Graphics: "Real-Time cs: C Versio	A Top- Rende on", Pe	-Down Ap ering", CR arson, 20	proach with C Press, 20 13.			on, 201

1. Edward Angel and Dave Shreiner, "Interactive Computer Graphics: A Top-Down Approach with OpenGL", Pearson, 2024.

Tomas Akenine-Möller, Eric Haines, and Naty Hoffman, "Real-Time Rendering", CRC Press, 2023.
 John M. Hughes, Andries van Dam, Morgan McGuire, "Computer Graphics: Principles and Practice", Addison-Wesley, 4. 2022.

5. avid F. Rogers, "Procedural Elements for Computer Graphics", McGraw-Hill, 2021.

6. Peter Shirley, Steve Marschner, "Fundamentals of Computer Graphics", CRC Press, 2020.

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2. Visual Effects | Computer Graphics World | 3D Modeling | Animation | CGI (cgw.com)

3. Introduction to Computer Graphics - Open Textbook Library (umn.edu)

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs					Pro	gram O	Outcom	es (POs)					Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	0
1	3	2	1	2	2	-	-	-	-	-	-	-	2	-	3	
2	3	3	3	3	3	-	-	-	-	-	-	-	3	-	3	r
3	3	3	3	3	3	-	-	-	-	-	-	-	3	-	3	r
4	3	3	3	3	3	-	-	-	-	-	-	-	3	-	3	
5	3	2	3	2	3	-	-	-	-	-	-	-	3	-	3	e

lation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

		Conti	inuous Assessme	nt Marks (CAM)		End Semester	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

-	Comp	uter Science and Engineering	Prograr	nme: B.	Tech.				
Semester	IV		Course	Catego	ry: PE	En	d Semeste	er Exam T	ype: Ti
Course Code	U23C	SE403	Perio	ds/Wee	k	Credit	Ma	ximum Ma	arks
Course Code	02303	52403	L	Т	Р	С	CAM	ESE	ΤN
Course Name	Distri	outed Systems	3	-	-	3	25	75	100
Prerequisite	NIL								
•	On co	mpletion of the course, the stud	lents will	be able	e to			BT M (Highe	apping st Leve
_	CO1	Understand the Architecture to desig	n distribute	ed Syster	n.			I	{2
Course Outcomes	CO2	Understand various Interprocess con	nmunicatio	n technic	ques.			I	∢2
Outcomes	CO3	Understand and Build Various File sy	/stem.						{ 3
	CO4	Design distributed system using vario		inication	models				\ 4
					models				\ 4
UNIT - I	CO5 Basic	Design application using various dist Concepts	nouted alg	ontnm.		Periods:0	0	I	\4
-		stems, Examples, Resource sharing	and the	Mab Ch			-	vitectural	nd
	els, Netwo	rking Interprocess communication, E							
UNIT - II	Comn	nunication in Distributed System	n			Periods:0	9		
communication. N	etwork vir	ess Communication – the API for ir tualization: Overlay networks. Case request-reply protocols – Remote pro	study: MI	PI Remo	te Metho	od Invocation	n and Obje	ects: Remo	ote CO
- Group communi	ration - Pi			shared m	emory a			ohiects	
UNIT - III Distributed file sys	File S tems - File	ublish-subscribe systems – Message or ystem and Peer to Peer Service e service architecture – Andrew File s	queues – S ystem. File	e System	: Feature	pproaches -I Periods:0 9 es-File mode	Distributed 9 I -File acce	ssing mode	els
UNIT - III Distributed file sys - File sharing ser	File S tems - File nantics Na er System ry, Tapest	ublish-subscribe systems – Message of ystem and Peer to Peer Service e service architecture – Andrew File st aming: Identifiers, Addresses, Name s – Introduction – Napster and its le Ty	queues – S ystem. File Resolutior	e System n – Nam	: Feature e Space	pproaches -I Periods:09 es-File mode Implementa	Distributed 9 I -File acce ation – Nar puting over	ssing modene Caches	- co
UNIT - III Distributed file sys - File sharing ser LDAP- Peer-to-pe case studies: Past UNIT - IV Introduction - Cloo - Coordination and Transactions -Nes	File S tems - File nantics Na er System ry, Tapest Synch Cks, events d Agreeme ted transa	ublish-subscribe systems – Message of ystem and Peer to Peer Service e service architecture – Andrew File s aming: Identifiers, Addresses, Name s – Introduction – Napster and its le	queues – S ystem. File Resolution gacy – Pe physical o exclusion	e System n – Nam er-to-pee clocks- L – Electic	: Feature e Space er – Mide ogical tin ons – Tra	Pproaches -I Periods:0 es-File mode Implementa dleware – Ro Periods:0 ne and logica nsactions ar	Distributed 9 I -File acce ation – Nar puting over 9 al clocks – ad Concurre	ssing mod ne Caches lays. Overl Global stat ency Contro	ay CO ay es ol- CO4
UNIT - III Distributed file sys - File sharing ser DAP- Peer-to-pe case studies: Past UNIT - IV ntroduction - Cloo - Coordination and Fransactions -Nes Distributed deadlo UNIT - V	File S tems - File nantics Na er System ry, Tapest Synch cks, events d Agreeme ted transa cks – Rep Proce	 ablish-subscribe systems – Message of stem and Peer to Peer Service aservice architecture – Andrew File staming: Identifiers, Addresses, Name s – Introduction – Napster and its lery and process states – Synchronizing and process – Optimistic concurre and process study – Coda. and process states – Synchronizing 	queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro	e System n – Nam er-to-pee clocks- L – Electic I – Time	: Feature e Space er – Mide ogical tin ons – Tra stamp o	Periods:09 Periods:09 Implementa dleware – Ro Periods:09 ne and logica nsactions ar rdering – Ato Periods:09	Distributed 9 I -File acce ation – Nar buting over 9 al clocks – ad Concurre bomic Comm 9	ssing modene Caches lays. Overl Global stat ency Contro hit protocol	es ol- CO
UNIT - III Distributed file sys - File sharing ser DAP- Peer-to-pe case studies: Past UNIT - IV ntroduction - Cloo - Coordination and Fransactions -Nes Distributed deadlo UNIT - V Process Manager	File S tems - File nantics Na er System ry, Tapest Synch Cks, events d Agreeme ted transa cks – Rep Proce ment: Pro	 ablish-subscribe systems – Message of stem and Peer to Peer Service as service architecture – Andrew File staming: Identifiers, Addresses, Name s – Introduction – Napster and its left and process states – Synchronizing 	queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro ism – Th	e System n – Nam er-to-pee clocks- L – Electic I – Time reads: 1	: Feature e Space er – Mide ogical tin ons – Tra stamp o Models,	Periods:09 Periods:09 Implementa dleware – Ro Periods:09 ne and logica nsactions ar rdering – Ato Periods:09	Distributed 9 I -File acce ation – Nar buting over 9 al clocks – ad Concurre bomic Comm 9	ssing modene Caches lays. Overl Global stat ency Contro hit protocol	es ol- co- co-
UNIT - III Distributed file sys - File sharing ser DAP- Peer-to-pe case studies: Past UNIT - IV ntroduction - Cloo - Coordination and Fransactions -Nes Distributed deadlo UNIT - V Process Manager Management: Intro	File S tems - File nantics Na er System ry, Tapest Synch Cks, events d Agreeme ted transa cks - Rep Proce ment: Pro oduction- F	 Iblish-subscribe systems – Message of stem and Peer to Peer Service Service architecture – Andrew File staming: Identifiers, Addresses, Name s – Introduction – Napster and its lery Introduction and Replication Sand process states – Synchronizing Introduction – Distributed mutual ctions – Locks – Optimistic concurre ication – Case study – Coda. Ss& Resource Management Cess Migration: Features, Mechani 	queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro ism – Th	e System n – Nam er-to-pee clocks- L – Electic I – Time reads: 1 ment Ap	: Feature e Space er – Mide ogical tin ons – Tra stamp o Models, proach	Pproaches - I Periods:09 es-File mode Implementa dleware – Ro Periods:09 ne and logica nsactions ar rdering – Ato Periods:09 Issues, Imp	Distributed 9 I -File acce ation – Nar buting over 9 al clocks – ad Concurre bomic Comm 9	ssing mod ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour	es ol- CO s - CO ce
UNIT - III Distributed file sys - File sharing ser DAP- Peer-to-pe case studies: Past UNIT - IV ntroduction - Cloo - Coordination and Transactions -Nes Distributed deadlo UNIT - V Process Manager Management: Intro	File S tems - File nantics Na er System ry, Tapest Synch Cks, events d Agreeme ted transa cks - Rep Proce ment: Pro oduction- F	 ablish-subscribe systems – Message of stem and Peer to Peer Service as service architecture – Andrew File staming: Identifiers, Addresses, Name s – Introduction – Napster and its lery aronization and Replication and process states – Synchronizing and process states – Synchronizing<td>queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro ism – Th ask Assign</td><td>e System n – Nam er-to-pee clocks- L – Electic I – Time reads: 1 ment Ap</td><td>: Feature e Space er – Mide ogical tin ons – Tra stamp o Models, proach</td><td>Pproaches - I Periods:09 es-File mode Implementa dleware – Ro Periods:09 ne and logica nsactions ar rdering – Ato Periods:09 Issues, Imp</td><td>Distributed 9 I -File acce ation – Nar puting over 9 al clocks – ad Concurre pmic Comm 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>ssing mod ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour</td><td>es ol- CO s - ce</td>	queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro ism – Th ask Assign	e System n – Nam er-to-pee clocks- L – Electic I – Time reads: 1 ment Ap	: Feature e Space er – Mide ogical tin ons – Tra stamp o Models, proach	Pproaches - I Periods:09 es-File mode Implementa dleware – Ro Periods:09 ne and logica nsactions ar rdering – Ato Periods:09 Issues, Imp	Distributed 9 I -File acce ation – Nar puting over 9 al clocks – ad Concurre pmic Comm 9 9 0 0 0 0 0 0 0 0 0 0 0 0 0	ssing mod ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour	es ol- CO s - ce
UNIT - III Distributed file sys - File sharing ser LDAP- Peer-to-pe case studies: Past UNIT - IV Introduction – Cloo - Coordination and Transactions - Nes Distributed deadlo UNIT - V Process Manager Management: Intro Lecture Periods Text Books 1. George Coulo Fifth Edition, F 2. Andrew S. Tai 3. Nancy A. Lynd	File S tems - File nantics Na er System ry, Tapest Synch cks, events d Agreeme ted transa cks – Rep Proce ment: Pro oduction- F cduction- F cduction- F	 ablish-subscribe systems – Message of stem and Peer to Peer Service as service architecture – Andrew File staming: Identifiers, Addresses, Name s – Introduction – Napster and its lery aronization and Replication and process states – Synchronizing and process states – Synchronizing<td>queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro ism – Th ask Assign Practic uted System ems Princip Ltd., Morg</td><td>e System n – Nam er-to-pee clocks- L – Electic I – Time reads: I ment Ap al Peric ms Conc oles and an Kaufr</td><td>: Feature e Space er – Mide ogical tin ons – Tra stamp o Models, proach ods: - epts and Paradign mann, 20</td><td>pproaches -I Periods:03 as-File mode Implementa dleware – Ro Periods:03 ne and logica nsactions ar rdering – Ato Periods:04 Issues, Imp 1 Design", ns", 2nd ed.,</td><td>Distributed (9 I -File acce ation – Nar buting over al clocks – ad Concurre omic Comm 9 Diementatio</td><td>ssing mod ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour ods:45</td><td>es bl- ce ce cc</td>	queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro ism – Th ask Assign Practic uted System ems Princip Ltd., Morg	e System n – Nam er-to-pee clocks- L – Electic I – Time reads: I ment Ap al Peric ms Conc oles and an Kaufr	: Feature e Space er – Mide ogical tin ons – Tra stamp o Models, proach ods: - epts and Paradign mann, 20	pproaches -I Periods:03 as-File mode Implementa dleware – Ro Periods:03 ne and logica nsactions ar rdering – Ato Periods:04 Issues, Imp 1 Design", ns", 2nd ed.,	Distributed (9 I -File acce ation – Nar buting over al clocks – ad Concurre omic Comm 9 Diementatio	ssing mod ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour ods:45	es bl- ce ce cc
UNIT - III Distributed file sys - File sharing ser DAP- Peer-to-pe case studies: Past UNIT - IV ntroduction – Cloo - Coordination and Transactions -Nes Distributed deadlo UNIT - V Process Manager Management: Intro - Courder Periods Text Books 1. George Coulo Fifth Edition, F 2. Andrew S. Tai 3. Nancy A. Lynd 4. Distributed Sy Reference Book	File S tems - File nantics Na er System ry, Tapest Synch cks, events d Agreeme ted transa cks - Rep Proce ment: Pro oduction- F s:45	Ablish-subscribe systems – Message of ystem and Peer to Peer Service e service architecture – Andrew File staming: Identifiers, Addresses, Name s – Introduction – Napster and its lery pronization and Replication s and process states – Synchronizing and proce	queues – S ystem. File Resolution gacy – Pe physical o exclusion ncy contro ism – Th ask Assign Ited System uted System ttd., Morg & Francis	e System n – Nam er-to-pee clocks- L – Electic I – Time reads: I ment Ap al Peric ms Conc oles and an Kaufr Group,	: Feature e Space er – Midd ogical tin ons – Tra stamp o Models, proach o ds: - epts and Paradign mann, 20 2010.	pproaches -I Periods:0 es-File mode Implementa dleware – Re Periods:0 he and logica nsactions ar rdering – Ato Periods:0 Issues, Imp 1 Design", ns", 2nd ed., 00.	Distributed of 9 I -File acce ation – Nar puting over 9 al clocks – ad Concurre point Comm 9 Delementatio Fotal Perio Pearson E	ssing mode ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour ods:45	es ol- CO s - CO ce CO
UNIT - III Distributed file sys - File sharing ser DAP- Peer-to-pe case studies: Past UNIT - IV ntroduction – Cloo - Coordination and Transactions -Nes Distributed deadlo UNIT - V Process Manager Management: Intro - Coordination and Fransactions - Nes Distributed deadlo UNIT - V Process Manager Management: Intro - Coordination and Fifth Edition, F 2. Andrew S. Tai 3. Nancy A. Lynd 4. Distributed Sy Reference Book 1. Distributed Coo 2. Pradeep K Sir 3. Tanenbaum A	File S tems - File nantics Na er System ry, Tapest Synch Cks, events d Agreeme ted transa cks - Rep Proce ment: Pro oduction- F s:45	Iblish-subscribe systems – Message of ystem and Peer to Peer Service architecture – Andrew File staming: Identifiers, Addresses, Name s – Introduction – Napster and its lery for and process states – Synchronizing and process and process – Synchronizing and process – Synchronizing and process and proces and process and proces and	queues – S ystem. File Resolution gacy – Pe physical of exclusion ncy contro ism – Th ask Assign Ited System uted System uted System and Design ples and Pa	e System n – Nam er-to-pee clocks- L – Electic I – Time reads: I ment Ap al Peric ms Conc oles and an Kaufr Group, emakaly ", Prenti aradigms	: Feature e Space er – Mide ogical tin ons – Tra stamp o Models, proach ods: - epts and Paradign mann, 20 2010. ani and I ce Hall o	Periods:01 Periods:01 Periods:01 Periods:02 Periods:02 he and logica nsactions ar rdering – Ato Periods:02 Issues, Imp 1 Design", ns", 2nd ed., 00. Mukesh Sing f India, 2007	Distributed of 9 I -File acce ation – Nar puting over 9 al clocks – ad Concurre omic Comm 9 Delementatio Fotal Perio Pearson E hal, Cambr -	ssing mode ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour ods:45	es ol- CO s - CO ce CC
UNIT - III Distributed file sys - File sharing ser DAP- Peer-to-pe case studies: Past UNIT - IV Introduction – Cloo - Coordination and Transactions - Nes Distributed deadlo UNIT - V Process Manager Management: Intro Lecture Periods Text Books 1. George Coulo Fifth Edition, F 2. Andrew S. Tai 3. Nancy A. Lynd 4. Distributed Sy Reference Book 1. Distributed Co 2. Pradeep K Sir 3. Tanenbaum A	File S tems - File nantics Na er System ry, Tapest Synch Cks, events d Agreeme ted transa cks - Rep Proce ment: Pro oduction- F coduction- F coducti	Addresses – Message of stem and Peer to Peer Service e service architecture – Andrew File station: Identifiers, Addresses, Name s – Introduction – Napster and its lery and process states – Synchronizing and process states – Synchronizing a	queues – S ystem. File Resolution gacy – Pe physical of exclusion ncy contro ism – Th ask Assign Ited System uted System uted System and Design ples and Pa	e System n – Nam er-to-pee clocks- L – Electic I – Time reads: I ment Ap al Peric ms Conc oles and an Kaufr Group, emakaly ", Prenti aradigms	: Feature e Space er – Mide ogical tin ons – Tra stamp o Models, proach ods: - epts and Paradign mann, 20 2010. ani and I ce Hall o	Periods:01 Periods:01 Periods:01 Periods:02 Periods:02 he and logica nsactions ar rdering – Ato Periods:02 Issues, Imp 1 Design", ns", 2nd ed., 00. Mukesh Sing f India, 2007	Distributed of 9 I -File acce ation – Nar puting over 9 al clocks – ad Concurre omic Comm 9 Delementatio Fotal Perio Pearson E hal, Cambr -	ssing mode ne Caches lays. Overl Global stat ency Contro nit protocol n. Resour ods:45	es ol- CO s - CO ce CC

COs					Prog	ram O	utcom	es (PO	s)					ram Spe omes (P	
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	1	2	1	2	-	-	1	1	2	2	3
2	3	2	1	1	1	2	1	2	-	-	1	1	2	2	3
3	3	2	1	2	2	2	1	2	-	-	3	3	2	3	3
4	3	2	2	2	3	2	1	2	-	-	3	3	2	3	3
5	3	2	2	2	3	2	1	2	-	-	3	3	2	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

		Cont	inuous Assess	ment Marks (CAN	/)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department	Computer Science and Engineering	Progran	nme: B	.Tech.				
Semester	IV	Course	Catego	ory: PE	End	d Semeste	r Exam Ty	oe: TE
Course Code	U23CSE404	Perio	ds/We	ek	Credit	Max	imum Mar	ks
		L	Т	Р	С	CAM	ESE	TM
Course Name	IoT Design Protocols	3	-	-	3	25	75	100
Prerequisite	NIL							
Trerequisite				- 4 -			BT Ma	pping
	On completion of the course, the stu	dents will	be abi	eto			(Highest	Level)
Course	CO1 Understand the Architectural C	Overview	of IoT	•			Kź	2
Outcomes	CO2 Recognize the IoT Reference Are	chitecture	and Re	eal-Worl	d Design Co	nstraints	K2	2
	CO3 Understand the various IoT Proto	ocols.					Ka	3
	CO4 Design application using various	IoT Proto	cols.				K4	1
	CO5 Solve the various Real-World De	sign Cons	traints				K4	1
UNIT - I	IoT-An Architectural Overview			-	Periods:09			-
	ture, Main design principles and needed capa nology Fundamentals- Devices and gateways,							CO1
processes in IoT, E	verything as a Service (XaaS), M2M and IoT A				gement.			
UNIT - II	Reference Architecture				Periods:09			
	ate of the Art – Introduction, State of the art, ture- Introduction, Functional View, Informat							
architectural views.	Real-World Design Constraints- Introduction							
representation and UNIT - III	visualization, Interaction and remote control. IOT Data Link Layer & Network Layer	Protocol	6		Periods:09			
-	GPP MTC, IEEE 802.11, IEEE 802.15), Wirele			Bluetoot			art Energy	
	ayer-IPv4, IPv6, 6LoWPAN, 6TiSCH, ND, DH					, <u>219500</u> 011	lait Enorgy,	CO3
					_			
UNIT - IV	Transport & Session Layer Protocols				Periods:09		·····	1
Transport Layer (10	CP, MPTCP, UDP, DCCP, SCTP)- (TLS, DTLS	b) – Sessior	i Layer-	HIIP, C	OAP, XIVIPP, J	AIVIQP,. IVIQ	211.	CO4
UNIT - V	Service Layer Protocols & Security				Periods:09)		
	M2M, ETSI M2M, OMA, BBF – Security in I	oT Protoco	ls – MA	AC 802.1	5.4, 6LoWPA	N, RPL,		00F
Application Layer. Lecture Periods:	45 Tutorial Periods: -	Practic	al Peri	ods: -	Т	otal Perio	ds:45	CO5
Text Books		Tuotio		040 .	•		401-10	
	tals: Networking Technologies, Protocols and	d Use Case	es for li	nternet c	of Things, Dav	/id Hanes,	Gonzalo Sa	algueiro
	tete, Rob Barton and Jerome Henry, Cisco Pre							•
	gs: Architecture, Design Principles and Applica sios Tsiatsis, Catherine Mulligan, Stefan Aves						chine-to-Ma	chine to
the Internet of	Things: Introduction to a New Age of Intelligen	ce", 1st Edi	tion, Ac	ademic F	Press,2014.	,		
4. Peter Waher, "	Learning Internet of Things", PACKT publishing	g, BIRMING	SHAM -	MUMBA	Ι.			
Reference Book	5							
	Reiter, Florian Michahelles, "Architecting the In	nternet of Th	nings", I	SBN 978	3-3-642-19156	6-5 e ISBN 9	978-3-642-1	9157-2
Springer. 2 The Internet of	Things – Key applications and Protocols, Olivi	er Hersent	David I	Boswarth	nick Omar Elle	oumi and W	ilev 2012	
3. Vijay Madisetti	and Arshdeep Bahga, "Internet of Things (A H	ands-on-Ap	proach)", 1st Eo	dition, VPT, 20	14.	-	
4. Daniel Minoli, ' 47347-4, Willy	Building the Internet of Things with IPv6 and N	MIPv6: The	Evolvin	g World	of M2M Comr	nunications	", ISBN: 978	3-1-118
Web References								
	atpoint.com/iot-internet-of-things							
2. https://www.tut	orialspoint.com/iot-network-protocols							
	orialspoint.com/iot-network-protocols an.com/tutorials/iot-protocols/							
	es-internet-guide.com/iot-messaging-protocols/	,						
* TF - TI								
‴ E —	neory Exam, LE – Lab Exam							

COs					Prog	ram O	utcom	es (PO	s)					ram Spe omes (P	
	P01	PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO1													PSO3
1	3	2	1	1	1	2	1	2	-	-	1	1	2	2	3
2	3	2	1	1	1	2	1	2	-	-	1	1	2	2	3
3	3	2	1	2	2	2	1	2	-	-	3	3	2	3	3
4	3	2	2	2	3	2	1	2	-	-	3	3	2	3	3
5	3													3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

		Cont	inuous Assess	ment Marks (CAN	/)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department	Comp	uter Science and Engineering	Progra	mme: B.	Tech.				
Semester	IV		Course	Catego	ry: PE	End	d Semeste	er Exam T	ype: TE
Course Code	U23CS	E405	Peri	ods/Wee	ek	Credit	Ma	ximum Ma	arks
			L	Т	Р	С	CAM	ESE	ТМ
Course Name	UI and	I UX Design	3	-	-	3	25	75	100
Prerequisite	NIL								
	On co	ompletion of the course, the stu	dents wil	l be able	e to				apping st Level)
	CO1	Build UI for user Applications.						ł	(2
Course Outcomes	CO2	Evaluate UX design of any p	roduct or	applica	ation.			ł	(2
Gutoomea	CO3	Demonstrate UX Skills in pro						ł	(3
	CO4	Demonstrate UX Skills in pro		•		els.		ł	(4
	CO5	Create Wireframe and Prototy						ł	(4
UNIT - I	Foun	dations of Design	<u>.</u>			Periods:09		L	
UI vs. UX Desigr storming - Obser	- Core vational	Stages of Design Thinking - Dive Empathy.	rgent and	Conver	gent Th	inking - Brai	nstorming	and Gam	^{ne} CO1
UNIT - II		dations of UI Design				Periods:09			L
Visual and UI Pri	nciples -	UI Elements and Patterns - Intera	action Beh	naviors a	and Prin	ciples – Bra	nding - St	yle Guides	
UNIT - III	Foun	dations of UX Design				Periods:09			CO2
Defining the UX	Design	erience - Why You Should Care a Process and its Methodology - F Needs and its Goals - Know abo	Research	in User	Experie				
UNIT - IV		raming, Prototyping and Testin				Periods:09			
Prototype - Build	ding Hig Other Ev	etching Red Routes - Responsiv h-Fidelity Mockups - Designing valuative User Research Methods arch, Designing, Ideating, & Info	Efficiently - Synthes	with To izing Te	ools - Ir st Findi	nteraction P	atterns -	Conductir	a ng CO4
	L	Problem Statements - Identifying					Creating	Doroonoo	
		ting User Stories - Creating Sc							
Lecture Periods:4	5	Tutorial Periods: -	Practic	al Period	ls: -	Т	otal Perio	ds:45	
Fext Books			i			i			
		Beginners", O'Reilly, 2022. s of UX using Psychology to Desi	gn Better	Product	& Servi	ces" O'Reilly	y 2021.		
Reference Books									
2. Steve Scho	ger, Ada	es Brewer, Aynne Valencia, "Des m Wathan "Refactoring UI", 2018. Iake Me Think, Revisited: A Comr				-		dition, 201	5.
* TE _ 1	boory Ex	am, LE – Lab Exam							

* TE – Theory Exam, LE – Lab Exam COs/POs/PSOs Mapping

COs					Prog	ram O	utcom	es (PO	s)					Program Specific Dutcomes (PSOs) SO1 PSO2 PSO3		
	PO1	01 P02 P03 P04 P05 P06 P07 P08 P09 P010 P011 P01												PSO2	PSO3	
1	2	1	-	-	3	-	-	-	-	-	-	-	3	-	3	
2	2	1	-	-	3	-	-	-	-	-	-	-	3	-	3	
3	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	
4	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	
5	3	2	1	1	3	-	-	-	-	-	-	-	3	-	3	

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

		Cont	inuous Assess	ment Marks (CAN	/)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Course Name RESEAN Prerequisite Nil Prerequisite Nil CO1 SI ar CO2 co CO2 co In CO3 S CO3 S CO4 SI CO4 SI CO5 co In CO4 SI CO	RCH METHODOLOGY	Period L 2 to all brand dents will between vari- ve engineerin lentify resea d use variou igning exper- ical and grap d write resea is and avoidi nentals of int ich is crucial rcch: Overvi g a Reseau roduction Review onducting Sources of s botheses: E	ds/Week T - ches) be able to ious types of ng problems rch problems rch problems is tools and iments, ana phical meth rch papers ing common sellectual pro- l for innovat iew of Bas rch Proble to Resea a Literat of Informa	P - of rese s. ns, per l servic alyzing ods. and di pitfal operty tion an sic, Ap em: Ke arch I ure I tion: 0	Credit C C 2 C C C C C C C C C C C C C C C C	Maximu CAM 25 apply ective s giarism. cluding Pe nd Deve ideratior Basic Pe Essent v of Lib	ns, Setting Concepts, eriods: 06 ial Steps, raries and eriods: 06 n Methods:	TM 100 pping Level) 2 2 4 3 3 CO1 CO2
Course Name RESEAL Prerequisite Nil Prerequisite Nil CO1 St CO2 co Course Outcomes CO3 in CO4 St CO5 k	RCH METHODOLOGY (Common appletion of the course, the stur tudents will be able to differentiate the popopriate research methods to solve tudents will develop the ability to id poprehensive literature reviews, an formation retrieval. Students will gain proficiency in desi terpreting results using both numer tudents will be able to structure and fectively, following ethical guideline students will understand the fundar bow to protect and enforce them, whi interpreneurship in engineering. Ction to Research a of Research, Types of Resea he Research Process, Defining nd Research Process, Defining nd Research Problems, Inter ating Research Problems, co in Methods: Basic Techniques. Ch Methods and Data Analysis ntal Research, Developing Hyp	L 2 to all brance dents will between varie dentify reseau duse variou igning experi- ical and grap dwrite reseau as and avoidi nentals of int ich is crucial rch: Overvi g a Reseau roduction Review onducting Sources of s potheses: E	T - ches) be able to: ious types of ng problems rch problem is tools and iments, ana phical meth- rch papers ing commonie ielectual problems if for innovation iew of Base rch Proble to Resea a Literation a Literation	of rese s. ns, per l servic alyzing ods. and di n pitfall operty tion an sic, Aper arch l ure f tion: 0	C 2 arch and form ces for effe data, and ssertation ls like plac rights, ind d pplied, an ey Consi Design: Review: Overview	CAM 25 apply ective s giarism. cluding Pe nd Deve ideratior Basic Pe Essent y of Lib	ESE 75 BT Map (Highest K2 K2 K2 K3 Friods: 06 elopmental hs, Setting Concepts, eriods: 06 ial Steps, raries and eriods: 06	100 pping Level) 2 4 3 CO1 CO2
Course Name RESEAU Prerequisite Nil Prerequisite On com CO1 Si CO2 CO2 CO1 Si CO2 CO2 CO1 Si CO2 CO3 CO4 Si CO5 Introduction CO5 Introduction VINIT-I Introduction Meaning and Importance Research Research Objectives a Approaches to Research UNIT-II Problen Identifying and Formula Referencing and Citation Online Databases. UNIT-III Introduction to Experime Sampling and Surveys, E Statistics. UNIT-IV Writing Preparing a Research Reconclusion). Referencing Scientific Misconduct. UNIT-V Basics of Intellectual Pro	RCH METHODOLOGY (Common appletion of the course, the stur tudents will be able to differentiate the popopriate research methods to solve tudents will develop the ability to id poprehensive literature reviews, an formation retrieval. Students will gain proficiency in desi terpreting results using both numer tudents will be able to structure and fectively, following ethical guideline students will understand the fundar bow to protect and enforce them, whi interpreneurship in engineering. Ction to Research a of Research, Types of Resea he Research Process, Defining nd Research Process, Defining nd Research Problems, Inter ating Research Problems, co in Methods: Basic Techniques. Ch Methods and Data Analysis ntal Research, Developing Hyp	2 to all brance dents will between varies we engineerin lentify researed d use variou igning exper- ical and gray d write researed write researed as and avoidi nentals of int ich is crucial rch: Overving g a Researed roduction Review onducting Sources of S potheses: E	- be able to ious types of ng problems rch problem is tools and iments, ana phical meth rch papers ing commor reflectual pro- tellectual pro- tellectual pro- tellectual pro- ter proble to Resea a Literat of Informa	of rese s. ns, per l servic alyzing ods. and di n pitfall operty tion an sic, Aper arch l ure f tion: 0	2 arch and form ces for effe data, and ssertation ls like plag rights, ind d oplied, an ey Consi Design: Review: Overview	apply ective giarism. cluding deratior Basic Essent v of Lib	75 BT Maj (Highest K2 K2 K2 K2 K2 K2 K2 K2 K2 K2 K2 K2 K2	100 pping Level) 2 4 3 CO1 CO2
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Lecture Periods: 30	Tutorial Periods: -		Practical Periods:		Total	Periods	s: 30	•
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Approaches, 5th E	nd Creswell, J. D. Research De Edition, SAGE Publications, 201	0	tative, Qua	antitat	ive, and	Mixed M	lethods	
Reference Books		A F			D .	<u> </u>	1	
Pearson, 2019.	K., Lewis, P., and Thornhill,							
2020.	Bougie, R. Research Methods							
 Bhattacherjee, A. Independent Public 	Social Science Research: Pri ishing, 2012.	nciples, Me	ethods, ar	nd Pra	actices, 2	2nd Edi	tion, Crea	teSpa

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- 4. https://researcheracademy.elsevier.com/
- 5. https://www.wipo.int/

COs/POs/PSOs Mapping

COs	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12
CO1	3	3	2	2	1	1	1	1	1	1	1	3
CO2	2	3	2	2	2	1	1	1	2	2	1	3
CO3	3	3	3	3	2	1	1	1	1	1	2	2
CO4	2	2	1	2	1	1	1	3	2	3	1	2
CO5	2	2	2	2	1	2	2	3	2	2	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

	Internal	Assessn	nent Mar	ks (IAM)		End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department	Comp	uter Science and Engineering	Progran	nme: B .	Tech				
Semester	۷		Course	•	ry: PC			r Exam T	ype: TE
Course Code	U23CS	57504	Periods	· ·		Credit		um Marks	
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			5 Will be a					(Highest	
	CO1	Articulate the Architecture and Dep		odels of	Cloud co	omputing.		- K2	
Course	CO2	Understand virtualization concepts	in Cloud					K2	
Outcomes	CO3	Explore AWS Cloud						K	-
	CO4	Analyze Cloud Deployment tools	luna it					K2	
UNIT - I	CO5	Identify the security issues and ana				Pariada.00	<u> </u>	Ka	5
		uction to Cloud Computing and - History Characteristics -Models - B			0000 D	Periods:09		omputing	CO1
in the Cloud, Arch	nitecture:	Components of Cloud Architecture Cloud - Private Cloud - Hybrid Cloud	e - Service	-Oriente	ed Archi				001
UNIT - II	Virtual	ization in Cloud Computing				Periods:09	3		
- Virtualization in (Cloud En	Concepts - Architectures - Processor vironments: Role of Virtualization in Security -, Performance and Manage	Cloud Co	omputing	g - Virtu				CO2
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Services - Storage	S Cloud: Services	Overview of Cloud Computing - AWS - AWS Networking and Security: AW							CO3
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UNIT - IV	L	Deployment Tools	footuroo			Periods:09	-	managad	T
services - Micros	soft Azur	ew of Google App Engine (GAE) - Ke e: Overview - Azure architecture - V ore services: Nova – Swift – Neutron -	irtual Mac	nines, A	zure Fur	nctions – Ope	enStack: C	werview -	CO4
UNIT - V	Cloud	Security				Periods:09	9		
		ic Attacks: Guest hopping – VM migra				Data Securit	y and Stor	age;	
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Text Books	.4J	Tutorial Ferious	Flacic		Jus	1		us.43	
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Programm 2. Anthony T 3. Einar Høs 4. Cornelia I 5. Kai Hwan	ning" 2023 Velte "C at "Cloud S Davis "Clo g, Geoffre		nnologies" Manage, s ge-Toleran	– 2023 and Ope t Softwa	erate in th re" - 202	ne Cloud" 20	23		
	rancisco	"Cloud Computing: Concepts and Te	chnologies	for Are	hitecte"	2023			
 Jeroen Mu lan Foster Vikram Di 	ulder "Mu r and Den hillon "Clo	Iti-Cloud Strategy for Cloud Architects inis B. Gannon "Cloud Computing for oud Computing Basics: A Non-Techni s, Spiros Zervas "Cloud Data Manag	s" -2023 Science a cal Introdu	nd Engii ction" -2	neering" :021	- 2022	gration" -20	21	
Web References									
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2	2	3	3	2	2	2	1	1	2	1	-	-	3	3	3
3	3	2	3	3	2	-	2	-	2	1	2	2	2	2	3
4	2	2	3	3	1	2	2	-	2	1	2	3	3	3	3
5	3	2	3	3	2	2	2	-	2	1	-	3	3	2	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

	Continuo	us Assess	ment Mark	is (CAM)		End	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examinati on (ESE) Marks	Marks
Marks	5	5	5	5	5	75	100

Department	Computer Science and Engineering	Progra	amme:	B.Tech				
Semester	V	Cours	e Cate	gory: PC	End Sem	ester Exa	am Type: 1	ΓE
Course Code	U23CSTC06	Pe	riods/\	Neek	Credit	Ma	aximum M	arks
		L	Т	Р	С	CAM	ESE	ТМ
Course Name	ARTIFICIAL INTELLIGENCE	3	•		3	25	75	100
Droce	(Common C:	SE, IT ar	nd CCE	=)				
Prerequisite	Basics of Algorithms and Probability On completion of the course, the students w	ull be ab	0 40				PT Moon	ina
				· · · · · · · · · · · · · · · · · · ·			BT Mapp (Highest L	evel)
	CO1 Understand AI fundamentals and app				e complex pro	oblems	K2	
Course	CO2 Understand the fundamentals of know CO3 Understand and Apply Fuzzy logic and						K3 K3	
Outcomes	CO4 Design model and manage uncertaint				ina techniau	29	K3	
	CO5 Explore the benefits of AI in different f		obabilit	5110 1003011			K3	
UNIT - I	Introduction to AI and Problem Solving				Periods:	09		
	Foundations of AI - History of AI - Agents Structur	re and its	types.	Problem So	olving by Sea	arching: U	ninformed	CO1
	DFS - Informed search - Greedy Best First Se					-		CO1
	Backtracking search for CSP.							
UNIT - II	Knowledge Representation				Periods:0			
	Knowledge Representation: Types - Approaches		0	representat	ion using S	emantic N	Vetwork –	
	tic networks - Frames - Conceptual dependencies	s – Scripts	3.					CO2
UNIT - III	Fuzzy and Predicate Logic				Periods			•
	of Fuzzy Set Theory - Operations of Fuzzy Se			•	•		•	~
	ons – Operations on Fuzzy Relations – Fuzzy Sys	stems – L	ogical A	Agents, Pre	dicate Logic	– First-Or	der Logic,	CO3
	-Order Logic, Forward and Backward Chaining.				Daviada			
UNIT - IV	Probabilistic Reasoning			•	Periods			Ī
	ations - Bayes rule - Bayesian Network - Pro artially Observable Environments - Inference in To			-			-	CO4
Dempster and Sh	-	emporari	NOUCIS					
UNIT - V	Applications of Al				Periods	:09		i
	Disease Diagnosis and Prediction.Al In Finance			-		anagemei	nt – Al in	.
Education: Adapt	ive Learning and Assessment – AI in Customer se	ervice: Ch	atbot a	nd Virtual A	Assistance.			CO5
Lecture Period	Is:45 Tutorial Periods: -	Pract	cal Pe	eriods: -	٦	Fotal Per	iods:45	
Text Books								
	ussell and Peter Norvig, "Artificial Intelligence: A N							
	Rich, Kevin Knight, and Shivashankar B. Nair, "Arti							
	sekaran,G.A.Vijayalakshmi Pai, "Neural Networks,	Fuzzy Lo	ogic and	d Genetic A	Algorithms sy	nthesis a	nd applicati	ons",15 th
Edition, Reference Book	PHI Learning Private Limited,2011							
		Applicat	one" E:	rot Edition		0024		
•	Bhargava,"Artificial Intelligence Fundamentals and mozhi Suguna, M.Dhivya,Sra Paiva,"Artificial I						Firet Editia	
2. S. Kani Press,20		menigenc			s anu Appli			
	g Ertel,"Introduction to Artificial Intelligence,"2 nd E	dition.Sor	inger.20	018.				
	Poole and Alan Mackworth," Artificial Intelligence	-	-		ational Age	nts", 2nd	Edition, Ca	ambridge
	ty Press, 2017.			·	5	-		Ŭ
5. Chris Th	nornton, Benedict Du Boulay, "Artificial Intelligence	through	Search'	",4 th Editior	n, Springer N	etherlands	s,2012.	
Web Reference	es							
	/ww.tutorialspoint.com/artificial_intelligence/index.l	ntm						
	/ww.javatpoint.com/artificial-intelligence-ai							
-	/ww.geeksforgeeks.org/artificial-intelligence/							
	owardsdatascience.com/							
	www.coursera.org/							
×	TE – Theory Exam, LE – Lab Exam							

CO's	Prog	ram O	utcom		Program Specific Outcomes (PSOs)										
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	3	-	-	-	2	2	2	3	3	2	3
2	3	3	3	3	3	-	-	-	2	2	2	2	3	3	3
3	3	2	3	3	3	-	-	-	2	3	3	3	3	3	3
4	3	3	3	3	3	2	2	-	2	3	3	3	3	3	3
5	3	3	2	3	3	2	2	-	2	2	3	2	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

		Conti	inuous Assessi	ment Marks (CAN	/)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

	Computer Science and Engineering	Program	nme: B.	Tech				
Semester	ν	Course	Catego	y: PC	E	nd Semeste	r Exam Ty	oe: TE
Course Code	U23CSTC07	Peri	ods/Wee	ek 🛛	Credit	Maxir	mum Marks	3
		L	Т	Р	С	CAM	ESE	ТМ
Course Name	WEB DESIGNING	3	-	-	3	25	75	100
	(Common t	to CSE and	AI&DS)	L				
Prerequisite	Basic knowledge in Programming and Data		· · · · · ·					
	On completion of the course, the stude		able to				BT Ma (Highest	
	CO1 Understand HTML and CSS						K	2
Course Outcomes	CO2 Implement client-side programmi						K	
euteeniee	CO3Understand the concepts of PHPCO4Connect PHP scripts with databa		orms.				K K	
	CO5 Implement the web hosting proce						K	••••••
UNIT - I	Web Basics, Html and CSS				Periods:09)		
HTML: HTML Syn Forms. Introductio Positioning Elemei	Internet – World wide web – DNS – URI and tax – Structure of HTML Documents – HTM on to CSS: CSS Syntax – Location of Style nts – Floating Elements.	L Elements	: Headir	ngs – Lir	nks – Image	s – Lists – /ling – CSS	Tables -	CO1
UNIT - II	Javascript	- Turses 1					Numeron	<u> </u>
Methods – Arrays	ction: Syntax – Variables – Operators – Dat – Array Methods – Conditions – Loops – F – Object Properties –Object Methods– Object Introduction to PHP and Forms	Popup Alert				JavaScript		CO2
String – IfElse GET/POST – Usin Cookies – Session	IP: Variables – Data Types – Constants – E Elseif – Switch – Loops – Arrays – Functio g Bootstarp – Form Validation – Form Requir is – Include – Exceptions.	ns – Super	globals	 RegE 	Ex. PHP For	m: Form H	andling –	
	PHP with Database Connectivity abase: Essential SQL – Creating a MySQL D					ng Data into		CO4
Introduction to Dat	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D ssing the Database in PHP – Updating Database				able – Putti	ng Data into		CO4
Introduction to Dat Database – Acces	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D ssing the Database in PHP – Updating Database				able – Putti	ng Data into Database –		CO4
Introduction to Dat Database – Acces Records – Sorting UNIT - V Introduction to We	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D using the Database in PHP – Updating Databath the Data.	ases – Inse on the site	rting Ne	w Data	Table – Puttin Items into a Periods:0 9	ng Data into Database –	- Deleting	CO4
Introduction to Dat Database – Acces Records – Sorting UNIT - V Introduction to We	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D ssing the Database in PHP – Updating Database the Data. Web Hosting eb Hosting: Creating the website – Working ns – Themes Publishing web sites – Maintaini	ases – Inse on the site ng a website	rting Ne	w Data	Table – Puttin Items into a Periods:0 9	ng Data into Database –	- Deleting ebsites –	
Introduction to Dat Database – Acces Records – Sorting UNIT - V Introduction to We Registering domain Lecture Periods:4 Text Books 1. Randy Conno 2. Steven Holzne 3. Jon Dukett, "J	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D tabase: ISSENTIAL SQL – Creating a MySQL D ssing the Database in PHP – Updating Database the Database in PHP – Updating Database the Database in PHP – Updating Database the Hosting the Database in PHP – Updating Database the Database in PHP – Updating Database Web Hosting the Database in PHP – Updating Database Web Hosting the Database in PHP – Updating Database the Creating the website – Working the State Publishing web sites – Maintaini the Complete References - Maintaini the Complete Reference - MoGraw avaScript and JQuery: Interactive Front–End	ases – Inse on the site ng a website Practic Developmer Hill Educati	rting Ne – Sence al Perio nt", Pear on, 3rd I	w Data ding ema ds: - son Edu Edition, 2	Fable – Puttii Items into a Periods:09 ail and acce cation Inc, T 2020.	ng Data into Database – Ss other we Total Perio	- Deleting ebsites – ods:45	
Introduction to Dat Database – Acces Records – Sorting UNIT - V Introduction to We Registering domain Lecture Periods:4 Text Books 1. Randy Conno 2. Steven Holzne 3. Jon Dukett, "J Reference Books	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D ssing the Database in PHP – Updating Database the Data. Web Hosting eb Hosting: Creating the website – Working ns – Themes Publishing web sites – Maintaini 45 Illy and Ricardo Hoar, "Fundamentals of Web I er, "PHP: The Complete Reference", McGraw avaScript and JQuery: Interactive Front–End Variant	ases – Inse on the site ng a website Practic Developmer Hill Educati Web Develo	- Sence - Sence al Perio nt", Pear on, 3rd I opment",	w Data ding ema ds: - son Edu Edition, 2 Paperba	Fable – Puttii Items into a Periods:09 ail and acce cation Inc, T 2020. ack, 2018.	ng Data into Database – ss other we Total Peri hird Edition	- Deleting ebsites – ods:45 , 2022.	CO5
Introduction to Dat Database – Acces Records – Sorting UNIT - V Introduction to We Registering domain Lecture Periods:4 Text Books 1. Randy Conno 2. Steven Holzne 3. Jon Dukett, "J Reference Books 1. Lyza Danger 2. Laura Lemay, 3. Alex Libby, G edition, 2016 4. Bassett, Linds 5. Nixon Robin,	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D tabase: ISSENTIAL SQL – Creating a MySQL D ssing the Database in PHP – Updating Database the Database in PHP – Updating Database the Database in PHP – Updating Database the Hosting the Database in PHP – Updating Database the Database in PHP – Updating Database Web Hosting the Database in PHP – Updating Database Web Hosting the Database in PHP – Updating Database the Creating the website – Working the State Publishing web sites – Maintaini the Complete References - Maintaini the Complete Reference - MoGraw avaScript and JQuery: Interactive Front–End	ases – Inse on the site ng a website Practic Developmer Hill Educati Web Develo dware for W ascript Web' eb Design v : a to-the-po	- Sence - Sence al Perio al Perio al Perio (b Deve yeb Deve yeb PE F vith HTM bint guid	w Data ding ema ds: - son Edu Edition, 2 Paperba elopers", Publicatic ML5 and e to JSC	Fable – Puttin Items into a Periods:09 ail and acce cation Inc, T 2020. ack, 2018. Dreamtech ons, First edit CSS3 Esse DN", O'Reilly	ng Data into Database – Ss other we Total Perio hird Edition Press,1st en tion, 2016. entials", Pao Media, 2019	- Deleting ebsites – ods:45 , 2022. dition, 2018 ckt Publish 5.	CO5
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Introduction to Dat Database – Acces Records – Sorting UNIT - V Introduction to We Registering domain Lecture Periods:4 Text Books 1. Randy Conno 2. Steven Holzne 3. Jon Dukett, "J Reference Books 1. Lyza Danger 2. Laura Lemay, 3. Alex Libby, G edition, 2016 4. Bassett, Linds 5. Nixon Robin, Web References 1. https://develoj 2. https://www.si 4. https://alistapa 5. https://css-tric	PHP with Database Connectivity tabase: Essential SQL – Creating a MySQL D ssing the Database in PHP – Updating Database the Data. Web Hosting eb Hosting: Creating the website – Working ns – Themes Publishing web sites – Maintaini 45 Illy and Ricardo Hoar, "Fundamentals of Web I er, "PHP: The Complete Reference", McGraw avaScript and JQuery: Interactive Front–End V Gardner, "Java Script on Things: Hacking Har Rafe Colburn, "Mastering HTML, CSS & Java Gaurav Gupta, Asoj Talesra, "Responsive Web	ases – Inse on the site ng a website Practic Developmer Hill Educati Web Develo dware for W ascript Web eb Design v : a to-the-po uery, CSS & de-accessib	rting Ne - Sence al Perio al Perio al Perio (*, Pear on, 3rd I opment", 'eb Deve ', BPB F vith HTM bint guid & HTML	w Data ding ema ds: - son Edu Edition, 2 Paperb Paperb Papers", Publicatic ML5 and e to JSC 5", O'Rei	Fable – Puttin Items into a Periods:09 ail and acce ail and acce cation Inc, T 2020. ack, 2018. Dreamtech ons, First edit CSS3 Esse DN", O'Reilly Ily Media, 5t	ng Data into Database – Ss other we Total Perio hird Edition Press,1st en tion, 2016. entials", Pao Media, 2019	- Deleting ebsites – ods:45 , 2022. dition, 2018 ckt Publish 5.	CO5

COs					Prog	ram C	Outcor	nes (I	POs)					ram Spo omes (F	
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO 9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	2	-	-	-	-	-	-	-	-	1	2
2	3	2	1	1	2	-	-	-	-	I	-	-	-	1	2
3	2	2	3	-	2	1	-	1	-	-	-	-	-	1	2
4	2	2	3	2	2	2	-	2	-	-	-	-	-	1	2
5	2	2	3	1	-	1	-	2	-	-	-	-	-	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

		Cor	ntinuous Asses	sment Marks (CA	AM)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department	t C	ompute	Scienc	e and Engi	neering		Progra	imme:	B.Tech.				
Semester	V						Course	e Categ	gory: PC	Enc	Semester	r Exam Typ	oe: LE
Course Cod	de U	23CSP5	03				Period	s/Weel	k (redit	Maxim	num Marks	;
							L	Т	Р	С	CAM	ESE	TM
Course Nan	ne C	LOUD C	OMPUT	ING LABO	RATORY	1	0	0	2	1	50	50	100
						CSE			<u>l</u>		<u>I</u>		
Prerequisite	e N	IL											
			etion of	f the course	e, the sti	udents	will b	e able	to			BT Map	pina
					,			0 0.010				(Highest	
	С	01 (Configure	e various virtu	alization t	tools su	ich as ∖	/irtual B	ox, VMwa	are works	tation.	K3	
Course				nd deploy a w								K3	
Outcomes	С			a cloud envir								K3	
	С	04 l	earn the	installation a	and use a	generic	cloud	environi	ment that	can be u	sed as a	K3	
			orivate cl										
		05 L	earn ab	out Hadoop								K2	
List of Exer													
				station with d								8.	
				I machine cre									
				ate hello worl		l other s	simple v	veb app	lications	using pytl	non/java.		
				e web applica									
5. Sim	ulate a cl	oud scena	ario using	CloudSim a	nd run a s						CloudSim.		
5. Sim 6. Writ	ulate a cl te a proce	oud scena dure to tra	ario using ansfer th	cloudSim a e files from o	nd run a s ne virtual	machin	e to an	other vir	tual mac	nine.	CloudSim.		
5. Sim 6. Writ 7. Writ	ulate a cl te a proce te a proce	oud scena dure to tra dure to la	ario using ansfer the unch virt	CloudSim a e files from of ual machine	nd run a s ne virtual using tryst	machin tack (O	e to an nline O	other vir penstac	tual mac k Demo V	nine.	CloudSim.		
5. Sim 6. Writ 7. Writ 8. Insta	ulate a cl te a proce te a proce all Hadoc	oud scena dure to tra dure to la	ario using ansfer th unch virt ode clus	CloudSim a e files from of ual machine ter and run si	nd run a s ne virtual using tryst mple appl	machin tack (O lications	e to an nline O s like w	other vir penstac ord cour	tual mac k Demo \ nt.	nine. /ersion)			
5. Sim 6. Writ 7. Writ 8. Insta Lecture Pe	ulate a cl te a proce te a proce all Hadoc riods:	oud scena dure to tra dure to la	ario using ansfer th unch virt ode clus	CloudSim a e files from of ual machine	nd run a s ne virtual using tryst mple appl	machin tack (O lications	e to an nline O s like w	other vir penstac ord cour	tual mac k Demo V	nine. /ersion)	CloudSim. al Periods	::30	
5. Sim 6. Writ 7. Writ 8. Insta Lecture Pe	ulate a cl te a proce te a proce all Hadoc riods: Books	oud scena dure to tra dure to la p single n -	ario using ansfer th unch virt ode clus Tutc	CloudSim a e files from o ual machine ter and run si orial Period	nd run a s ne virtual using tryst mple appl s:	machin tack (O lications	e to ano nline O s like wo Practi	other vir penstac ord cour cal Pe r	tual mac k Demo ^v nt. 'iods:30	nine. /ersion)		::30	
5. Sim 6. Writ 7. Writ 8. Insta Lecture Per Reference	ulate a cl te a proce te a proce all Hadoo riods: Books S: The C	oud scena dure to tra dure to la p single n - omplete B	ario using ansfer th unch virt ode clus Tutc eginner's	CloudSim a e files from o ual machine ter and run si orial Period Guide by St	nd run a s ne virtual using tryst mple appl s: ephen Ba	machin tack (O lications - ron was	e to and nline O s like wo Practi s publis	other vir penstac ord cour cal Per hed in 2	tual mac k Demo ^v nt. r iods:30 2020.	hine. /ersion) Tot	al Periods	::30	
5. Sim 6. Writ 7. Writ 8. Insta Lecture Per Reference 1. AWS 2. Lea	ulate a cl te a proce all Hadoo riods: Books S: The Ca rn the se	oud scena dure to tra dure to la p single n - omplete B crets of A	ario using ansfer the unch virt ode clus Tutc eginner's WS, AZU	CloudSim a e files from o ual machine ter and run si orial Period Guide by St RE, GCP, an	nd run a s ne virtual i using tryst mple appl s: ephen Ba d K8S by	machin tack (O lications - ron was written	e to and nline O s like w Practi s publis Todd k	other vir penstac ord cour cal Per hed in 2 Coff and	tual maci k Demo V nt. fiods:30 2020. publishe	hine. /ersion) Tot d in 2017.	al Periods		
5. Sim 6. Writ 7. Writ 8. Insta Lecture Per Reference 1. AWS 2. Lean 3. Clou	ulate a cl te a proce all Hadoo riods: Books S: The Co rn the sec ud Comp	oud scena dure to tra dure to la p single n - omplete B crets of A\ uting: Meti	ario using ansfer the unch virt ode clus Tutc eginner's WS, AZU nodology	g CloudSim a e files from o ual machine ter and run si prial Period s Guide by St RE, GCP, an r, Systems, ai	nd run a s ne virtual using tryst mple appl s: ephen Ba d K8S by nd Applica	machin tack (O lications - ron was written	e to and nline O s like w Practi s publis Todd k	other vir penstac ord cour cal Per hed in 2 Coff and	tual maci k Demo V nt. fiods:30 2020. publishe	hine. /ersion) Tot d in 2017.	al Periods		
5. Sim 6. Writ 7. Writ 8. Insta Lecture Per Reference 1. AWS 2. Lea 3. Clou Ben	ulate a cl te a proce all Hadoo riods: Books S: The Co rn the se ud Comp natallah w	oud scena dure to tra dure to la p single n - omplete B crets of A\ uting: Metl ere releas	ario using ansfer th unch virt ode clus Tutc eginner's VS, AZU nodology ed by CF	g CloudSim a e files from o ual machine ter and run si prial Period s Guide by St RE, GCP, an r, Systems, an RC Press in 2	nd run a s ne virtual using tryst mple appl s: ephen Ba d K8S by nd Applica 017.	machin tack (O lications - ron was written ations b	e to and nline O s like w Practi s publis Todd k y Lizhe	other vir penstac ord cour cal Per hed in 2 (off and Wang,	tual maci k Demo ^v riods:30 2020. publishe Rajiv Rai	hine. /ersion) Tot d in 2017. hjan, Jinju	al Periods n Chen, an	d Boualem	
5. Sim 6. Writ 7. Writ 8. Insta Lecture Per Reference 1. AWS 2. Lea 3. Clou Ben 4. Clou	ulate a cl te a proce all Hadoo riods: Books S: The Co rn the se ud Comp natallah w ud Comp	oud scena dure to tra dure to la p single n - omplete B crets of A\ uting: Metl ere releas uting: A Ha	ario using ansfer th unch virt ode clus Tutc eginner's VS, AZU nodology ed by CF ands-On	g CloudSim a e files from o ual machine ter and run si prial Period s Guide by St RE, GCP, an r, Systems, an RC Press in 2 Approach by	nd run a s ne virtual using tryst mple appl s: ephen Ba d K8S by nd Applica 017. Arshdee	machin tack (O lications - ron was written ations b	e to and nline O s like wo Practi s publis Todd k y Lizhe a and \	other vir penstac ord cour cal Per hed in 2 Coff and Wang, Vijay Ma	tual mac k Demo ^v nt. riods:30 2020. publishe Rajiv Rai disetti wa	hine. /ersion) Tot d in 2017. hjan, Jinju is publish	al Periods n Chen, an ed by the la	d Boualem tter in 2014	
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Correlation Level: 1-Low, 2-Medium, 3-High

Evaluation Method

		Continuous	Assessm	ent Marks (CAM)	Model End Semester T Practical Attendance (ESE) Marks M		
	Performance	in practical	classes	Madal		End Semester	Total
Assessment	Conduction of practical	Record work	viva	Practical Examination	Attendance		Marks
Marks	15	5 5		15	10	50	100

Department	Comp	uter Science and Engineering	Progra	mme: E	3.Tecł	٦.			
Semester	V		Course	e Categ	ory: P	C End Se	emester Ex	am Type:	LE
	U23CS	SPC05	Per	iods/We	eek	Credit	Ma	ximum Ma	arks
Course Code			L	Т	P	С	CAM	ESE	TM
Course Name		ICIAL INTELLIGENCE RATORY	0	0	2	1	50	50	100
		(Common to	CSE, IT a	and CC	E)				
Prerequisite	Basics	of Algorithms and Probability							
	On c	ompletion of the course, the stu	udents wi	ill be al	ole to				apping st Level)
Course	C01	Apply Search Algorithms to imp algorithms like Greedy Best First graph-based problems.	Search, A	*, and .	ÁO* to	solve path	finding and		(3
Outcomes	CO2	Solve CSPs with Backtracking to m Problems (CSPs) such as N-Queen	ns or Sudol	ku using	backtr	acking techr	niques.	ł	(3
	CO3	Design Inference Engines: Students inference engines, leveraging First- Perform Probabilistic Reasoning: to	Order Logi	ic for Al	decisio	n-making ta	sks.		(3
	CO4	Markov Models, and Kalman Filt prediction tasks.	ters for p	robabilis	stic rea	asoning and	sequence		(3
	CO5	Explore the benefits of AI in differer	nt application	ons.				ł	(3
_ist of Exercis									
					,			• `	
-	-	Best First Search and A* Search for p	-	-			-	-	
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2. Model a	classic Co		-	-			-	-	
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 Model a Impleme Develop and rule Impleme Impleme Construct probabili Construct probabili Impleme Simulate Simulate Impleme Simulate Simulate Simulate Simulate Simulate Stuart R Elaine R Chris Th S.Rajase Edition, Web References https://www.pages.com/page	classic Co nt AO* sea an inferen s. nt basic in ask. ct a Bayesi ties. nt a Hidde a Kalman nt basic be a Kalman nt basic be a model to boks chargava,"/ ussell and ich, Kevin ornton, Be ekaran,G.A PHI Learni	nstraint Satisfaction Problem (e.g., Narch for a graph-based problem. ce engine using forward chaining and ference techniques in First-Order Log an Network for a real-world problem (n Markov Model for sequence predict Filter for a tracking or navigation problem elief functions and apply Dempster-Shop redict stock price movements using Tutorial Periods: - Artificial Intelligence Fundamentals an Peter Norvig, "Artificial Intelligence: A Knight, and Shivashankar B. Nair, "An nedict Du Boulay, "Artificial Intelligence Vijayalakshmi Pai, "Neural Networks ng Private Limited, 2011	-Queens p I backward lic using fo (e.g., medi- cion (e.g., v blem (e.g., nafer theor g historical Praction A Applicat Modern A rtificial Inte ce through s, Fuzzy Lo	roblem of I chainin rward ar cal diagr veather r predicti y for uno data. cal Per ions", Fi upproach lligence Search'	or Sudo g to de nd back nosis) a predicti ng obje certaint iods:3 ", 4th I ", 3rd E ',4th Ed	oku) and solv duce conclu ward chaini and perform fon or speec ect positions y modeling in 10 Tota cion,CRC Pre Edition, Pear Edition, McGr ition, Spring	ve using bac sions from a ng for an Al- inference us h recognition over time). n a decision I Periods: ess,2021. rson, 2020. raw Hill, 201 er Netherlar	cktracking. a given set of -based dec sing condition n). -making pro 30 7. nds,2012.	ision- onal oblem.

Co's					Prog	gram O	utcom	es (PO	s)				Program Outcomes PSO1 PSO2		Specific (PSOs)
	PO1	1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12													PSO3
1	3	3	3	3	2	-	-	-	-	2	2	2	3	3	3
2	3	3	3	3	2	-	-	-	-	2	2	2	2	2	3
3	3	3	3	3	3	-	-	-	-	3	3	3	3	3	3
4	3	3	3	3	3	3	3	-	-	3	3	3	3	3	3
5	3	3 3 3 3 3 3 3 3											3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method Continuous Assessment Marks (CAM) End Performance in practical classes Semester Total Assessment Model Examination Marks Practical Attendance (ESE) Marks Conduction Record Examination viva of practical work 5 5 100 Marks 15 15 10 50

Department	Compute	r Science and Engineering	Program	me: B.	Tech.				
Semester	V		Course (Catego	ry: PC	End S	Semester E	xam Typ	e: LE
Course Code	U23CSPC	206	Periods/	Week		Credit	Maximu	um Marks	;
			L	Т	Р	С	CAM	ESE	TM
Course Name	WEB DES	SIGNING LABORATORY	-	-	2	1	50	50	100
		(CSE	and AI&DS	S)					
Prerequisite	Basic kno	wledge in Programming and [Database						
	•	letion of the course, the stu						BT Ma (Highes	
Course		onstruct and display webpage wi				ts		K	
Outcomes		nplement JavaScript programmin esign PHP Forms	g for website	e creatio	on			K K	
		nplement Database Connectivity	usina PHP					K	
		/eb hosting PHP applications	aonig i in					ĸ	
List of Exerc									
(b) Cr 2. Desig 3. Desig radio 4. Desig	n a timetable a n an admissio buttons, subm	ge for any clinic using marque and display it in tabular format n form for any course in your it and reset button etc.	college wit	h text,	passw	vord fields, d			
-		ge by using different CSS bor	der styles.						
. ,	•	use of CSS Box Model.							
()		program to remove a character	er at the sr	ecified	l positi	on of a give	n string an	d return t	he nev
string					poon	on or a give	in ouring and	a rotani t	
-		strate a HTML file that include	as lavaScr	int scri	nt for t	akina a num	har n as ini	nut usina	nromr
	-	bonacci numbers in a paragra		ipt son				put using	promp
			•	orint vo	lidatia	n in it for roa	triation of r	mondotor	fields
nume	ric field, email-	for keeping student record, ap address field, specific value ir	n a field etc						
9. Write	a program in F	PHP for processing a simple for	orm (use co	ontrols I	like ch	eckbox, radi	o buttons a	nd option	s).
10. Write	a program in F	PHP for a simple POST and G	ET function	าร					
11. Desig	n a login form	using cookies, bootstrap, PHF	P, Database	э.					
12. Desig	n a student for	m with add, update, delete, di	splay all ar	nd sear	ch opt	ion using stu	ident datab	ase.	
Lecture Perio	ods: -	Tutorial Periods: -	Practica	I Perio	ods:30	Tota	Periods:3	0	
Reference Bo	oks		<u>i</u>			i			
2. Lyza		olburn, "Mastering HTML, CSS ar her, "Java Script on Things:							Pres
3. Keith 4. Steve	Vald, Jason Ler Suehring, Jane	ngstorf, "Pro PHP and jQuery", Pa et Valade, "PHP, MySQL, JavaSo	ript & HTML	.5 All-in-				2013.	
		PHP Programming: Using PHP to	Build Dyna	mic We	b Sites	", Paperback,	2000.		
Web Referen		/ / > . · · · · -							
2. https:/ 3. https:/	www.tutorialspo	s.com/php/DEFAULT.asp bint.com/php/index.html com/php-tutorial/							

- 4. 5.
- https://www.phptpoint.com/php-tutorial https://www.javatpoint.com/php-tutorial https://www.w3schools.com/html/default.asp

					-										
COs	Prog	ram O	utcom	nes (P	Os)								Progra Outcor	m S nes (PS	Specific Os)
	P01	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	3	3	3	3	-	2	3	-	3	3	3
2	3	3	3	3	-	3	-	3	-	2	-	2	2	2	-
3	2	2	2	2	2	2	3	3	-	3	3	-	2	2	2
4	2	2	2	2	2	2	-	3	-	3	-	3	3	3	-
5	3	3	3	3	3	3	3	3	-	3	3	3	3	3	3

Correlation Level: 1-Low, 2-Medium, 3-High

Evaluation Method

	Co	ontinuous	Assessm	nent Marks (CAI	M)		
Assessment		nce in prac lasses	tical	Model		End Semester Examination	Total Marks
	Conduction Record vi of practical work		viva	Practical Examination	Attendance	(ESE) Marks	marito
Marks	15	5	5	15	10	50	100

Department	Comp	uter Science and Engineering	Prog	ramme:	B. Tec	h.			
Semester	V		Cour	se Cate	gory Co	ode: PA	*End Se	emester	r Exam Type: -
Course	11000	SW501	Pe	riods / \	Neek	Credit		Maxim	um Marks
Code	02303	50000	L	Т	P	С	CAM	ESE	ТМ
Course Name	MICRO	D PROJECT	-	-	2	1	100	-	100
			CSE						
Prerequisite	Progra	mming Languages, Databases							
	On co	mpletion of the course, the stude	ents will	be able	e to				BT Mapping (Highest Level)
Course	CO1	Identify the problem statement fo survey	r the mic	ro proje	ect work	through	the litera	ure	K2
Outcomes	CO2	Choose the proper component system.	s as pe	r the 1	requiren	nents of	the des	ign/	K2
	CO3	Apply the acquainted skills to dev	develop final model/system						К3

There shall be a Micro Project, which the student shall pursue as a team consists of maximum 4 students during the third year, fifth semester. The aim of the micro project is that the student has to understand the real time hardware / software applications. The student should gain a thorough knowledge in the problem he/she has selected and in the hardware / software he/she using in the Project. The Micro-project is an application that should be formally initiated and should be developed and also to be implemented by the respective team.

The Micro Project shall be submitted in a report form along with the hardware model / software developed, duly approved by the department internal evaluation committee. It shall be evaluated for 100 marks as Continuous Assessment. The department internal evaluation committee shall consist of faculty coordinator, supervisor of the project and a senior faculty member of the department. There shall be two reviews that will be considered for assessing a Micro Project work with weightage as indicated evaluation Methods.

	Lecture Periods: -	Tutorial Periods: -	Practical Periods: 30	Total Periods: 30
--	--------------------	----------------------------	-----------------------	-------------------

COs/POs/PSOs Mapping

COs						Program Specific Outcomes (PSOs)									
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3													1	1
2	3	3	3	2	2	2	2	2	3	3	3	1	2	2	2
3	3	2	2	1	-	2	-	-	3	3	3	1	3	3	3

Correlation Level: 1 – Low, 2 – Medium, 3 – High

Evaluation Method

		Review 1			Review 2			Total
Assessment	Novelty	Presentation	Viva	Presentation	Demonstration	Viva	Report	Marks
Marks	10	20	10	20	20	10	10	100

Department	Computer Science and Engineering	Program	nme: B.	Tech				
Semester	V	Course	Category	/ Code: AEC	*End S	emester	Exam T	ype: -
Course Code	U23CSC5XX		Period	s/Week	Credit	Maximu	ım Mark	(S
	023656588	L	Т	Р	С	CAM	ESE	TM
Course Name	CERTIFICATION COURSEV	-	-	4	-	100	-	100
		CSE						

Students shall choose an International / Reputed organization certification course of 40-50 hours duration specified in the curriculum (It is mandatory to do a minimum of six courses) which will be offered through the Centre of Excellence. These courses have no credit and will not be considered for CGPA calculation.

- (i) Certification Courses are required to be completed to fulfil the degree requirements. All Certification courses are assessed internally for 100 marks.
- (ii) The Course coordinator handling the course will assess the student through attendance and MCQ test, and declare the student as "pass" on satisfactory completion. A letter grade "P" is awarded to declare pass.
- (iii) The marks scored in these courses will not be taken into consideration for the SGPA / CGPA calculations in the grade sheet.

Evaluation Methods

Accessment	Continuous Assessme	nt Marks (CAM)	Total Marks
Assessment	Attendance	MCQ Test	Total Marks
Marks	10	90	100

Department	Computer Science and Engineering	Pr	ogramn	ne: B.Tec	sh.			
Semester	ν	Сс	ourse Ca	ategory C	Code: MC	C *E	nd Semeste	er Exam Type: -
Course	U23CSM505		Periods	s/Week	Credit	Ma	aximum Mai	ks
Code		L	T	Р	С	CAM	ESE	TM
Course	ESSENCE OF INDIAN	2	0	0	-	100	-	100
Name	TRADITIONAL KNOWLEDGE		_	-				
	Comn	non	to ALL	Branches	<u>.</u>		<u>-</u>	
Prerequisite	-							
	On completion of the course, the stu	dent	ts will k	be able to	D			BT Mapping (Highest Level)
0	CO1 Familiarize with the philosophy of Ind	lian d	culture					(1 lighteet 2010) K1
Course	CO2 Distinguish the Indian languages and							K2
Outcomes	CO3 Learn the philosophy of ancient, med			dern India	3			K 1
	CO4 Acquire the information about the fine	e arte	s in India	1				K 1
	CO5 Know the contribution of scientists of	diffe	erent era	S				K 1
UNIT- I	Introduction To Culture				Perio	ds:06		
	zation, culture and heritage, general charac ian Culture, Ancient India, Medieval India, Me			ulture, imp	oortance	of cultur	e in human	CO1
JNIT- II	Indian Languages, Culture and Lite				Perio	ds:06		
Indian Langu	Jages and Literature - I: the role of Sanskrit,			of scriptu	<u>i</u>		ciety, Indian	
	, other Sanskrit literature, literature of south							CO2
Indian langu	ages & literature.			00				
JNIT- III	Religion and Philosophy				Peri	ods:06		
Religion and	Philosophy in ancient India, Religion and	l Ph	ilosophy	in Medie	eval India	a, Religio	ous Reform	CO3
Movements	in Modern India (selected movements only).				••••			603
JNIT- IV	Fine Arts in India (Art, Technology	and	l Engin	eering)	Peri	ods:06		
	ng, Indian handicrafts, Music, divisions of In							
	Indian Architecture (ancient, medieval a			, Science	and Te	echnolog	y in India,	CO4
	t of science in ancient, medieval and modern	India	э.					
UNIT-V	Education System in India				<u>i</u>	ods:06		
	ancient, medieval and modern India, aims						cience and	cc
	Ancient India, Science and Scientists of Medi	·····				······		
Lecture Per		Pr	actical	Periods	-	T	otal Period	ls:30
Reference E				0404000	0075 00	05		
	apoor, "Text and Interpretation: The India Tra-					05		
	e in Samskrit", Samskrita Bharti Publisher, IS , "Position paper on Arts, Music, Dance and ⁻					200		
	in, "Examinations in ancient India", Arya Bool				0 494-7,	200		
5. Satya P	rakash, "Founders of Sciences in Ancient Ind	lia". `	Viiav Ku	- mar Publig	sher, 198	9		
	anna, "Essentials of Indian Philosophy", Motil						8 - 81208109	90, 2014
Web Referer					,			
	tel.ac.in/courses/109/104/109104102/							
2. https://np	tel.ac.in/courses/101/104/101104065/							
	tel.ac.in/courses/109/108/109108158/							
	tel.ac.in/courses/109/106/109106059/							
	tel.ac.in/noc/courses/noc17/SEM1/noc17-ae0)1/						
COS/POS/F	PSOs Mapping							0
	Program Outcon	nes ((POs)					ram Specific
COs			/				Outco	omes (PSOs)

COs					Prog	gram O	utcome	es (POs)					jram Spe omes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	-	-	-	-	-	-	-	-	3	-	1	1	-	1
2	1	-	-	-	-	-	-	-	-	3	-	1	1	-	1
3	1	-	-	-	-	-	-	-	-	3	-	1	1	-	1
4	1	-	-	-	-	-	-	-	-	3	-	1	1	-	1
5	1	-	-	-	-	-	-	-	-	3	-	1	1	-	1
-	1.41.1			A 14	1	1.12.1									

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

	Continu	ous Assessment M	larks (CAM)	
Assessment	Attendance	MCQ Test	Presentation / Activity / Assignment	Total Marks
Marks	10	30	60	100

PROFESSIONAL ELECTIVE COURSES

Semester		er Science and Engineering	5	amme: E					
	V		Cours	e Categ	ory: PE	E	nd Semeste	er Exam Ty	pe: TE
Course Code	U23CSE	506	Per	iods/We	ek	Credit	Max	kimum Mar	ks
			L	Т	Ρ	С	CAM	ESE	ТМ
Course Name	PROGR	AMMING IN C#	3	-	-	3	25	75	100
			CSE				k		
Prerequisite		nowledge of OOPS concepts							
	On con	npletion of the course, the stu	dents wi	ill be ab	le to			BT Ma	
	CO1	Understand the concept of .N	lot framo	work				(Highest	
Course		•							_
Outcomes	CO2	Learn the fundamental concepts	•					K	
	CO3	Understand the Programming Co		-	•			K	
	CO4	Develop the Graphical User Inte	erface usir	ng C#.				K	2
	CO5	Explore the Database Connectiv	ity using A	ADO.NET	Г.			K	3
UNIT - I		guage Fundamentals				Period			
process – Assemb	oly and its t ators- Prog	CLR) – Common Type System (CT ypes – Namespaces – Command ram control statements- Program: c Oriented Programming	line comp	iler. C#	Basics:	Literals-	Variables- Da Iculator progi	ata Types-	CO1
Polymorphism - Pr nested struct that s	ogram: cou store two da	 Strings – Methods- Operator ov nt duplicate elements in an array - ta for an employee. 				ut using a	string library		CO2
	Progra	mming Constructs				Period			
		Value Types and Reference Control Cont				ctures –G	enerics - C		CO3
Enumeration- Ite Divide two numb the user and tries if the same file al UNIT - IV Tool Box Controls	erator - Ex ers and ha s to open t ready exis Graphi e – Containe	ceptions Handling - Multithrea andle an exception when the us he file and handle exceptions if ts. cs & Window Forms r Control – Menu – Tool Bar – Too	ding – D ser enters the file d	elegates s non-nu oes not trols Dur	s and umeric exist - ing Des	ctures –G Events - values - F Create a Period ign Time -	enerics - C File I/O – Read a file blank file or s:09 - Run Time -	Program: path from n the disk	CO3
Enumeration- Ite Divide two numb the user and tries if the same file al UNIT - IV Tool Box Controls Programming GDI-	erator - Ex ers and ha s to open t ready exis Graphi - Containe + - Develop	ceptions Handling - Multithread andle an exception when the us he file and handle exceptions if ts. cs & Window Forms r Control – Menu – Tool Bar – Too an application to implement multiple	ding – D ser enters the file d	elegates s non-nu oes not trols Dur	s and umeric exist - ing Des	ctures –G Events - values - F Create a Period ign Time - ical interfa	enerics - C File I/O – Read a file blank file or s:09 - Run Time - ces.	Program: path from n the disk	
Enumeration- Ite Divide two numb the user and tries if the same file al UNIT - IV Tool Box Controls Programming GDI- UNIT - V	erator - Ex ers and ha s to open t ready exis Graphi e - Containe + - Develop Databa	ceptions Handling - Multithread andle an exception when the us he file and handle exceptions if ts. cs & Window Forms r Control – Menu – Tool Bar – Too an application to implement multiple se Programming	ding – D er enters the file d ol Tip Con e tools for	elegate s non-nu oes not trols Dur designin	s and umeric v exist - ing Des ig graph	ctures –G Events - values - F Create a Period ign Time - ical interfa Period	enerics - C File I/O – Read a file blank file or s:09 - Run Time - ces. s:09	Program: path from n the disk - Graphics	
Enumeration- Ite Divide two numb the user and tries if the same file al UNIT - IV Tool Box Controls Programming GDI- UNIT - V Data Access with – Data Binding	erator - Ex ers and has to open t ready exis Graphi e - Containe + - Develop Databa n ADO.NE ⁻ - Data C est Practic	ceptions Handling - Multithread andle an exception when the us he file and handle exceptions if ts. cs & Window Forms r Control – Menu – Tool Bar – Too an application to implement multiple se Programming T – Architecture – Data reader Grid Control – XML Based D ces – Comparison between J21 ADO.NET.	ding – D er enters the file d ol Tip Con e tools for – Data A ata Sets EE and .	eelegate s non-nu oes not trols Dur designin dapter – s. Enter NET - I	s and umeric v exist - ing Des ig graph - Comm prise E Develop	ctures –G Events - values - F Create a Period ign Time - ical interfa Period nand – Co cidition O	enerics - C File I/O – Read a file p blank file on s:09 - Run Time - ces. s:09 onnection – verview – ractive appl	Program: path from n the disk - Graphics Data Set Multi-Tier ication to	
Enumeration- Ite Divide two numb the user and tries if the same file al UNIT - IV Tool Box Controls Programming GDI- UNIT - V Data Access with – Data Binding Architecture – B connect database	erator - Ex ers and has s to open t ready exis Graphi - Containe + - Develop Databa n ADO.NE ⁻ - Data C est Practic e through A	ceptions Handling - Multithread andle an exception when the us he file and handle exceptions if ts. cs & Window Forms r Control – Menu – Tool Bar – Too an application to implement multiple se Programming T – Architecture – Data reader - Grid Control – XML Based D ces – Comparison between J21	ding – D er enters the file d ol Tip Con e tools for – Data A ata Sets EE and .	eelegate s non-nu oes not trols Dur designin dapter – s. Enter	s and umeric v exist - ing Des ig graph - Comm prise E Develop	ctures –G Events - values - F Create a Period ign Time - ical interfa Period nand – Co cidition O	enerics - C File I/O – Read a file p blank file on s:09 - Run Time - ces. s:09 onnection – verview – ractive appl	Program: path from n the disk - Graphics Data Set Multi-Tier	CO4
Enumeration- Ite Divide two numb the user and tries if the same file al UNIT - IV Tool Box Controls Programming GDI- UNIT - V Data Access with – Data Binding Architecture – B connect database Lecture Periods Text Books 1. Fiodar sazana 2. Mark Michaelis 3. Christian Nage 4. E.Balagurusar Reference Books	erator - Ex ers and has s to open t ready exis Graphi - Containe + - Develop Databa n ADO.NE ⁻ - Data C est Practic e through / ::45 vets, "Imple s, "Essentia el, Bill Evje ny, "Progra	ceptions Handling - Multithrea andle an exception when the us he file and handle exceptions if ts. cs & Window Forms r Control – Menu – Tool Bar – Too an application to implement multiple se Programming T – Architecture – Data reader Grid Control – XML Based D ces – Comparison between J21 ADO.NET.	ding – D er enters the file d of Tip Con e tools for – Data A ata Sets EE and . PB Public 2008", W	eelegate s non-nu oes not trols Dur designin dapter – s. Enter NET - I cal Peri cations, iley India Educatio	s and umeric v exist - ing Des g graph - Comm prise E Develop ods: - 2023. a Pvt Lt on Pvt L	ctures –G Events - values - F Create a Period ign Time - ical interfa Period nand – Co idition Or o an inter d.	renerics - C File I/O – Read a file p blank file on s:09 - Run Time - ces. s:09 onnection – verview – ractive appl Total Pe	Program: path from n the disk - Graphics Data Set Multi-Tier ication to Priods:45	CO4 CO5

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- https://www.amazon.in/Programming-Primer-Balagurusamy-SECOND-636363/dp/B0C74FB9NJ https://www.w3schools.com/cs/index.php 2.

3.

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs		Program Outcomes (POs) 01 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12												Program Specific Outcomes (PSOs)			
	PO1	PO2	PO3	PO4	PO5	PO6	P07	P08	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
1	3	2	3	2	2	1	1	-	2	1	1	1	3	3	3		
2	2	2	2	3	2	1	1	-	•	1	1	1	2	2	2		
3	3	2	3	2	2	2	1	-	-	2	1	2	3	3	3		
4	2	2	2	2	2	1	1	-	2	1	1	1	2	2	3		
5	3	2	1	2	2	2	1	-	3	2	1	2	2	3	2		

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

_		Cor	ntinuous Asses	sment Marks (CA	M)	End	Total	
Assessment	CAT 1	CAT 2	Model Exam	am Assignment* Attendance		Semester Examination (ESE) Marks	Marks	
Marks	5	5	5	5	5	75	100	

Department	Computer Science and Engineering	Program	nme: B	.Tech.				
Semester	V				e: PE *Er	nd Semeste	er Exam Ty	/be: TE
			ods / We		Credit		aximum Ma	
Course Code	U23ECEC01	L	Т	Р	С	CAM	ESE	TM
Course Name	DIGITAL IMAGE PROCESSING	3	-	-	3	25	75	100
Prerequisite	Students should have an introduction to sig		-		ivalent cou	Jrse.		
	On completion of the course, the stude CO1 Understand fundamentals, visual p				onships.		(Highes	lapping st Level) K2
Course Outcomes	CO2 Correlate the various image mathematical preliminaries	-	•	chnique		the help		K3
Oucomes	CO3 Apply different types of image enlapplications				•			K3
	CO4 Illustrate the significance of Segmentation techniques		Image		ocessing	and Ima	•	K4
	CO5 explore image compression techr based on matching.	niques, cod	ing me	∍thods,	and patte	rn recogniti		K4
UNIT- I	Digital image Fundamentals							riods: 09
	Origin – Steps in Digital Image Processing						-	
-	Acquisition – Image Sampling and Quar			onships	between	pixels., sir	mple imag	je CO1
	el, Brightness, contrast, hue, saturation, Mag	ch band effe	ect					
UNIT- II	Image Transform							riods: 09
	al Fourier Transform- Properties – Fast F					-		1 1
	Discrete Cosine transform, Discrete Sine		i, Hada	amard t	aransform,	Haar trans	sform, Slar	nt
transform, KL tr	ransform, SVD transform, Wavelet transform							
UNIT- III	Image Enhancement and Image Restor	ration					Per	riods: 09
Sharpening Sp frequency dom Adaptive filters	n: Gray level transformations – Histogram batial Filtering – Frequency Domain: Introd bain filters – Ideal, Butterworth and Gaussia s – Band reject Filters – Band pass Filters – Optimum Notch Filtering – Inverse Filtering	duction to Fo an filters. No	ourier 7 bise mo	Transfor	rm – Smoo	othing and	Sharpenin	ng CO3
UNIT - IV	Colour Image Processing and Image S		-	,	T		Per	riods: 09
-	entals – Colour models – HIS to RGB and	-		etection	of Discon	itinuities- E	-	
and Boundary	by morphological watersheds – basic co	ation- Morp	ohologia	ical pro	ocessing-	erosion a	ind dilation	n.
UNIT - V	Image Compression and Recognition			7			Per	riods: 09
	pression – Coding Redundancy - Interpixe	el Redundi	ancv -	Psvchc	visual R	edundancy		no
coding - Variab JPEG – MPE0	ole length coding – Adaptive coding – Arith G. Boundary representation, Boundary (ture, Texture – Patterns and Pattern classe	hmetic codii description,	ing – Li , Fourie	ZW cod ier Des	ding – Hyb scriptor, R	orid coding Regional De	- Wavelet	:- CO5
Lecture Period		Practica				Total Peri	iods: 45	
Text Books				74.5.	L	••••	•••••	
	C. Gonzalez & Richard E. Woods, Digita	al Image P	rocess	ing, 201	17, 4th ec	lition, Pear	son Educ	ation,
2. Anil K. 3. Kennetl	Jain, Fundamentals of Digital Image Proces h R. Castleman, Digital Image Processing, I			ition, Pe	arson Indi	a, India		
Reference Boo								
Tata Mo	C. Gonzalez, Richard E. Woods, Steven L. c Graw Hill Pvt. Ltd., 2011.		-	nage Pro	ocessing l	Jsing MATI	_AB", Thirc	J Edition
	n K Pratt, "Digital Image Processing", John V K. Pakhira, "Digital Image Processing and F			n" First	Edition P	ul I earnin(~ Dvt Itd	2011
	A. Pakilla, Digitar inage Frouessing and r	allenineo	a)(11 11 1 m av	at Ensi			J T VI. LIU.,	
4. John C	C. Russ, F. Brent Neal-The Image Procest ress, Taylor & Francis Group.	sing Handt						016),

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 http://www.caen.uiowa.edu/~dip/LECTURE/lecture.html
 https://nptel.ac.in/courses/117/105/117105079/
 https://nptel.ac.in/courses/117/105/117105135/

- 5. https://www.csie.nuk.edu.tw/
 - * TE Theory Exam, LE Lab Exam

COs/POs/PSOs Mapping

COs	Progr	am Out	comes ((POs)									Progra Outcon	m Speci nes (PSC	fic Ds)
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	2	-	-	-	-	-	-	-	-	2	2	-
2	3	2	2	2	-	-	-	-	-	-	-	-	2	2	-
3	3	2	2	2	-	-	-	-	-	-	-	-	2	2	-
4	3	2	2	2	-	-	-	-	-	-	-	-	2	2	-
5	3	2	2	2	-	-	-	-	-	-	-	-	2	2	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

	Continuou	s Assessme	nt Marks (CAM)			End Semester Examination	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*			Marks
Marks	5	5	5	5	5	75	100

Somoctor	Computer Science and Engineering	Programme: B.Tech .	•			
Semester	V	Course Category Co	de: PE *E	nd Semest	er Exam T	ype: TE
Course Code		Periods / Week	Credit	Max	ximum Ma	rks
	U23CSE507	L T P	С	CAM	ESE	TM
Course Name	NETWORK SECURITY	3	3	25	75	100
		CSE				
Prerequisite	Basic knowledge in Networks			r		
	On completion of the course, the stud	ents will be able to			BT Ma (Highest	
	CO1 Understand the need of Security S	ervices and Techniques			K2	
	CO2 Apply the different cryptographi			ivate kev	K3	
0	cryptography	· · · · · · · · · · · · · · · · · · ·				
Course Outcomes	CO3 Summarize solutions for effective	e key management dis	stribution and	maintain	K2	
Outoonico	message integrity CO4 Identify and use appropriate al	urity and	K3			
	authentication.	gonullins for assuring	System set	unty and		
	CO5 Outline the security requirement	ts and solutions for w	wireless netw	orks and	K2	
	distributed systems					
UNIT-I	Introduction		Periods: 9			
	- Non-cryptographic Protocol Vulnerabili			e need for	security	- CO1
UNIT-II	s - Security Mechanisms- Classical encryp	tion: Classical Techniqu	es. Periods: 9			
	Symmetric and Asymmetric Cipher					
	ers: Symmetric and asymmetric cryptogra - Pseudorandom Number Generators - A					
	ithm - Differential and Linear Cryptanalysis	•		- Oecung	y OF NOA	
UNIT-III	Key Management and Data Integrity A	<u>_</u>	Periods: 9	}		
_	ey exchange -Elgamal Cryptographic Syst	•	<u>i</u>		votograph	v
	Hash Functions: Secure Hash Algorithm (S				Jh 3 h	CO3
UNIT-IV	Authentication		Periods: 9)		
	es -Elgamal Digital Signature Scheme -					
		matric Authantication -	- Kerberos -	X.509 Aut	hentication	ו CO4
	ithm – RSA-PSS Digital Signature - Bio Key Infrastructure					
Service - Public	Key Infrastructure)		
Service - Public UNIT-V	Key Infrastructure Network and Wireless Security's		Periods: 9		tv - Secur	e
Service - Public UNIT-V Email Security: electronic trans	Key Infrastructure Network and Wireless Security's Pretty good privacy – S/MIME-IP Security action (SET) –System Security- Firewall	y - Web Security: SSL/ s design principles. Int	Periods: S Transport La trusion detec	yer Securit		
Service - Public UNIT-V Email Security: electronic trans Private Network	Key Infrastructure Network and Wireless Security's Pretty good privacy – S/MIME-IP Security action (SET) –System Security- Firewall as - Wireless security: IEEE 802.11 overview	y - Web Security: SSL/ s design principles. Int w and its security – WEF	Periods: 9 Transport La trusion detec P - WPA.	yer Securit		
Service - Public UNIT-V Email Security: electronic trans Private Network Case Studies:	Key Infrastructure Network and Wireless Security's Pretty good privacy – S/MIME-IP Security action (SET) –System Security- Firewall s - Wireless security: IEEE 802.11 overview Snort and Stenographic tools - Bit coin and	y - Web Security: SSL/ s design principles. In w and its security – WEF I Crypto currency systen	Periods: 9 Transport La trusion detec P - WPA. n.	yer Securit ion Syster	n - Virtua	
Service - Public UNIT-V Email Security: electronic trans Private Network Case Studies: Lecture Periode	Key Infrastructure Network and Wireless Security's Pretty good privacy – S/MIME-IP Security action (SET) –System Security- Firewall s - Wireless security: IEEE 802.11 overview Snort and Stenographic tools - Bit coin and	y - Web Security: SSL/ s design principles. Int w and its security – WEF	Periods: 9 Transport La trusion detec P - WPA. n.	yer Securit	n - Virtua	
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Service - Public UNIT-V Email Security: electronic trans Private Network Case Studies: Lecture Period Text Books 1. William Stall 2017.	Key Infrastructure Network and Wireless Security's Pretty good privacy – S/MIME-IP Security action (SET) –System Security- Firewall as - Wireless security: IEEE 802.11 overview Snort and Stenographic tools - Bit coin and s: 45 Tutorial Periods: 15 ings, "Cryptography & Network Security-	y - Web Security: SSL/ s design principles. In w and its security – WEF Crypto currency systen Practical Periods: - Principles and Practice	Periods: 9 Transport La trusion detec P - WPA. n. 	yer Securit ion Syster Total Period	m - Virtua I s: 60	CO
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- 2. https://www.mitel.com/articles/web-communication-cryptography-and-network-security
- 3. http://williamstallings.com/Cryptography/Crypto7e-Student/
- 4. http://www.maths.usyd.edu.au/u/afish/Math2068/index_lectures.html

* TE – Theory Exam, LE – Lab Exam

COs		Program Outcomes (POs)												ram Spe omes (P	
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	2	1	-	-	2	2	3	2	2	2	2	2	2	3	2
2	3	2	1	1	3	3	3	3	3	3	3	3	3	3	3
3	2	1	-	-	2	2	3	2	2	2	2	2	2	3	2
4	3	2	1	1	3	3	3	3	3	3	3	3	3	3	3
5	2	1	-	-	2	2	3	2	2	2	2	2	2	3	2

COs/POs/PSOs Mapping

Correlation Level: 1 - Low, 2 - Medium, 3 – High

Evaluation Methods

		Con	tinuous Assess	End Semester	Total		
Assessment	CAT 1 CAT 2		Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Marks
Marks	Marks 5		5	5	5	75	100

Dep	partment	Comp	uter Science and Engineering	Programme: B.Tech									
Ser	nester	V		Course	Catego	ory: PE	End	Semester E	xam Type	: TE			
Со	urse Code	U23CS	SE508	Periods/	Week		Credit	Maxim	um Marks	\$			
				L	Т	Р	С	CAM	ESE	ТМ			
Со	urse Name	Open \$	Source Programming for IOT	3	-	-	3	25	75	100			
				<u>.</u>	<u>i</u>		<u>i</u>	L					
Pre	requisite	Basic k	knowledge in Programming and N	etworks									
		On co	mpletion of the course, the stud	lents will	be abl	e to			BT Ma				
									(Highest				
	_	CO1	Identify key IoT platforms and la	nguages.					K	2			
	Course Outcomes	CO2	Develop real-time IoT application	ns with Py	rthon/M	licroPyt	hon		K	2			
Ċ	Jucomes	CO3	Build IoT applications and dashb	oards usi	ng Nod	le.js.			K	2			
		CO4	Develop analytics systems with	Julia.					Kź	2			
		CO5	Implement secure, scalable IoT	solutions	with Ru	ust/Go.			K	3			
UN	IT - I	Open	Source IOT Platforms and Prog				Periods	s:09					
			Concepts – Importance of Open Sour							CO1			
			 ESP32 – Programming Languages Concepts –Latency – Throughput a 										
			ner Station Project.	anu Kespu			ase Sludy	- Getting Sta					
	IT - II		n and Micropython for IOT Appl				Periods						
			F – Basics of Python and its role in lo ython – Setting Up Python and Micr							CO2			
			and ESP32– Requirements for real-										
sen	sors – Visualizi	ing data	using Python libraries - Case Stud										
			or with ESP32/ESP8266.				Periods	- 00					
	IT - III		ime IoT with Node.js Node.js for IoT – Setting Up Node.js	for lot l	ootolling	Nodo is			iaurina tha	<u> </u>			
			Using Node.js with IoT Devices – Inte										
Rea	I-Time Data Co		ation with Node.js – Case Study – Cre										
	ng Node.js. I T - IV		ta Processing using Julia				Periods	∩Q					
			tures and benefits for IoT – Basic syn	tax and pr	oaramm	ing cons			for IoT –	CO4			
Inst	alling Julia on Io	oT platfoi	ms like Raspberry Pi – Configuring th	ne Julia env	vironme	nt – Rea	al-Time Da	ta Processing	with Julia	004			
– Ir	nplementing m	ulti-threa	ding and asynchronous processing hine learning models for IoT applicat	– Advand	ced data	a visual	ization tec	chniques using	g Julia –				
	iementing real- ig Julia.	ume mac	chine learning models for for applicat	lions – Ca	se Sludy	y – Deve	elop an io		s system				
	IT - V	RUS	AND GO FOR IOT Security				Periods	s:09		L			
			view of Rust and its benefits - Key fe							CO5			
			 Basics – Advantages of Rust in I and its suitability for real-time application 										
			Rust and Go – Implementing secure										
tech	nniques with Go		time data transmission - Case Study										
	t or Go. :ture Periods :	- 15	Tutorial Periods: -	Practica) Doric	der -		Total Perio	de:15				
	t Books		Tutonai Tenous	Tactice		Jus		Total Terre	u3. T J				
1.		a and V	ijay Madisetti, Internet of Things: A Ha	ands-On A	oproach	. Secon	d Edition. I	McGraw-Hill E	ducation. 2	2021.			
2.	Pratik Desai, P	ython Pr	ogramming for Arduino, Packt Publish	ning, 2018.									
3.	Patrick Mulder Apress, 2021.	and Kels	ey Breseman, Node.js for Embedded	Systems:	Using V	Veb Tec	hnologies t	to Build Conne	ected Devic	æs,			
4.		ington, M	lastering Julia: A Comprehensive Gui	de for Adva	anced U	lsers, Pa	ackt Publisl	hing, 2022.					
			Drendorff, Programming Rust: Fast, S						1.0				
6.	Packt Publishir		tering Go: Harness the Power of Go to	o Build Pro	otessiona	al Utilitie	es and Con	icurrent Serve	rs and Serv	/ICeS,			
Ref	erence Book												
1.			no Cookbook, Third Edition, O'Reilly N										
2.			Programming with MicroPython: Get I	MicroPytho	on Work	ing for Y	'ou on the	Raspberry Pi	Pico, ESP	32, and			
3.			No Starch Press, 2021. sey Breseman, Node.js for Embedde	ed System	s: Usino	g Web 1	Fechnoloai	es to Build Co	onnected E	Devices.			
	Apress, 2021.			-		-	-						
4.	Chris Rackauc	kas and S	Shalabh Bhatnagar, Julia Programmir	ng for Oper	ations F	Research	n: A Prime	r on Computin	g, Springei	, 2018.			

- 5. Claus Matzinger, Rust Programming By Example, Packt Publishing, 2018.
- 6. Alan A. A. Donovan and Brian W. Kernighan, The Go Programming Language, Addison-Wesley Professional, 2015.

Web References

- 1. https://www.arduino.cc
- 2. https://docs.micropython.org/en/latest/
- 3. https://www.w3schools.com/nodejs/
- 4. https://julialang.org/
- 5. https://www.rust-lang.org
- 6. https://go.dev
 - * TE Theory Exam, LE Lab Exam

COs		Program Outcomes (POs)													Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
1	3	3	2	1	2	2	2	2	-	2	2	-	2	3	3		
2	3	3	3	2	-	2	-	2	-	2	-	2	2	3	-		
3	3	3	3	2	3	3	3	2	-	2	2	-	2	3	3		
4	3	3	3	2	3	2	-	2	-	2	-	2	2	3	-		
5	3	3	3	3	-	3	-	2	-	2	-	2	3	3	-		

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

	Continuous Assessment Marks (CAM)									
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	End Semester Examination (ESE) Marks	Total Marks			
Marks	5	5	5	5	5	75	100			

•	•	uter Science and Engineering	rogramme: B.Tech								
Semester	V							ter Exam Type: TE			
Course Code	U23C8	SE509	Perio	ods/We		Credit		um Marks			
			L	Т	P	C	CAM	ESE	ТМ		
Course Name	SOFT	WARE PROJECT MANAGEMENT	3	-	-	3	25	75	100		
		CS	Ē				<u>.</u>				
Prerequisite	-										
	On co	mpletion of the course, the studen	nts will	be ab	le to			BT Maj (Highest			
		O1 Understand Project Management and planning strategies									
	CO1			K2							
Course Outcomes	CO2	Obtain adequate knowledge about software process models and software effort estimation techniques									
	CO3	CO3 Estimate the risks involved in various project activities									
	CO4	Understand project monitoring and	contro	l strate	gies			K2	2		
	CO5	Staff selection process and the issu	ues rela	ated to	people man	agement	ļ	K2	2		
JNIT - I	Projec	t Evaluation and Planning				Periods	s:09				
Management Con	ntrol – Pro	nent – Categorization of Software Pro oject portfolio Management – Cost-bene opwise Project Planning							CO1		
JNIT - II		t Life Cycle and Effort Estimation				Periods	5:09		L		
- Agile Methods Basics of Softwar	Cycle – – Dynami e Estimati	Software Process and Proces c System Development Method – Extra on – Effort and Cost Estimation Technic	eme Pr				ctive Pro		CO2		
Parametric Produc JNIT - III		y Planning, Scheduling and Risk I	Manad	ement		Periods	:09				
	L	ing – Project Schedules – Activities – S							000		
	vity plaini					- INIOTWOLK F	Janning	monels -			
Forward Pass & E	Backward	÷ .	-	-	-		-		03		
		Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – (nethod	– Risk i	dentification	– Assessm	ent – Mo		COS		
PERT technique -	- Monte C	Pass techniques – Critical path (CRM) n	nethod	– Risk i	dentification	– Assessm	ent – Mo edules.		CO3		
PERT technique – JNIT - IV Collecting the Da Project Back to Ta - Types of Contra	- Monte C Monito ta – Visua arget – Ch act – Stage	Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – (oring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – Ir as in Contract Placement – Typical Terms	nethod Creatior arned V ntroduct s of a C	– Risk i n of Criti /alue Ai ion – Th	dentification ical Patterns nalysis – Prio ne ISO 12207	 Assessme Cost Sche Periods pritizing Mo Approach anagement 	ent – Mo edules. 5:09 nitoring – Supply – Accep	nitoring – – Getting / Process	CO3		
PERT technique – JNIT - IV Collecting the Da Project Back to Ta - Types of Contra JNIT - V	- Monte C Monito ta – Visua arget – Ch act – Stage Manag	Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – (oring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – In s in Contract Placement – Typical Terms jing Peoples and Organizing Team	nethod Creatior arned V htroduct s of a C	– Risk i n of Criti /alue Ai ion – Th ontract	dentification ical Patterns nalysis – Prio ne ISO 12207 – Contract M	 Assessme Cost Sche Periods pritizing Mo Approach anagement Periods 	ent – Mo edules. ::09 nitoring – Supply – Accep ::09	nitoring – – Getting / Process tance	CO4		
PERT technique – UNIT - IV Collecting the Dat Project Back to Ta - Types of Contra UNIT - V Staffing in Softwar The Oldham – Ha Working in Teams	- Monte C Monito ta – Visua arget – Ch act – Stage Manaç ackman J s – Decisio	Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – (pring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – Ir as in Contract Placement – Typical Terms jing Peoples and Organizing Team s – Managing People – Organizational E ob Characteristic Model – Stress – He on Making – Organizational Structures –	nethod Creatior arned V ntroduct s of a C 15 Behavior alth an	– Risk i n of Criti /alue Ai ion – Th ontract - Best d Safet	dentification ical Patterns nalysis – Prin e ISO 12207 – Contract M methods of y – Ethical a	 Assessme Cost Sche Periods oritizing Mo Approach anagement Periods Staff Select and Profess 	ent – Mo edules. ::09 nitoring – Supply – Accep ::09 ion – Mo sional Co	nitoring – – Getting / Process tance tivation – ncerns –	CO4		
PERT technique – JNIT - IV Collecting the Dar Project Back to Tar Types of Contra JNIT - V Staffing in Softwar The Oldham – Ha Vorking in Teams - Communication	- Monte C Monito ta – Visua arget – Ch ict – Stage Manag re Project ackman J s – Decisio Plans – L	Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – (oring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – Ir is in Contract Placement – Typical Terms jing Peoples and Organizing Team is – Managing People – Organizational E ob Characteristic Model – Stress – He on Making – Organizational Structures – eadership.	nethod Creatior arned V htroduct s of a C IS Behavior halth and Dispers	 Risk in of Critina of Critina 'alue Arion – Thomas and the second s	dentification ical Patterns nalysis – Prio ne ISO 12207 – Contract M methods of y – Ethical a Virtual Team	 Assessme Cost Sche Periods oritizing Mo Approach anagement Periods Staff Select and Professme and Professme 	ent – Mo edules. ::09 nitoring – Supply – Accep ::09 ion – Mo sional Co unication	nitoring – – Getting / Process tance tivation – incerns – s Genres	CO4		
PERT technique – UNIT - IV Collecting the Dai Project Back to Ta - Types of Contra UNIT - V Staffing in Softwar The Oldham – Ha Working in Teams - Communication	- Monte C Monito ta – Visua arget – Ch ict – Stage Manag re Project ackman J s – Decisio Plans – L	Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – (pring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – Ir as in Contract Placement – Typical Terms jing Peoples and Organizing Team s – Managing People – Organizational E ob Characteristic Model – Stress – He on Making – Organizational Structures –	nethod Creatior arned V htroduct s of a C IS Behavior halth and Dispers	 Risk in of Critina of Critina 'alue Arion – Thomas and the second s	dentification ical Patterns nalysis – Prin le ISO 12207 – Contract M methods of y – Ethical a	 Assessme Cost Sche Periods oritizing Mo Approach anagement Periods Staff Select and Professme and Professme 	ent – Mo edules. ::09 nitoring – Supply – Accep ::09 ion – Mo sional Co	nitoring – – Getting / Process tance tivation – incerns – s Genres			
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PERT technique – JNIT - IV Collecting the Dar Project Back to Ta - Types of Contra JNIT - V Staffing in Softwar The Oldham – Ha Working in Teams - Communication - Communicati	- Monte C Monito ta – Visua arget – Cri ct – Stage Manag re Project: ackman J s – Decisio Plans – L s:45 r, "Project Mike Cotte Mind Map ks ntel , Shafe tny, "Proje Ramesh, bocki "Effect	Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – C oring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – Ir as in Contract Placement – Typical Terms jing Peoples and Organizing Team is – Managing People – Organizational E ob Characteristic Model – Stress – He on Making – Organizational Structures – eadership. Tutorial Periods: - Management Essentials You Always Wa rell and Rajib Mall: "Software Project Ma is for Effective Project Management, 1st er, "Project Management, ISV: A Manag ct Managing Global Software Projects" – I	nethod Creation Arned V htroduct s of a C Dispers Behavior Dispers Prac Inted To nageme edition , erial Ap n, Wiley McGraw /iley Pul	- Risk i of Criti 'alue Ai ion - Th ontract - Best d Safet sed and tical P • Know" ent" - Fi Notion proach' , 2017.	dentification ical Patterns halysis – Price the ISO 12207 – Contract M methods of y – Ethical a Virtual Team eriods: - , Vibrant Pub fth Edition, T Press, 2015. ', Wiley, 2017 ucation (India	- Assessmu - Cost Schu Periods oritizing Mo 7 Approach anagement Periods Staff Select and Profess as - Comm Tot lishers, 202 ata McGrav	ent – Mo edules. ::09 nitoring – Supply – Accep ::09 ion – Mo sional Cc unication al Perio	nitoring – – Getting / Process tance tivation – ncerns – s Genres ds:45 w Delhi, 20	CO4		
PERT technique – JNIT - IV Collecting the Dar Project Back to Ta - Types of Contra JNIT - V Staffing in Softwar The Oldham – Ha Working in Teams - Communication Lecture Periods Text Books I. Kalpesh Ashar 2. Bob Hughes, M 3. Maneesh Dutt, Reference Bool 1. Meredith , Mar 2. Stanley E. Port 3. Gopalaswamy 4. Robert K. Wys 5. Walker Royce:	- Monte C Monito ta – Visua arget – Ch ict – Stage Manag re Project ackman J s – Decisic Plans – L s:45 r, "Project Mike Cotte Mind Map ks ntel , Shaft tny, "Proje Ramesh, socki "Effect : "Software ss	Pass techniques – Critical path (CRM) n arlo Simulation – Resource Allocation – C oring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – Ir is in Contract Placement – Typical Terms jing Peoples and Organizing Team is – Managing People – Organizational E ob Characteristic Model – Stress – He on Making – Organizational Structures – eadership. Tutorial Periods: - Management Essentials You Always Wa rell and Rajib Mall: "Software Project Ma s for Effective Project Management, 1st er, "Project Management, ISV: A Manag ct Management For Dummies", Fifth editior "Managing Global Software Projects" – I ctive Software Project Management" – W e Project Management"- Addison-Wesley	nethod Creation Arned V htroduct s of a C Sehavior balth and Dispers Prac Prac edition , erial Ap h, Wiley McGraw (iley Pul v, 1998.	- Risk in of Criti 'alue Ai ion - Thontract - Best d Safet sed and tical P • Know" ent" - Fi Notion proach' , 2017. ' Hill Ed blicatior	dentification ical Patterns halysis – Price he ISO 12207 – Contract M methods of y – Ethical a Virtual Tean eriods: - , Vibrant Pub fth Edition, T Press, 2015. ', Wiley, 2017 ucation (India h, 2011.	- Assessmu - Cost Schu Periods oritizing Mo 7 Approach anagement Periods Staff Select and Profess as - Comm Tot lishers, 202 ata McGrav	ent – Mo edules. ::09 nitoring – Supply – Accep ::09 ion – Mo sional Cc unication al Perio	nitoring – – Getting / Process tance tivation – ncerns – s Genres ds:45 w Delhi, 20	CO4		
PERT technique – JNIT - IV Collecting the Dar Project Back to Ta - Types of Contra JNIT - V Staffing in Softwar The Oldham – Ha Working in Teams - Communication Lecture Periods Text Books I. Kalpesh Ashar 2. Bob Hughes, M 3. Maneesh Dutt, Reference Bool 1. Meredith , Mar 2. Stanley E. Port 3. Gopalaswamy 4. Robert K. Wys 5. Walker Royce: Web Reference 1. https://www.pm 2. https://www.sim	- Monte C Monito ta – Visua arget – Ch ct – Stage Manag re Project: ackman J s – Decisio Plans – L s:45 ; "Project Mike Cotte Mind Map ks ntel , Shafe tny, "Proje Ramesh, socki "Effe siorg/learn plilearn.co	Pass techniques – Critical path (CRM) m arlo Simulation – Resource Allocation – G oring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – In as in Contract Placement – Typical Terms jing Peoples and Organizing Team is – Managing People – Organizational E ob Characteristic Model – Stress – He on Making – Organizational Structures – eadership. Tutorial Periods: - Management Essentials You Always Wa rell and Rajib Mall: "Software Project Ma s for Effective Project Management, 1st er, "Project Management, ISV: A Managi ct Management For Dummies", Fifth edition "Managing Global Software Projects" – N ctive Software Project Management" – W e Project Management"- Addison-Wesley	nethod Creation Arned V htroduct s of a C DS Behavior halth and Dispers Prac Inted To nageme edition , erial Ap n, Wiley McGraw /iley Pul /, 1998.	- Risk in of Criti 'alue An ion - Th ontract - Best d Safet sed and tical P tical P transformer (Notion proach' , 2017. Hill Ed bolication	dentification ical Patterns nalysis – Prie ne ISO 12207 – Contract M methods of y – Ethical a Virtual Team eriods: - , Vibrant Pub fth Edition, T Press, 2015. ', Wiley, 2017 ucation (India n, 2011.	- Assessmu - Cost Schu Periods oritizing Mo 7 Approach anagement Periods Staff Select and Profess as - Comm Tot lishers, 202 ata McGrav	ent – Mo edules. ::09 nitoring – Supply – Accep ::09 ion – Mo sional Cc unication al Perio	nitoring – – Getting / Process tance tivation – ncerns – s Genres ds:45 w Delhi, 20	CO4		
PERT technique – UNIT - IV Collecting the Dar Project Back to Ta - Types of Contra UNIT - V Staffing in Softwar The Oldham – Ha Working in Teams - Communication Lecture Periods Text Books 1. Kalpesh Ashar 2. Bob Hughes, M 3. Maneesh Dutt, Reference Bool 1. Meredith , Mar 2. Stanley E. Port 3. Gopalaswamy 4. Robert K. Wys 5. Walker Royce: Web Reference 1. https://www.pm 2. https://www.tuto 4. https://www.java	- Monte C Monito ta – Visua arget – Cr ict – Stage Manag re Project: ackman J s – Decisio Plans – L s:45 - r, "Project Mind Map ks ntel , Shafe tny, "Proje Ramesh, socki "Effer : "Software si - Software i.org/learn applilearn.co prialspoint atpoint.co	Pass techniques – Critical path (CRM) m arlo Simulation – Resource Allocation – G oring and Control alizing Progress – Cost Monitoring – Ea ange Control – Managing Contracts – In as in Contract Placement – Typical Terms jing Peoples and Organizing Team is – Managing People – Organizational E ob Characteristic Model – Stress – He on Making – Organizational Structures – eadership. Tutorial Periods: - Management Essentials You Always Wa rell and Rajib Mall: "Software Project Ma s for Effective Project Management, 1st er, "Project Management, ISV: A Manag ct Management For Dummies", Fifth edition "Managing Global Software Projects" – I ctive Software Project Management" – W e Project Management"- Addison-Wesley	nethod - Creatior arned V htroduct s of a C Behavior alth and Dispers Prac nted To nageme edition , erial Ap n, Wiley McGraw /iley Pul v, 1998. ent-officion	- Risk i of Criti 'alue Ai ion - Th ontract - Best d Safet sed and tical P • Know" ent" - Fi Notion proach' , 2017. • Hill Ed oblicatior e-struct	dentification ical Patterns halysis – Price he ISO 12207 – Contract M methods of y – Ethical a Virtual Team eriods: - , Vibrant Pub fth Edition, T Press, 2015. ', Wiley, 2017 ucation (India h, 2011. ure-4613 ent.html	 Assessme - Cost Schere Periods Periods Approach anagement Periods Staff Select and Professions - Comm Tot lishers, 202 ata McGrav Approach /ul>	ent – Mo edules. ::09 nitoring – Supply – Accep ::09 ion – Mo sional Cc unication al Perio	nitoring – – Getting / Process tance tivation – ncerns – s Genres ds:45 w Delhi, 20	CO4		

COs		Program Outcomes (POs)													Program Specific Outcomes (PSOs)		
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	P011	PO12	PSO1	PSO2	PSO3		
1	1	2	1	2	1	1	1	2	3	2	1	2	3	1	2		
2	1	2	3	2	3	1	1	2	3	2	3	2	3	1	2		
3	2	3	3	2	3	2	2	2	2	3	3	2	2	2	2		
4	2	1	3	3	3	2	2	2	3	1	3	3	3	2	2		
5	2	3	3	3	3	2	2	2	3	3	3	3	3	2	2		

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

	Continu	ious Asse	End Semester				
Assessment	CAT 1	CAT 1 CAT 2 Model Exam Assignment* Attendance					Total Marks
Marks	5	5	5	5	5	75	100

OPEN ELECTIVES

Department	Computer Science and Engineering	Progran	nme: B.	Tech				
Semester	V	Course	Catego	ry: OE	Enc	Semeste	r Exam Typ	be: TE
Course Code	U23CSO501	Perio	ds/Wee	k	Credit	Max	ximum Mar	ks
		L	Т	Р	С	CAM	ESE	ТМ
Course Name	STRUCTURED QUERY LANGUAGE	3	-	-	3	25	75	100
	(Offered to ECE, EEE, ICE, ME	CH, CIVIL,	BME ar	nd MECH	ITRONICS)			
Prerequisite	Basic Computer Knowledge							
	On completion of the course, the students	s will be at	ole to				ВТ Мар	• •
							(Highest	Level)
Course	CO1 Explain and utilize core concepts of \$		es.				K	2
Course Outcomes	CO2 Implement DDL and DML Command	S.					K	3
outcomes	CO3 Implement DCL, DQL and TCL.						K	3
	CO4 Implement Joins and Subqueries						K4	1
	CO5 Implement DCL and TCL commands	•					K	3
JNIT - I	SQL Basics				Periods:09	9		
ntroduction to da	tabase – History- Installation - Syntax -Data 1	Types - Se	lect – S	elect dis	tinct – Whei	re – And –	Or – Not -	-CO1
Constraints and its	····· · ·							
Data Definition La	DDL and DML anguage (DDL): Create – Alter: Add – Modify –				Periods:09)		CO2
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Data Definition La Data Manipulatio UNIT - III DQL: Select - Typ	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern	Method - l						
Data Definition La Data Manipulatio UNIT - III DQL: Select - Typ Drder by: asc – d	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function.	Method - l			Periods:09	•		
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Data Definition La Data Manipulatio UNIT - III DQL: Select - Typ Drder by: asc – d UNIT - IV Joins : Inner Join	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View	Method - U Matching.			Periods:09 Periods:09)		CO3
Data Definition La Data Manipulatio JNIT - III DQL: Select - Typ Drder by: asc – d JNIT - IV Joins : Inner Join JNIT - V	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL	Method - L Matching. vs.	Jpdate –		Periods:09)		CO2 CO3 CO4
Data Definition La Data Manipulatio JNIT - III DQL: Select - Typ Drder by: asc – d JNIT - IV Joins : Inner Join JNIT - V	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL oke, TCL: Commit – Rollback – Savepoint - Buil	Method - L Matching. vs.	Jpdate –	- Delete.	Periods:09 Periods:09 Periods:09)	ls:45	CO 3
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Data Definition La Data Manipulatio JNIT - III DQL: Select - Typ Drder by: asc – d JNIT - IV JOINS : Inner Join JNIT - V DCL: Grant – Rev Lecture Periods:4 Fext Books	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL oke, TCL: Commit – Rollback – Savepoint - Buil 15 Tutorial Periods: -	Method - L Matching. vs. It-in Functio Practica Itabase Sys	Jpdate – ons. I Period	- Delete.	Periods:09 Periods:09 Periods:09 T McGraw-Hill))) [;] otal Period Education,2		CO3
Data Definition La Data Manipulatio JNIT - III DQL: Select - Typ Drder by: asc – d JNIT - IV Ioins : Inner Join JNIT - V DCL: Grant – Rev Lecture Periods:4 Fext Books . Abraham Silbe 2. James R. Grof	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL oke, TCL: Commit – Rollback – Savepoint - Buil 15 Tutorial Periods: - erschatz, Henry F. Korth, and S. Sudarshan," Da f and Paul N. Weinberg, "SQL: The Complete	Method - L Matching. vs. It-in Function Practica Itabase Sys Refe	Jpdate – ons. I Period stem Col prence",	- Delete.	Periods:09 Periods:09 Periods:09))) [;] otal Period Education,2		CO3
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Data Definition La Data Manipulatio JNIT - III DQL: Select - Typ Drder by: asc - d JNIT - IV Joins : Inner Join JNIT - V DCL: Grant - Rev Lecture Periods:4 Fext Books . Abraham Silbe 2. James R. Grof 3. Markus Winan Reference Books 1. Renee M. P.	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL oke, TCL: Commit – Rollback – Savepoint - Buil 5 Tutorial Periods: - erschatz, Henry F. Korth, and S. Sudarshan," Da f and Paul N. Weinberg, "SQL: The Complete d, "SQL Performance Explained", Markus Winar Teate, "SQL for Data Scientists: A Beginner's G	Method - L Matching. vs. It-in Functio Practica Itabase Sys Refe nd Publishin Guide for Bu	Jpdate – ons. I Period stem Col prence", ng,2012. uilding D	- Delete.	Periods:09 Periods:09 Periods:09 T McGraw-Hill Hill Educatio or Analysis",) otal Period Education,2 n,2010. Wiley,2021.	2020.	CO3
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Data Definition La Data Manipulation JNIT - III DQL: Select - Typ Drder by: asc - d JNIT - IV Ioins : Inner Join JNIT - V DCL: Grant - Rev DCL: Grant - Rev Abraham Silbe DCL: Grant - Rev DCL: Grant - Rev Abraham Silbe DCL: Grant - Rev DCL: Grant - Rev Abraham Silbe DCL: Grant - Rev DCL: Gr	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL oke, TCL: Commit – Rollback – Savepoint - Buil 5 Tutorial Periods: - erschatz, Henry F. Korth, and S. Sudarshan," Da f and Paul N. Weinberg, "SQL: The Complete d, "SQL Performance Explained", Markus Winar Teate, "SQL for Data Scientists: A Beginner's G Barros, "Practical SQL: A Beginner's Guide to St "Pro SQL Server 2022 Administration: A Guide u, "Mastering SQL Fundamentals", Second Edit	Method - L Matching. vs. It-in Function Practica Itabase System Reference Note of the Busin Guide for Busin Orytelling w for the Mo ion, O'Reill	Jpdate – Dns. I Period stem Col stem Co	- Delete. - Delete. - S: - - McGraw- - Atasets fu - No Sta A", Apres	Periods:09 Periods:09 Periods:09 T McGraw-Hill Hill Educatio or Analysis", urch Press,20 is,2022.) otal Period Education,2 n,2010. Wiley,2021. 22 (2nd Ed	2020. ition).	CO3
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Data Definition La Data Manipulation JNIT - III DQL: Select - Typ Drder by: asc - d JNIT - IV Joins : Inner Join JNIT - V DCL: Grant - Rev DCL: Grant - Rev DCL	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL oke, TCL: Commit – Rollback – Savepoint - Buil 5 Tutorial Periods: - erschatz, Henry F. Korth, and S. Sudarshan," Da f and Paul N. Weinberg, "SQL: The Complete d, "SQL Performance Explained", Markus Winar Teate, "SQL for Data Scientists: A Beginner's G Barros, "Practical SQL: A Beginner's Guide to St "Pro SQL Server 2022 Administration: A Guide u, "Mastering SQL Fundamentals", Second Editidorow; Shannon Bradshaw, "MongoDB: The De gitalocean.com/community/conceptual-articles/a chopedia.com/6/28832/enterprise/databases/int mc.com/blogs/dbms-database-management-sys	Method - L Matching. vs. It-in Function Practica Itabase Sys Refe nd Publishin Guide for Bu orytelling w for the Mo ion, O'Reill finitive Guide an-introduc troduction-1	Jpdate – Dns. I Period stem Col erence", I ng,2012 uilding D vith Data dern DB y,2009 de", 3rd I	- Delete.	Periods:09 Periods:09 Periods:09 Periods:09 T McGraw-Hill Hill Educatio or Analysis",1 urch Press,20 s,2022. D'Reilly Media) Fotal Period Education,2 n,2010. Wiley,2021. 22 (2nd Ed	2020. ition).	CO3
Data Definition La Data Manipulation JNIT - III DQL: Select - Typ Drder by: asc - d JNIT - IV Joins : Inner Join JNIT - V DCL: Grant - Rev DCL: Grant - Rev DCL	anguage (DDL): Create – Alter: Add – Modify – n Language (DML): Insert – Types of Insertion DQL, Order by and Group by es of Selection – Aggregate Functions - Pattern esc. Group by function. Joins, Subquery and Views – Outer Join. Subquery – Set Operations – View DCL and TCL oke, TCL: Commit – Rollback – Savepoint - Buil 5 Tutorial Periods: - erschatz, Henry F. Korth, and S. Sudarshan," Da f and Paul N. Weinberg, "SQL: The Complete d, "SQL Performance Explained", Markus Winar Teate, "SQL for Data Scientists: A Beginner's G Barros, "Practical SQL: A Beginner's Guide to St "Pro SQL Server 2022 Administration: A Guide u, "Mastering SQL Fundamentals", Second Editidorow; Shannon Bradshaw, "MongoDB: The De gitalocean.com/community/conceptual-articles/a	Method - L Matching. vs. It-in Function Practica Itabase Sys Refe nd Publishin Guide for Bu orytelling w for the Mo ion, O'Reill finitive Guide an-introduc troduction-1	Jpdate – Dns. I Period stem Col erence", I ng,2012 uilding D vith Data dern DB y,2009 de", 3rd I	- Delete.	Periods:09 Periods:09 Periods:09 Periods:09 T McGraw-Hill Hill Educatio or Analysis",1 urch Press,20 s,2022. D'Reilly Media) Fotal Period Education,2 n,2010. Wiley,2021. 22 (2nd Ed	2020. ition).	CO3

* TE – Theory Exam, LE – Lab Exam

					Pro	gram O	utcom	es (POs	5)					gram Spe comes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	1	2	-	1	-	-	-	2	1	-	1	3	2	2
CO 2	2	1	2	-	1	-	-	-	2	1	-	1	3	2	2
CO 3	2	1	2	-	1	-	-	-	2	1	-	1	3	2	2
CO 4	3	2	3	-	2	-	-	-	2	1	-	1	3	2	2
CO 5	2	1	2	-	1	-	-	-	2	1	-	1	3	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

		Cont	inuous Assessm	ent Marks (CAM)		End Semester Examination	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*		(ESE) Marks	Marks
Marks	5	5	5	5	5	75	100

Evaluation Methods

Department	Comput	ter Science and Engineering	Pro	gramm	e: B.Te	ch				
Semester	V		Co	urse Ca	tegory:	OE	End	Semeste	r Exam Typ	be: TE
Course Code	U23CSC	7502		Periods	/Week	Cred	lit	Max	ximum Mar	ks
			L	Т	P	C	·····	CAM	ESE	TM
Course Name	NETWO	ITER PERIPHERALS AND	3	-	-	3		25	75	100
		(Offered to ECE, EEE, ICE, MECH,	CIVIL	, BME a	nd MEC	HTRO	NICS)			<u> </u>
Prerequisite	NIL									
·····	On com	pletion of the course, the stude	nts w	ill be al	ole to				BT Map (Highest I	
•	CO1	Explain the system components and n	nemor	/.					K2	
Course Outcomes	CO2	Explain the motherboard designs and	its con	nponents	3.				K3	}
	CO3	Classify the various Storage devices.							K 4	ļ
	CO4	Understand the purpose of various I/O) peripl	nerals.					K4	
	CO5	Simulate various Networking Component	ents.						K2	2
UNIT - I	Introdu	ction to PC and Memory				Per	iods:	:09		
		ers - Overview of Systems and Com								CO1
Memory Packages -	- Logical M	atures - Intel Core X-Series Processo emory Organizations - Memory Consid stalling Memory - CPU Coolers.								
UNIT - II	······································	board Designs				Per	iods:	:09		<u>.</u>
		BM PC XT -IBM PC AT - The Baby AT	- Micr	o-AT -LF	Y and N	/ini-LP	X - AT	X - Mini-A	TX - NLX -	CO2
Active Motherboards Expansion Slots – I		s. M.2 Expansion Card – PCIE GEN3 N	1.2 - Ir	itel D850)GB - U	paradir	na a N	/lother Bo	ard -DDR4	
BOOST - Chipsets	- Intel -Nor	n-Intel Chipsets - North Bridge - South	n Bridg	e - CMC	DS - Mo					
Live Dash OLED - N UNIT - III		Connectivity 802.11 AD WIFI - USB 3 supplies and storage devices	.1 GEI	V2 Contr	oller.	Por	iods:	00		
		anagement - Modular – Non-Modular	r - Coi	ncepts o	f Switch				ntial Power	CO3
	Managemer	nt -The Floppy Disk Drive - Magnetic S								000
UNIT - IV		pherals and Bus Architecture				<u>.</u>	iods:			
		ning Diagram - IEEE1284 Modes - Asy Sound Cards – ISA - PCI – AGP.	nchro	nous Co	mmunic	ation -	Serial	Port Sign	als - Video	CO4
UNIT – V		k Components				Per	iods:	:09		L
		e - Ethernet Cable - FIBER Optics – ess Point - PCI Wireless Card - USB W					h - M	anageable	e Switch –	CO5
Lecture Periods:	:45	Tutorial Periods: -	Pra	ctical I	Periods	5: -		Total Pe	eriods:45	<u>.</u>
Text Books										
2. Ron Gilster, "PC 3. Craig Zacker and 4. Mike Meyers, "Int	Hardware: John Rour troduction to	Shooting, maintaining and Repairing A Beginner's Guide", Tata McGraw-Hi ke, "The complete reference: PC hard o PC Hardware and Troubleshooting", and Clones hardware trouble shooting	II , 200 ware", Tata N	1. Tata Mo ⁄IcGraw-	:Graw-H Hill.	lill.		II 2002		
Reference Books	S									
2.Mastering Pc Hard 3.Scott Mueller, "Up 4.Hans Peter Messr 5.Scott Mueller, "Up	dware And ograding an mer, "The Ir ograding an	rking (2nd ed.) January 2021. Networking – big Book Jan 2014 d Repairing PCs", Pearson Education, ndispensable PC Hardware Book", Add d Repairing Laptops", Pearson Educat rogrammer"s Guide to I/O, CPUs, and	dison- ^v tion, 3ı	Nesley, d Editior	4th Editi 1, 2012.			ication, 2n	d Edition	
Web References										
2.https://www.javatp 3.https://www.udem 4.https://www.tutoria 5.https://www.udem	point.com/co ny.com/cour alspoint.con ny.com/cour	Irses?query=computer%20hardware omputer-hardware-and-networking-com- rse/learn-computer-basics-hardware-n- n/computer_fundamentals/computer_r rse/computer-hardware-operating-system of Exam JE – Lab Exam	etwork networ	king.htm		als				
5. B. Govindarajulu, Reference Books 1.Computer hardwa 2.Mastering Pc Hard 3.Scott Mueller, "Up 4.Hans Peter Messr 5.Scott Mueller, "Up 6."The undocumente Web References 1.https://www.cours 2.https://www.javatp 3.https://www.udem 4.https://www.udem	, "IBM PC a s are & netwo dware And ograding an mer, "The Ir ograding an ted PC: A P sera.org/cou point.com/cou alspoint.com ny.com/cour	nd Clones hardware trouble shooting rking (2nd ed.) January 2021. Networking – big Book Jan 2014 d Repairing PCs", Pearson Education, ndispensable PC Hardware Book", Add d Repairing Laptops", Pearson Educat rogrammer"s Guide to I/O, CPUs, and urses?query=computer%20hardware omputer-hardware-and-networking-con rse/learn-computer-basics-hardware-n n/computer_fundamentals/computer_r	and m , 21st I dison- tion, 3i Fixed urse etwork network	Edition, 2 Wesley, 7 d Editior Memory -comple king.htm	ce", Tata 2013. 4th Editi n, 2012. v Areas" te-tutoria	on, 200 Pearso)1.		d Edition	

			•• •		Pro	gram C	outcom	es (PO	s)					gram Spe comes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO 1	2	1	2	-	1	-	-	-	-	1	-	-	3	-	-
CO 2	2	1	2	-	1	-	-	-	-	1		-	2	-	-
CO 3	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-
CO 4	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-
CO 5	3	1	2	-	1	-	-	-	-	1	-	-	3	-	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

			Continuous	Assessment Mark	s (CAM)	End	_
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department		uter Science and Engir	neering	Program				I			
Semester	VI			Course	<u> </u>		[L		er Exam	
Course Code	U23IT	TC03		Perio	ds / We T	eek P	Crec C		Ma: CAM	ximum Ma ESE	arks TM
Course Name				3	0	р 0	3		25	_⊃⊑ 75	100
			Common t	o CSE, IT a	-	-	.		20		100
Prerequisite	Mathe	ematics									
	On c	ompletion of the course	the stud	lonte will b	abla	ło				BT M	apping
		-	-			.0					st Level)
		Explain the basic concepts Apply supervised algorithm		•	ion prob	lome					(2
Course	CO2	Explain the need for ensen									(3
Outcomes	CO3	-									(2
	CO4	Apply unsupervised and re		•	•		us probler	ms			(3
	CO5	Apply dimensionality reduc	tion and op	timization teo	chniques	3				ł	(3
Unit- I		luction					Period				
Unsupervised lea	rning – F	ming; Examples of Machine Reinforcement learning; Pre into probabilities – Basic st	liminaries: V	Veight space	– Curse	e of dime					
Unit- II	Supe	rvised Learning					Period	s: 09			
		ear Discriminants: Brain an rceptron: Forward and Bacl						Linear s	separab	oility – Line	^{ar} CO2
Unit- III	Prob	abilistic Learning, Lear	ning with	Trees			Period	s: 09			i
		ussian mixture models – N sion trees – Classification e									_ CO3
Unit- IV	Unsu	pervised Learning, Rei	nforceme	nt Learning	J		Period	s: 09			
		algorithm; Reinforcement le ov decision process – Value				e – Rew	vard funct	ion – D	iscount	ting – Actio	^{on} CO4
Unit- V	Dime	nsionality Reduction, C	Optimizatio	on Techniq	ues		Period	s: 09			
		Techniques: Linear Discrim njugate gradients – Search						mizatior	n and Se	earch: Leas	st- CO5
Lecture Period	s: 45	Tutorial Perio	ds:	Practica	al Perio	ods: -		Tota	l Peric	ods: 45	
Text Books	AL. 11	. (1	• •		•						
2. Stephe Learnin	n Marsl Ig and P	n, "Introduction to Mach and, "Machine Learning attern Recognition Serie	- An Algor s, 2015	rithmic Pers	pective	e", 2 nd E	dition, C		n and	Hall/CRC	Machine
3. Oliver 1 Reference Boo		d, "Machine Learning for	Absolute	Beginners"	,3™ Edi	tion, 20	121				
1. Jason B	ell, "Mac ach, "Ma	hine learning – Hands on fo chine Learning: The Art an									Universit
3. Richert,	Willi, "Bu	uilding machine learning sys "Machine Learning", McGra				hing, 20	13.				
5. Y S Abu	-Mostafa	a, M Magdon-Ismail, H T Lir	, "Learning	from Data", A	AML Bo	ok Publi	shers, 201	12			
Neb Reference											
 https://w https://m 	ww.cour	/courses/106/105/1061051 sera.org/learn/machine-lea earningmastery.com/ atascience.com/machine-lea	rning								
		yticsvidhya.com/blog/2017/			arning-a	lgorithm	s/				

COs					Prog	gram O	utcome	es (POs)				Program Specific Outcomes (PSOs)		
	P01	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	2	-	-	-	-	-	-	-	-	-	3	1	1
2	3	2	2	-	-	-	-	-	-	-	-	-	3	1	1
3	3	2	2	-	-	-	-	-	-	-	-	-	3	1	1
4	3	2	2	-	-	-	-	-	-	-	-	-	3	1	1
5	3	2	2	-	-	-	-	-	-	-	-	-	3	1	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Method

		Continuous	Assessment N	larks (CAM)		End Semester	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*		Examination (ESE) Marks	Total Marks
Marks	1(0	5	5	5	75	100

Department	Comp	uter Science and Engineering	Program	me: B.	Tech.				
Semester	VI		Course C	Categor	y: PC	End	Semester	Exam Type:	TE
Course Code	U23C	ST605	Perio	ds/Wee	ek	Credit	Ma	kimum Mark	s
Course Code			L	Т	Р	С	CAM	ESE	TM
Course Name	DESIC BOTS	SNING AND BUILDING OF	3	-	-	3	25	75	100
			CSE						
Prerequisite	NIL								
	On co	mpletion of the course, the stud						BT Map (Highest)	Level)
Course	CO1	To provide insights on robotic proces anywhere		``	A) techno	logy and auto	mation	K	
Outcomes	CO2	To understand the feature of Web Co		n				K	
	CO3	To design and develop bot using bot	Creator					K	3
	CO4	To understand Metabot functionality						K	3
	CO5	To develop and Train IQ Bots						K	3
UNIT - I		uction to Robotic Process Auto							
	cycle– R	ases – Automation Anywhere Enterpr PA features and capabilities – Ways t			rol Room	, Bot Creator,	and Bot R	unner)- RPA	⁴ CO1
UNIT - II		Control Room and Client				Periods:09			
in Progress and Scheo and Device Pools) - W	luled Ta orkload igure Se	Dashboard (Home, Bots, Devices, Auska) - Bots (View Bots Uploaded and (Queues and SLA Calculator) - Audit titings, Users, Roles, License and M	Credential Log (View	s) - Dev Activitie	vices (Vie es Loggeo	w Developme which are as	ent and Rui sociated w	ntime Clients vith Web CR	s CO2
UNIT - III	,	reator				Periods:09			
		 Loop Command – Excel Commar 	d – Datab	ase Co	ommand			mand - XMI	
Command - Terminal E	mulator	Command - PDF Integration Comman	nd - FTP Co	omman	d - PGP (Command - Ol	oject Clonir	ng Commano	d CO3
- Error Handling Comm UNIT - IV		anage Windows Control Command - \ Bot and Bot Insight	Norkflow D	Designe	r - Repor	Designer - B Periods:09		es	
-		Bot With Screen - MetaBot with DLL- I	ntroductio	n to Rot	Insight -			Operationa	
Analytics.	,				moight		-	operationa	CO 4
UNIT - V	IQ Bo					Periods:09			
		iew of Cognitive Automation-Setting ntegrating IQ Bots with Other Automat	ion Anywh	ere Bot	S.				CO5
Lecture Periods:45		Tutorial Periods: -	Practic	al Peri	ods: -	T	otal Peric	ods:45	
2022 2. Will Neimat, " 3. Alok Mani Tr	Masterir ipathi, "L	elementation Guide: A Practical Approved B RPA with Automation Anywhere: Ex earning Robotic Process Automation: utomation Anywhere", Packt Publishir	opert Guide Create Sc	e for Bo	t Develop	ers", Apress,	2021.	·	
Reference Books			-			_	_		
Marshall Cave	endish Ir	tive Automation and Robotic Process Iternational, 2020 ocess Automation with Automation Ar			-				
		Bots", BPB Publications, 2020.	, , , , , , , , , , , , , , , , , , ,					to 2001g11, 2	sevelep,
3. Gerardus Blo	kdyk, "R	obotic Process Automation: A Guide to Inds-On Robotic Process Automation							n and
5. Pascal Borne	t, Ian Ba	:", Apress, 2020. rkin, Jochen Wirtz, "Intelligent Automa	ation: Welc	ome to	the World	d of Hyperauto	omation", V	/orld Scienti	fic
Publishing, 20 Web References	J2U.								
	utomatic	nanywhere.com							
2. https://www.a									
-									
	sity.autor	nationanywhere.com							

5. https://www.simplilearn.com/tutorials/automation-anywhere-tutorial

* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs	Progr	am Ou	tcome	s (POs	i)								Program Specific Outcomes (PSOs)		
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	2	1	1	1	2	1	2	-	-	1	1	2	2	3
2	3	2	1	1	1	2	1	2	-	-	1	1	2	2	3
3	3	2	1	2	2	2	1	2	-	-	3	3	2	3	3
4	3	2	2	2	3	2	1	2	-	-	3	3	2	3	3
5	3	2	2	2	3	2	1	2	-	-	3	3	2	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

		Con	tinuous Assess	sment Marks (CAI	M)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department	Comp	uter Science and Engineering	Program	nme: B.	Tech				
Semester	VI		Course		ry: PC	E	nd Semes	ter Exam ⁻	Туре: ТЕ
Course Code	U23C	ST606	Periods	/Week		Credit	Maxim	um Marks	5
			L	T	Р	C	CAM	ESE	TM
Course Name	ANIM	ATION AND VISUAL EFFECTS	3	-	-	3	25	75	100
			CSE						
Prerequisite		of Animation							
		mpletion of the course, the stud	lents will b	e able	to			BT Ma (Highes	t Level)
	CO1	Understand the concepts of VF	X and Anii	mation				K	2
Course	CO2	Design Animation Effects using	g After Effe	cts.				K	4
Outcomes	CO3	Design Animation Effects using	g Premier F	۲o.				K	4
	CO4	Understand Blender tools and	Design cha	aracter o	design.			K	4
	CO5	Design and modeling using Ble	ender.					K	4
UNIT - I	Vfx Ar	nd Animation				Periods	:09		
Cons of Visual E of Animation – A UNIT - II Usage of Platfor	Effects – Applicatio Learni m – Tool	X – Brief History of VFX - Need Applications of VFX – Comparisons of Animation – Career in Anir ing After Effects s used – Plugins & Types – Impo – Color Play – Visual Effects –	on betweer nation – Pr orts & Expo	n VFX a os & Co orts – M	nd Anii ons of <i>I</i> asking	mation. An Animation. Periods – Object D	imation – F : 09 Puplication	History – Motion	CO1
Encoder.		ing Premiere Pro	Render Ta		Jvance	Periods			
		erence between After Effects & P	Promioro Pr		octe & I			Solitting	CO3
& its work – LUT	s & its a	pplication – Working with Creativ				Advance	Options.	Spinning	005
UNIT - IV		uction to Blender & Tools				Periods			
Design – Using	Other De		ols – The B	lender	Scene ·	-		haracter	CO4
UNIT - V		er Works		– • • •		Periods		<u></u>	
		lender – Character Modelling – I er Page – Lighting & Compositio		g, Painti	ing & S	shaders – (Character H	Rigging	CO5
Lecture Period		Tutorial Periods: -	Practic	al Peric	ods: -		Total Per	iods:45	
Text Books									
2. Maxim Jago, "A	dobe Pre nster, "Ble	d, "Adobe After Effects Classroom in miere Pro Classroom in a Book" Pea ender For Dummies" John Wiley & S	arson Educa			23.			
 Chad Perkins Joe Dockery, Trotter Burt," Adobe Press Maxim Jago, Oscar Baech Web Reference 	,"The Afte Conrad C Mastering , 2024. "Adobe P ler and Xu	er Effects Illusionist: All the Effects in Chavez,"Learn Adobe After Effects C g Adobe Premiere Pro 2024: Comple Premiere Pro Classroom in a Book", ury Greer, "Blender 3D By Example"	C for Visual ete Step-by- Adobe Pres	Effects Step Vic s, 2024.	and Mo leo Edit	tion Graphic	s", Peachpi		
 https://www.ro https://www.pr https://concep https://www.vis 	cketstock emiumbe tartempire sualeffect	tion.com/animation-for-beginners/ .com/blog/learn-5-simple-animation- at.com/blog/text-effect-premiere-pro e.com/blender-animation-tutorials/ ssociety.com/ am, LE – Lab Exam		effects/					

TE – Theory Exam, LE – Lab Exam

COs	Prog	ram C	outcon	nes (P	Os)								Program Specific Outcomes (PSOs)		
	PO1	01 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO1											PSO1	PSO2	PSO3
1	2	2											-	-	-
2	2	1	3	-	-	1	-	-	-	-	-	-	-	-	-
3	2	2	3	-	2	1	-	1	-	-	-	-	-	-	-
4	2	2	3	2	2	2	-	2	-	-	-	-	-	-	-
5	2	1											-	-	-

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

	Continu	Jous Asse		End	Total		
Assessment	CAT 1	CAT 2	Model Exam	Assignment *	Attendance	Semester Examination (ESE) Marks	Marks
Marks	5	5	5	5	5	75	100

Department		uter Science and Engineering	Program			······			
Semester	VI		Course C		y: PC		······	ster Exam Ty	
Course Code	U23CS	SB602	Periods/	Week		Credit	Maxi	mum Marks	
			L	Т	Ρ	С	CAM	ESE	TM
Course Name		CHAIN CONCEPTS AND	2	-	2	3	50	50	100
			CSE						•••••••••••••••••••••••••••••••••••••••
Prerequisite	-								
	On coi	mpletion of the course, the stud	lents will be	e able t	:0			BT Mapp (Highest Le	-
	CO1	Understand the fundamentals of B	Blockchain.					K2	
Course	CO2	Understand the concepts of Crypto	ography.					КЗ	
Outcomes	CO3	Analyze real-world case studies.						К3	
	CO4	Implement Blockchain concepts.						К2	
	CO5	Explore applications of Blockchain	.					К2	
UNIT - I	Introd	uction to Blockchain				Periods:	10		
application-Soft &	Hard Forl	 History – CAP theorem and blockc Private and Public blockchain. Dis bil Attack-Energy utilization and alter 	tributed Cons						C01
UNIT - II	Found	lation to Cryptography				Periods:	10		
Symmetric Key Encryp	otion Simple / - Factori	ny: Hash function, Digital Signature e DES, Linear and Differential crypt zation problem and RSA-Diffie Hell t- SHA-1- MD5.	tanalysis- DE	S- Mod	es of o	peration- T	riple DES, A	ES – Public	CO2
UNIT - III		chain Applications				Periods:	10		-
types– Bitcoin ins Transaction Mana	tallation – agement: \$	sactions types – The structure of a b Bitcoin programming and the comr Serializability – Recoverability – Tran	mand-line inte	erface -	-Crypto	currency Ex nart Contra	cts: Automat	nap Indices.	CO3
	1	atory Exercises		•		Periods:1	15		
 Impleme Impleme Impleme Impleme Impleme the funct 	ntation of ntation of nting the r ntation of ionality of	constructing a Merkle tree with block Block construction using blockchain blockchain using Java programming running of the blockchain node several consensus techniques (such the network. a blockchain token (e.g., ERC-20) a	Principles language Proof of Wo	rk and I		f Stake) and	d see how th	ey affect	CO4
UNIT - V	Labor	atory Exercises				Periods:	15		
8. impleme 9. Impleme 10. Impleme 11. Impleme	nting bloc nt and cor nt the set- nt the bloc	Blockchain-based peer-to-peer netw k chain ideas to the development of nfigure Go Ethereum and the Mist br up interoperability between different ckchain reentrancy attacks and learn ploy a simple smart contract on a blo	a cryptocurre rowser. Devel t blockchains n how to preve	op and (e.g., P ent ther	test a s olkadot n	, Cosmos).		Chain.	CO5
Lecture Periods:	80	Tutorial Periods: -	Practical I	Periods	: -30		Total Perio	ds:60	
Text Books						- ·-			
2. Don Tap and the	scott and World" Pe	opoulos ,"Mastering Bitcoin: Unlockin Alex Tapscott ,"Blockchain Revoluti nguin, Updated Edition, 2023.	ion: How the	Techno	logy Be	ehind Bitcoi	n Is Changir	ng Money, Bu	isiness
-		e Basics of Bitcoins and Blockchains	-	-					
-		Cryptography and Network Security	: Principles ar	nd Prac	tice", F	earson 8th	Edition, 202	22.	
Reference Books		0							
		Science of the Blockchain",2016	Linter d. C.			A		10	
		Blockchain Basics: A Non-Technical			-	-	$I \in dition, 20^{\circ}$	19.	
		stering Bitcoin: Unlocking Digital Cry	-				2014		
	m vvooa,	``ETHEREUM: A Secure Decentraliz	zeu iransacti	un Leda	лет. Үе	mow paper.	∠∪14.		

Web References

- https://www.thew3university.io/
 https://cryptozombies.io/
 https://decrypt.co/

- 4. https://unchainedcrypto.com/

COs/POs/PSOs Mapping

COs	Prog	ram C	utcon	nes (P	Os)								-	m Speci nes (PSC	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	-	2	2	2	-	1	-	-	1	1	1	1	2	3
2	2	3	1	2	1	1	2	-	3	2	2	2	2	2	3
3	2	3	2	3	2	2	3	-	3	2	1	3	3	2	1
4	2	2	1	3	1	1	2	-	3	2	1	2	2	2	2
5	2	3	1	2	1	1	2	2							

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

Evaluation Method

			Con	tinuous Asses	ssment	Marks (CAM) –	Maximur	n 50 Ma	arks			
	Co	ontinuc	ous Asse	ssment (Theo	ry)	Conti	inuous As	sessm	ent (Pra	ictical)	#End	
Assessment	CAT 1	CAT 2	Model	Attendance	Total	Conduction of Practical	Report	Viva	Total	#End Semester Examination (ESE) Marks (Practical- Internal Evaluation)	#End Semester Examination (ESE) Marks (Theory)	Total Marks
Marks	5	5	5	5	20*	15	10	5	30*	20	75**	100
*T	*To be weighted for 10 Marks		ks	10	*To be weigh	ted for 10	Marks	10	30	*To be weighted for 50 Marks		

Semester	Computer Science and Engineering Programme: B.Tech. er VI Course Category Code: PC *End Semester Exam Type									
Course Code	U23IT	:BC03	Perio	ds / We	eek	Cred	it Max	kimum Ma	arks	
	UZJII	FCUS	L	Т	Р	С	CAM	ESE	TM	
Course Name	MACH	INE LEARNING LABORATORY	0	0	2	1	50	50	100	
		Commor	n to CSE, IT a	nd CCE						
Prerequisite	Math	ematics								
	On cor	npletion of the course, the students	s will be able	to				BT Mapp (Highest		
Course	CO1	Apply python packages and libraries	for various pro	oblems				K	(3	
Outcome	CO2	Apply supervised learning techniques	s for various p	roblems				K	(3	
	CO3	Develop an open-ended solution with world problem.	n data privacy	and ethi	cal conce	erns, for a	a given real-	K	(3	
	CO4	Apply unsupervised and reinforceme	nt learning tec	hniques	for vario	us proble	ems	K	(3	
	CO5	Apply ensemble techniques to solve dimensionality reduction methods	the problems a	and dem	nonstrate	the work	ing of	K	(3	
ist of Exercis	ses									
Applicat	tions of F	etes using decision tree								
 k-Neare Application Analyze 	est Neigh tions of c any two	Random Forest and AdaBoost ensemb ing for Euclidean distance metric bor algorithm limensionality reduction techniques on supervised / unsupervised machine le	any dataset		any of th	e followir	ng real-time app	olications: (a) Text	
 k-Neare Applicat Analyze process 	est Neigh tions of c any two sing (b) Ir	ing for Euclidean distance metric bor algorithm limensionality reduction techniques on	any dataset	hms for		e followir	ng real-time app Total Period		a) Text	
 k-Neare Applicat Analyze process Lecture Period Lecture Period 1. Jason E 2. Peter Fl Press, 2 3. Richert,	est Neigh tions of c any two sing (b) Ir ds: oks Bell, "Mac lach, "Mac 2012. Willi, "B	ing for Euclidean distance metric bor algorithm limensionality reduction techniques on supervised / unsupervised machine le nage processing (c) IoT systems	any dataset earning algorit Practical ers and Techr of Algorithms Python", Pacl	hms for Perioc nical Pro that Mał kt Publis	ls: 30 fessiona ke Sense	ls", 1 st Ec of Data"	Total Period	s: 30 14.		
 k-Neare Applicat Analyze process Analyze Analyze Process Reference Boo Jason E Peter Fl Press, 2 Richert, Tom M Y S Abu 	est Neigh tions of c any two sing (b) Ir ds: oks Bell, "Mad lach, "Mad 2012. Willi, "B Mitchell, u-Mostafi	ing for Euclidean distance metric bor algorithm limensionality reduction techniques on supervised / unsupervised machine le nage processing (c) IoT systems - Tutorial Periods: - chine learning – Hands on for Develop achine Learning: The Art and Science uilding machine learning systems with	any dataset earning algorit Practical ers and Techr of Algorithms Python", Pacl ucation (India),	hms for Perioc hical Pro that Mał that Mał 2013.	is: 30 fessiona ke Sense shing, 201	ls", 1 st Ec of Data" 13.	Total Period lition, Wiley, 20 , 1 st Edition, Ca	s: 30 14.		
 k-Neare Applicat Analyze process Analyze Process Lecture Period Asson E Peter FI Press, 2 Richert, Tom M Y S Abu Web Reference 	est Neigh tions of c any two sing (b) Ir ds: oks Bell, "Mac Bell, "Mac Bell, "Mac ach, "Ma Constant Willi, "B Mitchell, u-Mostafi es	ing for Euclidean distance metric bor algorithm limensionality reduction techniques on supervised / unsupervised machine le nage processing (c) IoT systems - Tutorial Periods: - chine learning – Hands on for Develop achine Learning: The Art and Science uilding machine learning systems with "Machine Learning", McGraw-Hill Edu	any dataset earning algorit Practical ers and Techr of Algorithms Python", Pacl ucation (India),	hms for Perioc hical Pro that Mał that Mał 2013.	is: 30 fessiona ke Sense shing, 201	ls", 1 st Ec of Data" 13.	Total Period lition, Wiley, 20 , 1 st Edition, Ca	s: 30 14.		

COs	Progr	am Ou	itcome	s (POs))								-	m Speci mes (PS	
	PO1													PSO2	PSO3
1	3	3 2 2 - 2 1											3	1	2
2	3	2	2	-	2	-	-	-	1	-	-	2	3	1	2
3	3	3	3	-	2	-	-	-	1	-	-	2	3	1	2
4	3	3 2 3 - 2 1 - 2											3	1	2
5	3	3 2 3 3 2 2 3 -											3	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 – High

	Continuous A	ssessment	Marks (C	AM)			
Assessment	Performance	in practical	classes	Model		End Semester Examination	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	(ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

Department	Computer S	cience and Engineering	Program	me: B.T	ech.									
Semester	VI		Course 0	ategory	: PC	End	Semester	Exam Type	: PE					
C	U23CSP604		Perio	ds/Weeł	‹	Credit	Ma	ximum Mai	rks					
Course Code														
Course Name	DESIGNING BOTS LABO		0	0	2	1	50	50	100					
Prerequisite	Nil		CSE											
	On completi	on of the course, the stu	dents will	be able	e to			BT Ma (Highest						
Cours	CO1 Impleme	nt basic operations on Task E	Sot					·····	(3					
Outcomes	÷	bot to Automate extraction of							(3					
Outcomes		and apply Automation for web							(3					
		metabot for workload automa	ation						(3					
		ng IQ bot for automation							(3					
List of Exercis								i.						
1.Set up Automa	ation Anywhere,	explore the Control Room	, and crea	te your f	first basi	ic Task Bot.								
 6. Create a bot to morning. 7. Automate the 8. Automate the 9. Create a bot to 10. Develop 	o automatically la process of assig process of loggin o download files ing BOT to Crea	ling an email using a bot. aunch a website every day ning customer support tick ng into a web-based email from an FTP server and lo te and deliver invoices.	ets (stored account, d oop throug	d in an E checking n them t	Excel file g for nev to renan	e) to differen w messages ne each file	nt agents u s, and logg based on	using queu ging out. a specific	les.					
_ecture Periods		Tutorial Periods: -	Practic	al Perio	ods:30	T	otal Perio	ods:30						
Reference Bool	-													
Automation Any 2. Alok Mani Tripa Publications, 20 3. Sandeep Kuma	ywhere ,First Editio athi, Robotic Proce 020. ar, Robotic Proces	Asokan, Robotic Process Auto on, Packt Publishing Ltd., 202 ess Automation (RPA) - A Pra s Automation: Guide to Buildi ocess Automation, Packt Pub	20. ctical Guide ng Software	e to Imple e Robots	ementing	RPA in You		-	nd					
Neb Reference	S													
 https://univers https://www.y 	sity.automationany													

COs					Pro	gram	Outcor	nes (P	Os)					gram Spe comes (P	
	PO1	O1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12											PSO1	PSO2	PSO3
1	3	3	2	3	2	2	1	-	2	1	-	2	2	3	2
2	3	2	3	3	2	2	1	-	2	1	-	-	3	3	3
3	3	3	3	3	2	2	2	-	2	1	-	-	3	2	3
4	3	3 2 3 3 2 2 1 - 2 1 -										-	3	3	3
5	3	3	3	3	2	-	3	2	3						

Correlation Level: 1-Low, 2-Medium, 3-High

	Continuous A	ssessment	Marks (C	AM)			
Assessment	Performance	in practical	classes	Model		End Semester Examination	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	(ESE) Marks	Marks
Marks	15 5 5		15	10	50	100	

Department	Computer Science and Engineering		nme: в.т		······			
Semester	VI	Course	Category	y: PC	Er	nd Semeste	er Exam Ty	/pe: LE
Course Code	U23CSP605	Periods	/Week		Credit	Maxin	num Mark	S
		L	Т	Р	С	CAM	ESE	TM
Course Name	ANIMATION AND VISUAL EFFECTS LABORATORY	0	0	2	1	50	50	100
		CSE	i i.	i				
Prerequisite	Basics of Animation							
· · · · · · · · · · · · · · · · · · ·	On completion of the course, the st	udents will h	e able t	0			BT Map	ning
				•			(Highest L	-
	CO1 Understand Layers, Panels, Fran	nes. etc.					K3	every
Course	CO2 Implement motion effects in video						K4	
Outcomes	CO3 Implement new methods in animatic	•					К4	
	CO4 Understand Bevel Tool, Knife To		Concepts.				К4	
	CO5 Create 3D Environment.		• •				К5	
List of Exercis	es					L		
AFTEREFFEC	ſS							
	IG AFTEREFFECTS n to After Effects							
b. Interface Ir	ntroduction neline Panels, Compositions, Links Pan	ام						
d. Animation								
e. Key frame:								
	Editing & Animation							
	e Stretching & Imports\Exports\Footage	e Replaceme	nts					
	asking & Text Animation							
	Media Encoder							
6. Vfx & Render PREMIEREPRO								
1. Basic start	5							
	New Sequence							
	& Track Selection tools							
c. Rolling & F								
d. Make Slow								
e. Split\Cut vi	ideo clip							
f. Transitions	s control & Animae layers\ Chroma key	c						
	Duplication \ Effects & Adjustments Lay							
	h Imports & Exports							
ANIMATION BI	• •							
1. Introduction &								
	rigation & Transform & Add\Del							
	tructions & Creating Meshes							
4. Extrude & Lo 5. Bevel Tool &	op cut Knife Tool & Shading							
6. Shading Edit								
7. Rigging & pa								
	dscapes & Environments							
9. Rain effects &	& Abstract creation							
10. 3D Environr					1			
Lecture Periods	:- Tutorial Periods: -	Practica	al Period	s:30	Тс	otal Period	s:30	
Reference Bool								
	Brie Gyncild, "Adobe After Effects Classroor				3.			
	Adobe Premiere Pro Classroom in a Book" F mster, "Blender For Dummies" John Wiley &		ition, 2022	2.				
	Conrad Chavez,"Learn Adobe After Effects (Effects an	d Motion	Graphics".	, Peachoit F	ress, 2019	
	Mastering Adobe Premiere Pro 2024: Compl							
Press, 2024.				-				
Veb References								

https://www.pdfdrive.com/3d-art-essentials-the-fundamentals-of-3d-modeling-texturing-and-animatione157006123.html
 https://www.pdfdrive.com/aim-awards-suite-of-games-animation-and-vfx-skills-qualifications-e50802091.html
 https://www.bloopanimation.com/animation-for-beginners/
 https://www.rocketstock.com/blog/learn-5-simple-animation-techniques-effects/

5. https://www.premiumbeat.com/blog/text-effect-premiere-pro

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)											Program Specifi Outcomes (PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	P07	P08	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3		
1	3	3	3	3	3	3	3	3	-	3	3	3	3	3	3		
2	2	2	2	2	3	2	-	2	-	2	2	2	2	2	2		
3	3	3	3	3	3	3	3	3	-	-	3	-	3	3	3		
4	2	2	2	2	2	2	-	2	-	2	2	2	2	2	3		
5	3	3	3	3	3	3	-	3	-	3	3	3	3	3	3		

Correlation Level: 1-Low, 2-Medium, 3-High

	Continuous A	ssessment	Marks (C	AM)			
Assessment	Performance	in practica	classes	Model		End Semester Examination	Total
	Conduction of practical	Record work	viva	Practical Examination	Attendance	(ESE) Marks	Marks
Marks	15	5	5	15	10	50	100

Department	Compu	uter Science and Engineering												
Semester	VI		Cour	se Cate	gory Co	de: PA	*End Se	emeste	r Exam Type: -					
Course	U23EE					Maxim	ximum Marks							
Code	UZSED	20002	L	Т	Р	С	CAM	ESE	ТМ					
Course Name	MINI F	PROJECT	-	100										
			CSE					•						
Prerequisite	Proę	gramming Languages, Databases	5											
	On c	ompletion of the course, the st	udents wi	l be ab	le to				BT Mapping (Highest Level)					
Course	CO1	Identify the problem statement survey	for the mi	ni proje	ct work	through	the literat	ture	K2					
Outcomes	CO2	Choose the proper components as per the requirements of the design/ system. K2												
	CO3	Apply the acquainted skills to develop final model/system K3												

There shall be a Mini Project, which the student shall pursue as a team consists of maximum 4 students during the third year, fifth semester. The aim of the mini project is that the student has to understand the real time hardware / software applications. The student should gain a thorough knowledge in the problem he/she has selected and in the hardware / software he/she using in the Project. The Mini-project is an application that should be formally initiated and should be developed and also to be implemented by the respective team.

The Mini Project shall be submitted in a report form along with the hardware model / software developed, duly approved by the department internal evaluation committee. It shall be evaluated for 100 marks as Continuous Assessment. The department internal evaluation committee shall consist of faculty coordinator, supervisor of the project and a senior faculty member of the department. There shall be two reviews that will be considered for assessing a Mini Project work with weightage as indicated evaluation Methods.

Lecture Periods: -	Tutorial Periods: -	Practical Periods: 30	Total Periods: 30

COs/POs/PSOs Mapping

COs		Program Outcomes (POs)												Program Specific Outcomes (PSOs				
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3			
1	3	2	2	2	-	-	-	-	3	3	-	1	1	1	1			
2	3	3	3	2	2	2	2	2	3	3	3	1	2	2	2			
3	3	2 2 1 - 2 - 3 3 1												2	2			

Correlation Level: 1 – Low, 2 – Medium, 3 – High

		Review 1			Review 2					
Assessment	Novelty	ovelty Presentation Viva Presentation		Demonstration	Viva	Report	Total Marks			
Marks	10	20	10	20	20	10	10	100		

Department	Computer Science and Engineering	Programme : B. Tech									
Semester	VI	Course	Category	Code: AEC	*End Se	emester	Exam T	ype: -			
Course Code	U23CSC6XX		Periods	s/Week	Credit	Maxim	num Ma	rks			
	023656688	L	Т	Р	С	CAM	ESE	TM			
Course Name	Certification Course –VI	-	-	4	-	100	-	100			
	•	CSE	<u></u>								
Prerequisi	ite -										

Students shall choose an International / Reputed organization certification course of 40-50 hours duration specified in the curriculum (It is mandatory to do a minimum of six courses) which will be offered through the Centre of Excellence. These courses have no credit and will not be considered for CGPA calculation.

- (i) Certification Courses are required to be completed to fulfil the degree requirements. All Certification courses are assessed internally for 100 marks.
- (ii) The Course coordinator handling the course will assess the student through attendance and MCQ test, and declare the student as "pass" on satisfactory completion. A letter grade "P" is awarded to declare pass.
- (iii) The marks scored in these courses will not be taken into consideration for the SGPA / CGPA calculations in the grade sheet.

Assessment	Continuous Assess	ment Marks (CAM)	Total Mark	
Assessment	Attendance	MCQ Test		
Marks	10	90	100	

Department	Con	puter Science and Enginee	ering Pro	ing Programme: B. Tech.							
Semester	VI		Co	ourse	Category: MC	End Se Type: •		er Exan	N		
Course Code	U23C	SM606		Perio	ds/Week	Cred		kimum l	Marks		
			L	T	Р	С	CAM	ESE	TM		
Course Name	GEND		2	0	0	-	100	-	100		
Prerequisite	-		CSE								
•	On co	ompletion of the course, the	studente	will k	a able to			BT Ma			
	CO1	-				~		Highes) K			
Course	CO1	Describe the general identity,					~	ĸ			
Outcomes	CO2	Illustrate the causes and issue Describe the workplace discr					÷				
		culture.		ncula		genuel		K	2		
	CO4	Familiarize with international a	ind Indian fr	amew	orks on gender	equality		K	2		
	CO5	Illustrate the current challenge and the role of technology.	s in gender	equalit	y, including the	glass ce	eiling	ĸ	2		
UNIT – I	Introd	duction to Gender Equality				Perio					
Gender equality	– expl	oring gender identity and expres cal perspectives on gender roles,	ssion, Unde	erstand	ling the social of	construc	tion of	genera	CO1		
UNIT – II		er Inequality and Its Manife				Perio		oquality	•		
	ation ar	s, practice and custom – Issues ad health, violence and exploitation er and Culture				Perio		IOMESIIC	CO2		
Workplace disc	Gena riminatio	on, Media influences on gender	and cultur	e. Gei	nder and powe	r dvnan	nics in	society			
Strategies for pr	omoting	gender equality and cultural un	derstanding			. ajnan		000101	CO3		
UNIT – IV		oting Gender Equality				Perio					
	n Const	uman Rights – International fram titution – Policies and initiatives ous contexts									
UNIT – V		emporary Challenges and F	uture Dire	ection	S	Perio	ds:06				
Current challeng challenging gen future.	ges and der inec	emerging issues in gender equa quality – Exploring possibilities fo	ality – Glass r transforma	s ceilin ative c	g – role of tech hange and envi	nology sioning	n conti a gend	nuing o er-equa	r I CO5		
Lecture Periods	s: 30	Tutorial Periods: - Pra	actical Peri	ods: -	Tot	al Perio	ds: 30				
dynamics, a	nd the s d Sex" b	y" by Raewyn Connell – This bo ocial construction of gender. y Simone de Beauvoir – A histor									
 "Women and roles, inequal 	d Gende ality, and	er in the Indian Society" by Neera d feminist movements in India.	a Desai and	Usha	Thakkar – Foci	uses on	the cor	ntext of g	gende		
Reference Book	-										
2. A social and	Cultura	lian societies, New Delhi: Manoh al history, Volume1. Connecticut:	Oxford: Pra	aeger.							
		al history, Volume2. Connecticut: Idian Feminism: Class, Gender a			lieval Ages. Ch	ennai: N	otion F	Press. Ift	ikhar,		
Veb Reference	S										
1. https://www		en.org									
 https://ncw.r https://en.ur 		g/themes/gender-equality									
J. HUUS.//ED.Uf	ເຮຣບບ.ບໄ	y/memes/genuer-equality									
	weforur	n.org/reports									

PROFESSIONAL ELECTIVE COURSES

Department	Computer Science and Engineering Programme: B.Tech									
Semester	VI		Course	Catego	ory: PE	End S	emester E	xam Type:	TE	
Course Code	U23CS	SE6110	Periods	s/Week		Credit	Maxim	num Marks		
			L	Т	Р	С	CAM	ESE	ТМ	
Course Name	HASK	ELL PROGRAMMING	3	-	-	3	25	75	100	
	L	C	SE	<u>I</u>	L	1	<u>I</u>			
Prerequisite	Basic	knowledge in Programming								
,		mpletion of the course, the st	tudents	will b	e able	to		BT Map	ping	
		•						(Highest		
	CO1	List and define the fundamental conc	epts of fui	nctional	progran	nming.		K 1		
Course	CO2	Utilize the process lists using higher-	order func	tions an	d foldin	g techniques	s in	K3		
Outcomes		Haskell.				41		1/0		
	CO3	Describe the required data types and			tures of	the Haskell.		K3		
	CO4	Apply fragmenting and wrapping usin	ng Monade	S				K2		
	CO5	Apply the reasoning and proofs on pr	rograms ir	n functio	nal prog	ramming.		K2		
UNIT - I		uction To Haskell				Periods				
		am – Compilers and Interpreters –. Fun							CO1	
		 Basic datatypes - List types - Tuples t string concatenation. Type classes: Eq 								
		and concatenates them into a single st								
UNIT - II	List ar	nd folding Lists				Periods	:09			
		lists – Lambda Expressions – Using								
		 Transforming lists – Filtering lists – 2 rite fold functions – Scans – Combina 								
Operations Using F				0110110. 1	rogram	. ourn and /	worago or			
UNIT - III	Tuple,	Arrays and Recursive Functions	5			Periods	09			
		nere (), filter () functions. Arrays - Cre							CO3	
		- Matrix multiplication. Recursive on	lists, Mul	Itiple are	guments	s and recurs	sion. Mutua	recursion.		
E Prodram: Sorting a	n Arrav -	Perform Binary Search using recursiv					-,			
UNIT - IV	n Array – Monac	Perform Binary Search using recursiv								
UNIT - IV	Monac		e function	s-Tuple	Operati	ons. Periods:	09			
UNIT - IV Functors – Applic	Monac ative – N	ls	e function as functi	ons - S	Operati equenc	ons. Periods: Sing parsers	09 - commo		CO4	
UNIT - IV Functors – Applic Maybe, either, IO UNIT - V	Monac ative – N Monac Input/	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept	as function as functi otation. P	ons - S rogram	Operati equenc : Buildii	ons. Periods: Sing parsers ng a Simple Periods:	:09 - commo ≥ REPL. :09	n Monads:		
UNIT - IV Functors – Applic Maybe, either, IO UNIT - V Input/Output: IO o	Monac ative – N Monac Input/ perations	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept – Actions – Composing actions – S	as function as functi otation. P	s-Tuple ons - S rogram g action	Operati equenc : Buildin s – Pro	ons. Periods: ing parsers ng a Simple Periods: moting valu	: 09 ∋ – commo ∋ REPL. : 09 es to actior	n Monads: ns: return -		
UNIT - IV Functors – Applic Maybe, either, IO UNIT - V Input/Output: IO of Composing actions	Monac cative – No. Monac Input/ perations	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept	as function as functi otation. P	s-Tuple ons - S rogram g action	Operati equenc : Buildin s – Pro	ons. Periods: ing parsers ng a Simple Periods: moting valu	: 09 ∋ – commo ∋ REPL. : 09 es to actior	n Monads: ns: return -		
UNIT - IV Functors – Applic Maybe, either, IO UNIT - V Input/Output: IO o	Monac cative – 1 0. Monac Input/ perations perations recursive on.	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept – Actions – Composing actions – S ely – Exception handling – File handling	as function as functi otation. P	s-Tuple ons - S rogram g action and wri	Operati equenc : Buildii s – Pro ting files	ons. Periods: ing parsers ng a Simple Periods: moting values. Program: c	: 09 ∋ – commo ∋ REPL. : 09 es to actior	n Monads: ns: return – and perform		
UNIT - IV Functors – Applic Maybe, either, IO UNIT - V Input/Output: IO of Composing actions a basic file operation	Monac cative – 1 0. Monac Input/ perations perations recursive on.	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept – Actions – Composing actions – S	as function as functi otation. P Gequencing g: Reading	s-Tuple ons - S rogram g action and wri	Operati equenc : Buildii s – Pro ting files	ons. Periods: ing parsers ng a Simple Periods: moting values. Program: c	:09 = commo = REPL. : 09 es to actior reate a file a	n Monads: ns: return – and perform		
UNIT - IV Functors – Applic Maybe, either, IO UNIT - V Input/Output: IO of Composing actions a basic file operation Lecture Periods Text Books	Monac cative – Monac Input/ perations recursive on. :45	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept – Actions – Composing actions – S ely – Exception handling – File handling Tutorial Periods: -	as function as functi otation. P Gequencing g: Reading Practic	s-Tuple ons - S rogram g action and wri cal Peri	Operati equenc : Buildin s – Pro ting files ods: -	ons. Periods: ing parsers ng a Simple Periods: moting valu s. Program: c	:09 = – commo = REPL. :09 es to actior reate a file a Total Perio	n Monads: ns: return – and perform		
UNIT - IV Functors – Applic Maybe, either, IO UNIT - V Input/Output: IO of Composing actions a basic file operation Lecture Periods Text Books 1. Chris Alle	Monac cative – N Monac Input/ perations recursive on. :45	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept – Actions – Composing actions – S ely – Exception handling – File handling Tutorial Periods: -	e function as function tation. P equencing Reading Practic	s-Tuple ons - S rogram g action and wri al Peri ples" Fir	Operati equenc : Buildin s – Pro ting files ods: -	ons. Periods: ing parsers ng a Simple Periods: moting valu s. Program: c	 09 Commo REPL. 09 es to actior reate a file a Fotal Perio y 1,2017. 	n Monads: ns: return – and perform		
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UNIT - IV Functors – Applic Maybe, either, IO UNIT - V Input/Output: IO of Composing actions a basic file operation Lecture Periods Text Books 1. Chris Alle 2. Graham H 3. Bird, Rich Reference Book	Monac cative – N Monac Input/ perations crecursive on. :45 :45 n, Julie N lutton, "P ard, "Thir s	Is Monads. Monadic parsing: Parsers I operations: return, >>=, >>, do no output and File concept – Actions – Composing actions – S ely – Exception handling – File handling Tutorial Periods: - Moronuki, "Haskell Programming from F Programming in Haskell", Cambridge Un hking Functionally with Haskell", Cambridge Un hking Functionally with Haskell", Cambridge Un	as function as function. P Gequencing Reading First Princi niversity F ridge Univ	ons - S rogram g action and wri al Peri ples" Fir Press, So versity P	Operati equenc : Buildin s – Pro ting files ods: - rst publis econd e	ons. Periods: ing parsers ng a Simple Periods: moting valu s. Program: c shed Januar dition, 2016. rst edition, 2	 O9 A - commo REPL. O9 es to actior reate a file a Fotal Perio y 1,2017. 015. 	n Monads: ns: return – and perform ods:45	CO5	
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COs	Prog	ram C	Outcor	nes (P	Os)								Program Specific Outcomes (PSOs)			
COS	PO	РО	PO	РО	PO	РО	РО	РО	PO	PO1	PO11	PO12	PSO1	PSO2	PSO3	
	1	2	3	4	5	6	7	8	9	0						
1	1	2	1	2	1	1	1	2	3	2	2	2	3	1	2	
2	1	2	3	2	3	1	1	2	3	2	2	2	3	1	2	
3	2	3	3	3	3	2	2	2	2	3	2	1	2	2	2	
4	2	1	3	3	3	2	2	2	3	1	3	3	3	2	2	
5	2	3	3	3	3	2	2	2	3	3	3	3	3	2	2	

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

	Continu	Jous Asse	essment Marks	(CAM)		End	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Marks
Marks	5	5	5	5	5	75	100

	Comp	uter Science and Engineering	Progran	nme: E	3.Tech					
Semester	VI		Course	Catego	ory: PE		End Se	emester	Exam T	ype: TE
Course Code	U23CS	SE611	Periods	/Week		Credi	t	Maxim	um Mar	ks
			L	Т	Ρ	С		CAM	ESE	ТМ
Course Name	GAME	DESIGN AND DEVELOPMENT	3	0	0	3		25	75	100
			CSE	<u>.</u>		<u>.</u>				
Prerequisite	Basic k	nowledge in Programming								
	On co	mpletion of the course, the stud	ents will b	e able	to				BT Ma Highest	
	CO1	Describe the Basic concepts of Me	echanics an	d Proto	typing ⁻	Fechnique	es.		КЗ	8
Course	CO2	Illustrate the Game World.							К2	2
Outcomes	CO3	Design the systems and Feedbach	k for game.						K3	6
	CO4	Understand the characters and Ga	ame world i	ncorpo	ated wi	th unity.			КЗ	8
	CO5	Evaluate the Iteration in Game De		•					K4	ļ
UNIT - I	Core I	Aechanics and Prototyping Teo	•					Perio	ds:09	
Designing Core	Mechani	cs - Designing Playtests - Collect	ting Feedb	ack - I	Evaluat	ing Proto	otype Pe	erforma	nce.	CO1
UNIT - II	Narrat	ive and Game Worlds						Perio	ds:09	
		s - Aligning Story and Gameplay	- Creating	Game	World	s - Char	acter Ar			CO2
Using Environm			oreating	Game		o onun		onotype	.0	001
UNIT - III	Syste	ns and Feedback						Perio	ds:09	i
System Design		s - Types of Feedback Loops - C	ollecting P	layer F	eedba	ck - Und	erstand	ling Dyn	amic	CO3
	em Tunin	g and Balancing. Worlds and characters with U						Daria	ds:09	
Systems - Syste		worlds and characters with U	nity						as:09	_
Systems - Syste UNIT - IV	Game			nuiror	monto	Dlover	Intoroo		World	
Systems - Syste UNIT - IV Worldbuilding -	Game Designin	g Memorable Characters - Craftir			ments	- Player	Interac		World	CO4
Systems - Syste UNIT - IV Worldbuilding -	Game Designin lution- Ur				iments	- Player	Interac	tion with	World ds:09	CO4
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- 5. https://www.geeksforgeeks.org/how-to-get-started-with-game-development/
 - * TE Theory Exam, LE Lab Exam

COs/POs/PSOs Mapping

<u> </u>	Prog	ram C	Outcor	nes (P	Os)								-	m Speci nes (PSC	
COs	РО	РО	РО	РО	PO	РО	РО	РО	РО	PO1	PO11	PO12	PSO1	PSO2	PSO3
	1	2	3	4	5	6	7	8	9	0					
1	2	2	3	3	3	2	3	3	-	2	3	-	3	2	3
2	2	2	3	3	-	3	-	3	-	2	-	2	2	2	-
3	3	2	3	3	3	2	3	3	-	3	3	-	3	3	3
4	3	2	3	3	3	3	-	3	-	3	-	3	3	3	-
5	2	2	2	2	-	2	-	2	-	2	-	2	2	2	-

Correlation Level: 1 - Low, 2 - Medium, 3 - High Evaluation Methods

	Continu	Jous Asse	essment Marks	(CAM)		End	Total
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Marks
Marks	5	5	5	5	5	75	100

Department		uter Science and Engineering	Program						_
Semester	VI		Course ('y: PE		End Semes		pe: TE
Course Code	U23CS	E612	Periods/	T	_	Credit		num Marks	
			L	T	Р	C	CAM	ESE	TM
Course Name	NOSQ	L DATABASE	3	-	-	3	25	75	100
			CSE						
Prerequisite	Basic k	Knowledge in Database							
	On cor	mpletion of the course, the stud	dents will b	e able t	to			BT Map	
								(Highest	Level
	CO1	Illustrate the detailed Architecture,	-	•		•	•	K2	
	CO2	Differentiate and identify right Data		s for Re	al-time	Application	ns.	K3	
Course	CO3	Interact with NOSQL Data Stores.						K2	
Outcomes	CO4	Outline the Non-Relational Databa			• • • •			K3	
	CO5	Illustrate the Indexing on MongoD	B & Usage o	f Indexe	s in Mo	-		K4	
UNIT - I		uction to NoSQL				Periods			
and BASE for relia horizontal scalabil UNIT - II	able datab ity with Da NoSQ	generation, second generation, thir base transactions, speeding Perform atabase sharing, Brewers CAP theor L Data Architecture Patterns	ance by stra rem.	tegic us	e of RA	M, SSD, a	nd disk- achie	ving	CO
Data Model Gra	ph Data	gate Models- Document Data Mod Model, NoSQL system ways to gs to distribute the data on clusters.	handle big	g data	probler	ms, Movir	ng Queries to	o data, not	CO
UNIT - III	Intera	cting with NoSQL Data Stores				Periods	s:09		
Terms, Key-Value	Database	lue Databases, Properties of keys, (e. Document, Collection, Naming, C g, indexing, Replication, Sharing.							CO
UNIT - IV	NoSQ	L Storage Architecture				Periods	s:09		i
		nted Databases, Hbase Distributed S ached and Redis, Eventually Consist					Internals, Und	erstanding	CO4
UNIT - V	Indexi	ng and Ordering Data Sets				Periods	s:09		
		Sets: Essential Concepts Behind a odb, Indexing and Ordering in Couc					ng in Mongodk	, Creating	COS
Lecture Periods	:45	Tutorial Periods: -	Practica	l Perio	ds: -		Total Perio	ods:45	
Text Books	_		1						
Big Data M 2. Dan Sulliva 3. Daniel Aba Database	lanageme an Sullivar Idi, Peter I Systems", r D.Manni	n, "NoSQL for Mere Mortals", Addisc Boncz and Stavros Harizopoulas, "T Now Publishers,2013. ing, Prabhakar Raghavan, Hinrich S	on-Wesley, 2 he Design ai	015. nd Imple	mentat	ion of Mod	lern Column-C	priented	r
Reference Boo									
 Sadalage Wiley Pu Andreas Perkins, NoSQL N Guy Han Elmasri a Web Referent 	e P & Fow blications, Meier, Mid Eric Redn Movement rison, "Nez and Navat ces	Iler, "NoSQL Distilled: A Brief Guide , 1st Edition, 2019. chael Kaufmann, "SQL & Nosql Data nond, Jim Wilson, Seven Databases , 2nd Edition, Pragmatic Bookshelf, xt Generation Database: NoSQL and he, "Fundamentals of Database Sys	abases",Rep i in Seven W 2018. d big data", <i>F</i> stems", Pears	ro Book eeks: A Apress, 2 son Edu	s, 2019 Guide t 2015. cation 2	o Modern		d the	
1. https://www		a.org/lecture/nosql-databases/introdu rgeeks.org/introduction-to-nosql/	uction-to-nos	ql-VdRN	lp				

COs	Prog	ram C	utcon	nes (P	Os)								-	m Speci nes (PSC	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	P08	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	2	1	2	2	2	2	-	2	2	-	2	3	3
2	3	3	3	2	-	2	-	2	-	2	-	2	2	3	-
3	3	3	3	2	3	3	3	2	-	2	2	-	2	3	3
4	3	3	3	2	3	2	-	2	-	2	-	2	2	3	-
5	3	3	3	3	-	3	-	2	-	2	-	2	3	3	-

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

	Continu	Lous Asse	essment Marks	(CAM)		End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department	Compu	ter Science and Engineering	Program	nme: E	3.Tech				
Semester	VI		Course	Categ	ory: PE	En En	d Semes	ter Exam Ty	/pe: TE
0 0	U23CS	E613	Perio	ods/We	ek	Credit	Μ	laximum Ma	irks
Course Code			L	Т	Р	С	CAM	ESE	ТМ
Course Name	IOT CH	ALLENGES AND FUTURE	3	-	-	3	25	75	100
	<u>i</u>		CSE		<u>i</u>	1			
Prerequisite	-								
•	On co	mpletion of the course, the stu	dents wil	l be ab	ole to			BT Mapp	oina
								(Highest L	
	CO1	Recognize and understand the fun	damentals	of IoT A	Architect	ure and layer		K2	
Course	CO2	Explain about data processing and	l analytics					K3	
Outcomes	CO3	Describes about IoT Privacy and S		stems				K3	
	CO4	Understand working Principle of IIc	ъТ					K2	
	CO5	Design a Real Time Applications						K2	
UNIT - I	1	uction to IOT				Periods:			
		haracteristics of IoT- IoT Architectur	-	-		-	-	-	CO1
IoT- History of IoT-	About Thi	ngs in IoT- The Identifiers in IoT- Ab	out the Inte	rnet in	loT- loT	frameworks-	loT and M2	2M.	001
UNIT - II	Data A	cquiring, Organizing, Process	ing and A	nalyti	cs	Periods:0)9		
Data Acquiring and	d storage -	Organizing the Data - Transactions	- Busines	s proce	sses – li	ntegration and	Enterpris	e Systems -	
Analytics – Knowle	dge Acquir	ing, Managing and Storing Processe	es- Knowled	lge Mar	nagemei	nt Reference /	Architectur	e.	CO2
UNIT - III	IOT Pr	ivacy, Security and Vulnerabili	ities Solu	tions		Periods:0)9		
Introduction-Vulne	rabilities –	Security Requirements and Threat ar	nalysis –use	e case a	nd misu	se cases – lol	security T	omography	
		dentity Management and Establishr							CO3
Security Models ar	nd Protoco	s for IoT.							
UNIT - IV	Indust	rial IOT				Periods:0)9		
IIoT: Introduction-	Business N	Nodel and Reference Architecture -	Layers -llo	T Sensi	ng - IloT	Processing -	IIoT Com	munication-	
		dium Access issues-MAC protocol S	-		-	-			CO4
UNIT - V	Applic	ations of IOT				Periods:0)9		
Home Automation-	Smart Citi	es- Energy- Smart Water-Retail Mar	nagement- l	oqistic	s-Agricu	lture- Health a	and Lifesty	le- Industrial	
1		design Ethics- IoT in Environmenta	-	-	-		-		CO5
Applications.	•	C C						-	
Lecture Periods	:45	Tutorial Periods: -	Practic	al Per	iods: -		Total Per	iods:45	
Text Books			<u>.</u>						
1. D. Hanes. G. Sa	laueiro. P.	Grossetete, R. Barton, J. Henry; IoT	Fundamer	ntals: Ne	etworkin	a Technoloaie	s. Protoco	ls. and Use (Cases for
	•	ition, Pearson India Pvt. Ltd., 2018.				5	-,	-,	
		OF THINGS (IOT): Architecture and	d Design P	rinciple	s", 2nd	Edition, McGr	aw Hill Ed	ucation(India) Private
Limited,2 nd Edition	,2017.		-						
3. Alasdair Gilchris	t," Industry	4.0:The Industrial Internet of Things	s",by (Apres	s),2017	7.				
4. HakimaChaouch	ni, — "The	Internet of Things Connecting Objec	ts to the W	eb" ISB	N :978-′	1- 84821-140-	7, Wiley P	ublications.	
5.Internet of Thing	s-A Hands	on Approach, By Arshdeep Bahga a	and Vijiay N	ladisetti	i Univers	sities,2015 Pr,	IBN:97881	73719547.	
Reference Book	S								
		nternet of Things (IOT) Experiments:	Learn IoT.	the pro	oramme	er's wav. 1st E	dition. BPI	B Publication	s. 2018.
1		ernet of Things', Packt Publishing, 20			5	, , ,	,		-,
	-	s:Cyber Manufacturing Systems" by		schke,C	Christian	Brecher ,Hou	bing Song	,Danda B.Ra	wat
(Springer),2017	-						0 0		
		t of Things: Create a powerful Indust	trial IoT by	Giacom	io Vener	ri,Antonio Cap	asso,Pack	t,2018.	
5.Adrian McEwen,	Designing	the Internet of Things, Wiley, 2013.							
Web References	S								
1. https://www.gee	ksforgeeks	org/introduction-to-internet-of-thing	s-iot-set-1/						
		om/internet_of_things/index.htm							
		/iot-internet-of-things							
4. https://www.digi	.com/blog/	category/iot-trends							
5. https://archive.n	ptel.ac.in/c	ourses/106/105/106105166/							
		Exam, LE – Lab Exam							

COs					Prog	ram C	Dutcoi	nes (I	POs)					ram Spo omes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO 9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	3	3	3	3	3	3	3	3	-	2	3	-	3	3	2
2	3	3	3	3	-	3	-	3	-	2	-	2	2	3	3
3	3	3	3	3	3	3	3	3	-	3	3	-	3	2	3
4	3	3	3	3	3	3	-	3	-	3	-	3	3	3	3
5	2	2	2	2	-	2	-	2	-	2	-	2	2	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

		Conti	nuous Assessr	nent Marks (CAN	A)	End	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department	Computer Science and Engineering	Pro	gramm	e: B.Tech				
Semester	VI	Cou	irse Ca	tegory: PE	End Sei	mester Ex	am Typ	e: TE
Course Code	U23CSE614	L	Periods T	/Week	Credit C	Ma CAM	ximum l	Marks TM
Course Name	SERVER-SIDE SCRIPTING	3	-	-	3	25	75	100
	LANGUAGES	SE						
Prerequisite	A basic understanding of Client-Server Ar		uro 8. va	hat a wah	eorvor ie			
Flelequisite	δ				501 1001 13.		BT	Mapping
	On completion of the course, the stude	ents wi	ll be al	ole to				est Leve
•	CO1 Understand the basics of scripting	g langu	ages.					K2
Course Outcomes	CO2 Obtain knowledge about scripting with	n respec	ctive to r	eactive web	Pages			K3
Outcomes	CO3 Implement the basic functionality usin	ig Pearl	scriptin	g.				K3
	CO4 Implement the basic functionality usin	ig Ruby	scriptin	g.				K2
	CO5 Understand the in-depth knowledge o	of progra	mming	features of A	ngular JS			K2
UNIT - I	Introduction to scripts and scripting la	nguag	es		Period	ds:09	<u>.</u>	
Scripting. JavaS Objects- Predefir UNIT - II	cripts and Scripting Languages – Scripts a cript: Variables, Data Types, Operators, C ned objects, Accessing objects, Object Metho JavaScript for reactive web pages elem	Conditio ods. n ents	onal sta	atements, l	oops, An	rays, Fun ds:09	octions,	CO1
	amming of reactive web pages elements: Ja dow events, Event handlers, Frames, Form		•			eyboard e	events,	CO2
	PEARL	• •		•	Period	16.00		
UNIT - III	ables, Scalars, Operators, Conditional staten	aanta	~~~~	Arrova Ctri			Duilt in	
Dala IVDES. Valio	מטובה. טנמומוה. טטבומוטוה. טטוטוווטוומו הומוכוו			Anays, Sun	1143. 1 18311	CO, LIDIO,	Duiit-iii	
• •	n matching and regular expression operators		_00p3,	•	9-,	, ,		CO3
Functions, Patter	n matching and regular expression operators	S.		-	Period	ds:09		CO3
Functions, Patter UNIT - IV Data types, Var Hashes, File I/C	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo , Ruby Form handling.	S.		-	Perioc lodules, A	ls:09 rrays, Stri	ings,	CO3
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo D, Ruby Form handling. AngularJS	s. oops, N	lethods	s, Blocks, M	Perioc lodules, A Perioc	ls:09 rrays, Stri ls:09		
Functions, Patter UNIT - IV Data types, Var Hashes, File I/C UNIT - V AngularJS Develo	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo 0, Ruby Form handling. AngularJS opment Environment, Expressions in Angula	s. oops, N rJS, Ar	Aethods	s, Blocks, M S Directives	Perioc lodules, A Perioc s, Data Bin	ds:09 rrays, Stri ds:09 iding, Ang	ularJS	C04
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develo Model Modes, Or	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo b, Ruby Form handling. AngularJS opment Environment, Expressions in Angula ne Way Binding, Two Way Binding, Angular	s. oops, N rJS, Ar	Aethods	s, Blocks, M S Directives	Perioc lodules, A Perioc s, Data Bin	ds:09 rrays, Stri ds:09 iding, Ang	ularJS	
Functions, Patter UNIT - IV Data types, Var Hashes, File I/C UNIT - V AngularJS Develo	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo b, Ruby Form handling. AngularJS opment Environment, Expressions in Angula ne Way Binding, Two Way Binding, Angular	s. oops, N rJS, Ar	Aethods	s, Blocks, M S Directives	Perioc lodules, A Perioc s, Data Bin	ds:09 rrays, Stri ds:09 iding, Ang	ularJS	C04
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develo Model Modes, Or AngularJS Forms	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo 0, Ruby Form handling. AngularJS opment Environment, Expressions in Angula ne Way Binding, Two Way Binding, Angular s.	s. oops, N rJS, Ar JS Cor	/lethods igularJ	s, Blocks, M S Directives	Perioc lodules, A Perioc s, Data Bin Scope, Ai	ds:09 rrays, Stri ds:09 iding, Ang	ularJS Filters,	C04
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develo Model Modes, Or AngularJS Forms Lecture Periods Text Books	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Loo, o, Ruby Form handling. AngularJS opment Environment, Expressions in Angular ne Way Binding, Two Way Binding, Angular s. :45	s. oops, N rJS, Ar JS Cor Pra	/lethods igularJ3 itroller, ctical l	s, Blocks, M S Directives AngularJS Periods: -	Perioc lodules, A Perioc s, Data Bin Scope, An	ds:09 rrays, Stri ds:09 iding, Ang ngularJS fotal Perio	ularJS Filters, ods:45	CO4 CO5
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develor Model Modes, Or AngularJS Forms Lecture Periods Text Books 1. David Flana Edition "Gre 2. David Barror 3. Learning PHI O'Reilly Publ	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo 0, Ruby Form handling. AngularJS opment Environment, Expressions in Angula ne Way Binding, Two Way Binding, Angular s.	s. oops, N rJS, Ar JS Cor Publicat Publicat Publicat Publicat	Vethods agularJ3 atroller, ctical I World's cions 20 cations. Step Gu	s, Blocks, M S Directives AngularJS Periods: - Most-Usec 200. 2000. uide to Crea	Period lodules, A Period s, Data Bin Scope, An C Program ating Dyna	ds:09 rrays, Stri ds:09 iding, Ang ngularJS otal Perio ming Lang	ularJS Filters, ods:45 guage, 7 sites 3rd	CO4 CO5 7th
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develo Model Modes, Or AngularJS Forms Lecture Periods Text Books 1. David Flana Edition "Gre 2. David Barror 3. Learning PHI O'Reilly Publ 4. Tom Christia	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Loo, Ruby Form handling. AngularJS opment Environment, Expressions in Angula ne Way Binding, Two Way Binding, Angular, S. :45 Tutorial Periods: - gan," JavaScript: The Definitive Guide: Mast yscale Indian Edition, Paperback., O'Reilly Fn, "The World of Scripting Languages", Wiley P, MySQL, JavaScript, CSS & HTML5: A Strications, 2014. nsen, Brian D Foy, Larry Wall, Jon Orwant,"	s. oops, N rJS, Ar JS Cor Publicat Publicat Publicat Publicat	Vethods agularJ3 atroller, ctical I World's cions 20 cations. Step Gu	s, Blocks, M S Directives AngularJS Periods: - Most-Usec 200. 2000. uide to Crea	Period lodules, A Period s, Data Bin Scope, An C Program ating Dyna	ds:09 rrays, Stri ds:09 iding, Ang ngularJS otal Perio ming Lang	ularJS Filters, ods:45 guage, 7 sites 3rd	CO4 CO5 7th
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develo Model Modes, Or AngularJS Forms Lecture Periods Text Books 1. David Flana Edition "Gre 2. David Barror 3. Learning PHI O'Reilly Publ 4. Tom Christia Reference Book 1. David Flanag 2. Russ Fergus 3. J. Lee and B	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Loo, Ruby Form handling. AngularJS opment Environment, Expressions in Angula ne Way Binding, Two Way Binding, Angular, S. :45 Tutorial Periods: - gan," JavaScript: The Definitive Guide: Mast yscale Indian Edition, Paperback., O'Reilly Fn, "The World of Scripting Languages", Wiley P, MySQL, JavaScript, CSS & HTML5: A Strications, 2014. nsen, Brian D Foy, Larry Wall, Jon Orwant,"	s. poops, M rJS, Ar JS Cor Publicat Publicat Publicat Publicat Publicat Progra	Aethods IgularJS Itroller, ctical I World's ions 20 ations. Step Gu mming ing Lan Dom sc	s, Blocks, M S Directives AngularJS Periods: - Most-Usec 200. 2000. uide to Crea Perl, 4th E guage", O'l	Period lodules, A Period s, Data Bin Scope, Ai T Program ating Dyna dition" O'F Reilly Pub AJAX," Ap	ds:09 rrays, Stri ds:09 iding, Ang ngularJS fotal Perio ming Lang amic Web Reilly Med lications. press.	ularJS Filters, ods:45 guage, 7 sites 3rd ia,2012.	CO4 CO5 7th dEdition
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develo Model Modes, Or AngularJS Forms Lecture Periods Text Books 1. David Flana Edition "Gre 2. David Barror 3. Learning PHI O'Reilly Publ 4. Tom Christia Reference Book 1. David Flanag 2. Russ Fergus 3. J. Lee and Barror 3. J. Lee and Barror 3. J. Lee and Barror 4. Addison We	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Lo p, Ruby Form handling. AngularJS opment Environment, Expressions in Angula ne Way Binding, Two Way Binding, Angular ane Way Binding, Two Way Binding, Angular :45 Tutorial Periods: - gan," JavaScript: The Definitive Guide: Mast yscale Indian Edition, Paperback., O'Reilly F n, "The World of Scripting Languages", Wiley P, MySQL, JavaScript, CSS & HTML5: A Strications,2014. nsen, Brian D Foy, Larry Wall, Jon Orwant," :s gan and Yukihiro Matsumoto," The Ruby Pro- on, Christian Heilmann "Beginning JavaScript . Ware "OpenSource Web Development with sley) Pearson Education.	s. poops, M rJS, Ar JS Cor Publicat Publicat Publicat Publicat Publicat Progra	Aethods IgularJS Itroller, ctical I World's ions 20 ations. Step Gu mming ing Lan Dom sc	s, Blocks, M S Directives AngularJS Periods: - Most-Usec 200. 2000. uide to Crea Perl, 4th E guage", O'l	Period lodules, A Period s, Data Bin Scope, Ai T Program ating Dyna dition" O'F Reilly Pub AJAX," Ap	ds:09 rrays, Stri ds:09 iding, Ang ngularJS fotal Perio ming Lang amic Web Reilly Med lications. press.	ularJS Filters, ods:45 guage, 7 sites 3rd ia,2012.	CO4 CO5 7th dEdition
Functions, Patter UNIT - IV Data types, Vari Hashes, File I/C UNIT - V AngularJS Develor Model Modes, Or AngularJS Forms Lecture Periods Text Books 1. David Flana Edition "Gre 2. David Barror 3. Learning PHI O'Reilly Publ 4. Tom Christia Reference Book 1. David Flanag 2. Russ Fergus 3. J. Lee and B. (Addison We	n matching and regular expression operators RUBY iables, Operators, Conditional statements, Leo, Ruby Form handling. AngularJS opment Environment, Expressions in Angular, and Way Binding, Two Way Binding, Angular, s. :45 Tutorial Periods: - gan," JavaScript: The Definitive Guide: Mast yscale Indian Edition, Paperback., O'Reilly Fn, "The World of Scripting Languages", Wiley P, MySQL, JavaScript, CSS & HTML5: A Strications,2014. nsen, Brian D Foy, Larry Wall, Jon Orwant," gan and Yukihiro Matsumoto," The Ruby Progon, Christian Heilmann "Beginning JavaScript. Ware "OpenSource Web Development with sley) Pearson Education.	s. poops, M rJS, Ar JS Cor Publicat Publicat Publicat Publicat Publicat Progra	Aethods IgularJS Itroller, ctical I World's ions 20 ations. Step Gu mming ing Lan Dom sc	s, Blocks, M S Directives AngularJS Periods: - Most-Usec 200. 2000. uide to Crea Perl, 4th E guage", O'l	Period lodules, A Period s, Data Bin Scope, Ai T Program ating Dyna dition" O'F Reilly Pub AJAX," Ap	ds:09 rrays, Stri ds:09 iding, Ang ngularJS fotal Perio ming Lang amic Web Reilly Med lications. press.	ularJS Filters, ods:45 guage, 7 sites 3rd ia,2012.	CO4 CO5 7th dEdition
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* TE – Theory Exam, LE – Lab Exam

COs/POs/PSOs Mapping

COs					Pro	gram	Outcor	nes (P	Os)					gram Spe comes (P	
	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
1	1	2	2	2	1	2	2	1	1	2	-	3	2	3	2
2	2	3	3	3	2	2	1	1	2	1	-	-	3	3	3
3	3	3	3	3	2	2	2	-	2	1	2	2	3	2	3
4	3	2	3	3	1	2	2	-	2	1	2	3	3	3	3
5	3	3	3	3	2	2	2	-	2	1	-	3	3	3	3

Correlation Level: 1 - Low, 2 - Medium, 3 – High Evaluation Methods

	Assessment		Cor	End				
Asses		CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Semester Examinati on (ESE) Marks	Total Marks
Ma	arks	5	5	5	5	5	75	100

Department	Ma	nagement Studies	Program	ne : B.Tech									
Semester	V/V	1	Course Ca	ategory Code	OE *E	nd Seme	ester Exar	n Type:	TE				
				Periods/We			Maximur	••					
Course Code	U23	3HSOC01	L	Т	P	C	CAM	ESE	TM				
Course Name	INT	ELLECTUAL PROPERTY RIGHTS	3	0	0	3	25	75	100				
		Common to	o ALL Brancl	hes									
Prerequisite	Nil												
r roroquiono	On com	pletion of the course, the students will	be able to					(Hig	apping hest vel)				
	CO1	Describe the Concept and Importance of	Intellectual P	roperty Rights	s (IPR).				(2				
Course	CO2	Describe the procedures for patent re infringement.	egistration, in	cluding reco	gnizing le	gal rem	edies for	к	(3				
Outcomes	CO3	Apply copyright laws to hypothetical scer	narios involvin	g academic i	ntegrity and	d plagiar	ism.	ĸ	(3				
	CO4	Infer the different types of trademarks and understand the registration process and infringement issues.											
CO5 Explain the legalities surrounding industrial designs, geographical indications, and their protection mechanisms.													
UNIT-I Overview of Intellectual Property Periods: 9													
Mark, Design, conventions a	Geograpi nd agree	ed for intellectual property right (IPR) - K hical Indication, Plant Varieties and Trade ements: WTO/TRIPS Agreement, Paris vention, Madrid Agreement, Nice Agreem	e Secret – Int Convention,	ernational pro	otection of Conventio	IPR- Ma	jor Intern	ational	CO1				
UNIT-II		v of Patents		Ŭ		Pe	riods: 9						
Process and p	oroduct F	Patent - Subject matter of Patent - Regist Patent, Legal Requirements for Patents	 Patent doc 	ument: Spec	ification ar				CO2				
Patents - Trans		tent rights - Infringement of Patents and F v of Copyrights	Remedies - Ev	vergreening o	f Patents	Po	riods: 9						
-		Copyright - Subject matter of copyright -	Law of Conv	rights - Autho	orshin and	-		wright					
Registration Pr	rocedure, rights - R	Assignment and Licensing of copyright elated Rights: Celebrity Rights, Academic	- Infringemen	nt of Copyrigh	its and Re	medies	- Emergir	ng new	CO3				
special referen UNIT-IV		ware. v of Trademarks				Pe	riods: 9						
Meaning and Registration of Licensing of tr	Nature o Trademates	of Trademarks - Different kinds of Tra arks - Grounds for refusal of Registratio s - Infringement, Remedies and Penaltie efenses - Emerging New trends in tradema	n: Absolute G es - Offenses	Ground and F	Relative Gr	egistrable	e Tradem Assignme	nt and	CO4				
UNIT-V		her Forms of IPR	unto			Pe	riods: 9						
Meaning and n	ature of	Industrial Design - Subject Matter - Proce	edure for regis	stration - Infri	ngement of	f Copyrig	ghts in de	signs -					
Secrets- Prote	ction for	ent - Trade secret Law-Determination of submission-Trade Secret litigation - Mea ment of Geographical indication - Remed	ining and Nati	ure of Geogra	-				CO5				
Lecture Perio	ds:45	Tutorial Periods: 0	Pra	ctical Period	ls: 0	Tota	Periods	: 45					
Text Books			I										
Limite	d, 2019.	K. V. Intellectual Property Rights: Protect		-				ng India	Private				
	-	Khusdeep, D. Intellectual Property Right	s, 2 nd edition,	PHI Learning	Private Li	mited, 2	018.						
Reference Bo													
-		aw Relating to Intellectual Property Rights	· · · · · · · · · · · · · · · · · · ·										
Ceng	age Lear	borah E. Intellectual Property: The Law of ning, 2013.											
-		ellectual Property Rights: Unleashing the P	÷		wiceraw-F		sing con	npany; 2	2022.				
4. Jyoti l	kattan. Ir	tellectual Property Rights, 2 nd edition, Bh	arat Law Hou	se, 2024.									

5.	Surendra Malik and Sudeep Malik, Supreme Court on Intellectual Property, Eastern Book Company, 2022.
Web Re	eferences
1.	https://www.wipo.int/about-ip/en/
2.	https://www.uspto.gov/patents/basics/general-information-patents
3.	https://www.wto.org/english/tratop_e/trips_e/trips_e.htm
4.	https://www.epo.org/about-us/annual-reports-statistics/annual-report.html
5.	https://articles.manupatra.com/article-details/Patent-Types-Laws-related-to-them-in-India
6.	https://www.inta.org/trademarks/trademark-basics/.

COs/POs/PSOs Mapping

Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3
CO1	1	1	-	-	-	3	2	2	-	2	1	2	1	2	2
CO2	1	2	-	2	-	3	2	2	-	2	1	1	1	1	2
CO3	-	2	-	-	-	2	2	3	-	2	-	1	-	1	3
CO4	1	1	-	-	-	3	2	2	-	2	1	1	1	1	2
CO5	1	2	-	-	-	3	3	2	-	2	1	1	1	1	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		lı	nternal Assess		End Semester	Total	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Semester		ement Studies	Fiogramm	e: B. Tech								
	V/VI		Course Ca	tegory Code	e: OE	*End S	emester Ex	am Type	TE			
Course Code			F	Periods/Wee	ek	Crec	lit Maxim	um Marks	6			
	U23HS	OC02	L	Т	Р	С	CAM	ESE	TM			
Course Name	NEW P	RODUCT DEVELOPMENT	3	0	0	3	25	75	100			
		Con	nmon to ALL Branch	ies								
Prerequisite								-				
	On cor	npletion of the course, the stu	dents will be able to					(Hig	apping hest vel)			
	CO1	Explain the stages and importa contexts.	nce of new product d	evelopment	(NPD)	in mode	rn business	³ ł	(2			
Course	CO2	Apply market research to id specifications.	entify customer nee	ds and tra	anslate	them ir	nto produc	t P	K3			
Outcomes	CO3	Illustrate the product concepts viable option.	using screening and	scoring tec	hniques	to sele	ct the mos	t P	(3			
	CO4 Examine product prototype that incorporates principles of product architecture and design for manufacturing.											
	CO5	Analyze a business plan and ma	arket strategy for the	successful la	aunch o	f a new p	product.	ŀ	(4			
UNIT-I	Introd	uction to New Product Develop	pment				Periods: 9)				
Role of Innova Products - Risk	tion and Manage	uct Development (NPD) - Produce Creativity in NPD - Reverse Enternation New Product Development in New	ngineering and its Ap ent - Sustainability and	plication in	NPD -	Busines	s Models f NPD	or New	CO1			
JNIT-II		Research and Customer Need tunities for New Products - Con					Periods: 9					
NPD - Tools for UNIT-III Concept Genera Design Thinkin	tion Proc g for Nev	ns - Establishing and Refining F anding Consumer Behaviour: Su of Generation and Evaluation ress: Continuous and External Io v Products - Techniques for Cor	urveys, Focus Groups dea Sources - Clarifyi	, and Ethno ng the Prob	graphy lem and	d Brainst	Periods: Sol) utions -	CO2			
and Scoring Pr	oduct Co	ncepts - Concept Evaluation and					ncepts - Sc	reening	CO3			
			Selection Methods -				-	-	CO3			
UNIT-IV	Produc	t Design and Development		Prototyping	Technie	ques	Periods:	9	03			
UNIT-IV Product Archite Environmental C Cross - Functio	Produc cture an Considera		vs. Integral Produc lopment Teams - Sta	Prototyping t Architectu ges of team	Technie ure - D Develo	esign fo ppment -	Periods: or Sustaina Collaborat	ability - ion and				
UNIT-IV Product Archite Environmental C	Produc cture an Considera onal Tear	t Design and Development d its role in NPD - Modular tions - Organizing Product Deve	vs. Integral Produc elopment Teams - Sta Tools for Effective P	Prototyping t Architectu ges of team	Technie ure - D Develo	esign fo ppment -	Periods: or Sustaina Collaborat	ability - ion and opment	CO3			
UNIT-IV Product Archite Environmental C Cross - Functio Methodologies UNIT-V Developing a Ne Product Busine	Produc cture an Considera nal Tear Launch ew Produ ess Plan	t Design and Development d its role in NPD - Modular tions - Organizing Product Deve ns in Product Development - n, Strategy and Commercializa ct Strategy - Building Market De - Preparing for Market Launch	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra	Prototyping t Architectu ges of team roduct Des ategies for N	Technic ure - D n Develo ign - A	ques pesign fo ppment - gile Pro	Periods: or Sustaina Collaborat duct Devel Periods: Developing	ability - ion and opment 9 a New				
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine	Produc cture an Considera nal Tear Launch ew Produ ess Plan nd Future	t Design and Development d its role in NPD - Modular tions - Organizing Product Deve ns in Product Development - n, Strategy and Commercializa ct Strategy - Building Market De	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E	Prototyping t Architectu ges of team roduct Des ategies for N	Technic ure - E n Develo ign - A New Pro	ques resign fo ppment - gile Pro- pducts - t Life C	Periods: or Sustaina Collaborat duct Devel Periods: Developing	ability - ion and opment 9 a New tinuous	CO4			
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine Improvement a Lecture Periods	Produc cture an Considera nal Tear Launch ew Produ ess Plan nd Future	t Design and Development d its role in NPD - Modular tions - Organizing Product Deve ns in Product Development - n, Strategy and Commercializa ct Strategy - Building Market De - Preparing for Market Launch Product Enhancements	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E	Prototyping t Architectu ges of team roduct Des ategies for N valuation -	Technic ure - E n Develo ign - A New Pro	ques resign fo ppment - gile Pro- pducts - t Life C	Periods: Collaborat duct Devel Periods: Developing ycle - Cor	ability - ion and opment 9 a New tinuous	CO4			
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine Improvement a Lecture Periods 1. Ulrich KT,	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinge	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market Development - Preparing for Market Launch Product Enhancements Tutorial Periods: SD. Product design and development	vs. Integral Product elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Prace pment. 7 th edition. Mo	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio	Technic ure - En Develo ign - A New Pro Produc ds:	ques resign fo ppment - gile Pro- ducts - t Life C Total	Periods: Collaborat duct Devel Periods: Developing ycle - Cor Periods: 4	ability - ion and opment 9 a New tinuous	CO4			
INIT-IV Product Archite Invironmental C Cross - Functio Methodologies INIT-V Developing a Ne Product Busine Improvement a Lecture Periods Text Books 1. Ulrich KT,	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinge	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market De - Preparing for Market Launch Product Enhancements Tutorial Periods:	vs. Integral Product elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Prace pment. 7 th edition. Mo	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio	Technic ure - En Develo ign - A New Pro Produc ds:	ques resign fo ppment - gile Pro- ducts - t Life C Total	Periods: Collaborat duct Devel Periods: Developing ycle - Cor Periods: 4	ability - ion and opment 9 a New tinuous	CO4			
JNIT-IV Product Archite Invironmental C Cross - Functio Aethodologies JNIT-V Developing a Ne Product Busine Improvement a ecture Periods fext Books 1. Ulrich KT, 2. Crawford 3. Cooper Re	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinge CM, Di Bo G. Winnir	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market Development - Preparing for Market Launch Product Enhancements Tutorial Periods: SD. Product design and development	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Prace pment. 7 th edition. Mo gement. 11 th edition. I	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio Graw-Hill E McGraw-Hill	Technic ure - En Develo ign - A New Pro Produc ds: ducation Educat	ques resign fo ppment - gile Pro- ducts - t Life C Total n; 2020. ion; 201	Periods: or Sustaina Collaborat duct Devel Periods: Developing ycle - Cor Periods: 4	ability - ion and opment 9 a New tinuous	CO4			
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine Improvement a Lecture Periods Text Books 1. Ulrich KT, 2. Crawford 3. Cooper R	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinge CM, Di Bo G. Winnir	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market De - Preparing for Market Launch Product Enhancements Tutorial Periods: SD. Product design and developmendetto A. New products mana	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Prace pment. 7 th edition. Mo gement. 11 th edition. I	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio Graw-Hill E McGraw-Hill	Technic ure - En Develo ign - A New Pro Produc ds: ducation Educat	ques resign fo ppment - gile Pro- ducts - t Life C Total n; 2020. ion; 201	Periods: or Sustaina Collaborat duct Devel Periods: Developing ycle - Cor Periods: 4	ability - ion and opment 9 a New tinuous	CO4			
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine Improvement a Lecture Periods Text Books 1. Ulrich KT, 2. Crawford 3. Cooper Ro Reference Bool	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinge CM, Di Bo G. Winnir ks	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market De - Preparing for Market Launch Product Enhancements Tutorial Periods: SD. Product design and developmendetto A. New products mana	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Prace pment. 7 th edition. Mo gement. 11 th edition. In ue through innovation.	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio Graw-Hill E McGraw-Hill E	Technic ure - En Develo ign - A New Pro Produc ducation Educat Basic E	ques vesign fo ppment - gile Pro- oducts - t Life C Total n; 2020. ion; 201- iooks; 20	Periods: Collaborat duct Devel Periods: Developing ycle - Con Periods: 4 4.	ability - ion and opment 9 a New tinuous	CO4			
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine Improvement a Jecture Periods Text Books 1. Ulrich KT, 2. Crawford 3. Cooper RC Reference Bool 1. Trott, P. Ir	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinge CM, Di Be G. Winnir ks	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market Do - Preparing for Market Launch Product Enhancements Tutorial Periods: • SD. Product design and developmendetto A. New products mana ag at new products: Creating value	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Prace opment. 7 th edition. Mo gement. 11 th edition. I ue through innovation.	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio Graw-Hill E McGraw-Hill 5 th edition.	Technic ure - En Develo ign - A New Pro Produc ds: ducation Educati Basic E Educati	ques resign for ppment - gile Pro- oducts - t Life C Total n; 2020. ion; 2017 ooks; 20 on. 2017	Periods: 9 or Sustaina Collaborat duct Devel Periods: 9 Developing ycle - Cor Periods: 4 4.	ability - ion and opment 9 a New tinuous 5	CO4			
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine Improvement a Lecture Periods Text Books 1. Ulrich KT, 2. Crawford 3. Cooper R Reference Bool 1. Trott, P. Ir 2. Thomke, S	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinger CM, Di Br G. Winnir ks nnovation S. Experir	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market Do - Preparing for Market Launch Product Enhancements Tutorial Periods: • SD. Product design and developmenter g at new products: Creating value management and new product of	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Pra- pment. 7 th edition. Mo gement. 11 th edition. I ue through innovation. development 6 th editio power of business exp	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio Graw-Hill E McGraw-Hill 5 th edition.	Technic ure - C n Develo ign - A New Pro Produc ducation Educati Basic E Educati larvard	ques eesign fo ppment - gile Pro- oducts - t Life C Total n; 2020. ion; 2017 ooks; 20 on. 2017 Busines	Periods: Collaborat Collaborat duct Devel Periods: Developing ycle - Con Periods: 4 4. 017.	ability - ion and opment 9 a New tinuous 5 5 ress. 202	CO4			
JNIT-IV Product Archite Environmental C Cross - Functio Methodologies JNIT-V Developing a Ne Product Busine Improvement a Lecture Periods Text Books 1. Ulrich KT, 2. Crawford 3. Cooper Re Reference Bool 1. Trott, P. Ir 2. Thomke, S 3. Blank, S. O	Produc cture an Considera onal Tear Launch ew Produ ess Plan nd Future s: 45 Eppinge CM, Di Bo G. Winnir ks novation S. Experir G., & Dor	t Design and Development d its role in NPD - Modular tions - Organizing Product Development - n, Strategy and Commercializa ct Strategy - Building Market Developments - Preparing for Market Launch e Product Enhancements Tutorial Periods: - SD. Product design and developmendetto A. New products mana and at new products: Creating value management and new product of mentation works: The surprising	vs. Integral Produce elopment Teams - Sta Tools for Effective P tion emand and Entry Stra h - Post - Launch E Prace pment. 7 th edition. Mo gement. 11 th edition. In ue through innovation. development 6 th edition power of business exp al: The step-by-step ge	Prototyping t Architectu ges of team roduct Des ategies for N valuation - ctical Perio Graw-Hill E McGraw-Hill E McGraw-Hill 5 th edition.	Technic ure - C n Develo ign - A New Pro Produc ducatio Educati Basic E Educati larvard ding a g	ques resign fo ppment - gile Pro- ducts - t Life C Total n; 2020. ion; 2017 ooks; 20 on. 2017 Business reat com	Periods: Collaborat Collaborat duct Devel Periods: Developing ycle - Cor Periods: 4 4. 017.	ability - ion and opment 9 a New tinuous 5 5 ress. 202 y. 2020	CO4			

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COs/POs/PSOs Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	Program Specifi Outcomes (PSO:		
(COs)													PSO1	PSO2	PSO3
CO1	3	-	3	-	3	1	1	-	-	1	-	2	3	-	3
CO2	1	-	2	1	3	-	-	1	-	1	-	3	2	1	3
CO3	1	1	3	-	2	-	1	-	2	-	1	2	3	-	2
CO4	3	-	1	1	3	1	-	1	2	-	1	1	1	1	3
CO5	1	-	3	-	3	-	-	-	2	-	1	2	3	-	3

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Co	ntinuous Asse	essment Marks ((CAM)	End Semester	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100

Department		nagement Studies	Programme									
Semester	V/V	I	Course Cate	• •		·····•	ester Exa					
Course Code	1100			Periods/We	ek	Credit	Maximu	•••				
		HSOC03	L	T	P	С	CAM	ESE	TM			
Course Name	FIN	ANCE FOR ENGINEERS	3	0	0	3	25	75	100			
		Commo	n to ALL Branches	6								
Prerequisite	Nil											
	On c	ompletion of the course, the stude	nts will be able to					BT Ma (Higl Lev	hest			
	CO1	Explain the objectives, scope, ar differentiate between profit maximiz		-		ngineerir	ng, and	, К2				
	CO2	Apply the concepts of the time valu appraisal techniques such as NPV,			-		estment	κ	K3			
Course Outcomes	CO3	CO3 Demonstrate the steps in the capital budgeting process and apply techniques like cost- benefit and sensitivity analysis for evaluating engineering projects.										
		Analyze financial statements, inclu	uding balance shee	ets and inc	ome state			1				
	CO4	engineering perspective, and evaluation	ate financial ratios t	to assess th	e financial	perform	ance of	K	4			
		engineering projects. Analyze different types of costs, su	ich as fixed variab	le and ma	rainal cost	s and e	valuate					
	CO5	cost-benefit analysis and break-eve					Valuato	K	4			
JNIT-I-	Intro	duction to Financial Management					riods: 9	1				
		lanagement: Objectives, Scope, and										
		anning - Basic Concepts: Profit Maxir laking, Relationship between Finance				of Engine	ering Ma	inagers	CO1			
JNIT-II	*****	ne Value of Money and Investment				Pe	riods: 9					
Fime Value of I	<u>l</u>	Concept, Importance and Applicati		g Project,	Present V	alue an	d Future	Value				
		nt Appraisal Techniques: Payback F			V), Intern	al Rate	of Return	ו (IRR)	CO2			
JNIT-III	·····	ability Index (PI) - Risk Analysis in Inv pital Budgeting for Engineering Pro		laking.		Pe	riods: 9					
	i	cess: Steps and Key consideration	-	Evaluating	Engineer			h-Flow				
Estimation for P		Cost - Benefit Analysis in Engineeri							CO3			
Evaluation. JNIT-IV	Ein	ancial Statements and Ratio Analy				Po	riods: 9					
-		al Statements: Balance Sheet, Inco		d an Engi	neering P			nancial				
Statement Interp	retatior	 Financial Ratios: Liquidity, Profi of Ratio Analysis in Engineering Proje 	tability - Engineeri						CO4			
JNIT-V	Co	st Estimation and Engineering Eco	nomic Analysis			Pe	riods: 9					
Analysis in Engi Economic Analys	neering is: Rep	timation in Engineering - Types of (Projects, Break-Even Analysis and lacement Analysis.	I Its Application in	Engineerin	g Decisio				CO5			
Lecture Periods	: 45	Tutorial Periods: 0	Pract	tical Period	ls: 0	Total	Periods	: 45				
Text Books												
		/icks EM, Koelling CP. Engineering E	•									
,	• •	vers SC, Allen F. Principles of Corpora				•						
•		ouston JF. Fundamentals of Financial	Management. 15 th	edition. Ce	ngage Lea	rning; 20)19.					
Reference Book			— • • • • • • • • • • • • • • • • • • •	–			~					
•		Sinha KK. Financial Management for	•		•		018.					
		nance for Engineers: Evaluation and	Funding of Capital	Projects. Sp	pringer; 20	17.						
Neb References			• •	··· · · ·								
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https://w		estopedia.com/ask/answers/033015/v										

3.	https://omnicard.in/blogs/capital-budgeting-24042024
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5.	https://corporatefinanceinstitute.com/resources/accounting/financial-ratios/
6.	https://www.dau.edu/acquipedia-article/engineering-cost-estimation-method

COs/POs/PSOs Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	Program Spe Outcomes (P		
(COs)													PSO1	PSO2	PSO3
CO1	1	2	-	-	-	1	1	1	-	2	1	1	1	1	2
CO2	1	2	1	-	1	2	1	2	-	3	1	-	1	2	3
CO3	-	3	3	-	1	3	1	2	-	3	1	1	1	2	3
CO4	1	2	-	2	1	1	2	1	1	2	1	-	2	1	2
CO5	-	3	-	-	2	3	2	2	1	2	2	3	2	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		II	nternal Assess	ment Marks (IAM)		End Semester	Total	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Total Marks	
Marks	5	5	5	5	5	75	100	

Department	Manag	ement Studies	Programme	B. Tech							
Semester	V/VI		Course Cate	*End Sem	ester Exa	m Type:	TE				
Course Code			Pe	eriods/Wee	k	Credit	Maximur	n Marks			
Course Code	U23HS	OC04	L	Т	Р	С	CAM	ESE	TM		
Course Name	ECONO	MICS FOR ENGINEERS	3	0	0	3	25	75	100		
		Common t	o ALL Branche	es							
Prerequisite	Basics	s of Economics									
	On con	npletion of the course, the students	will be able to					BT Ma (Hig Lev	hest		
	CO1 Interpret principles of managerial economics to real-world scenarios, utilizing demand analysis and forecasting techniques.										
Course	CO2	Discuss production functions and cos decision-making and market strategies		evaluate 1	heir im	pact on ma	anagerial	к	2		
Outcomes	CO3	Examine various market structures a market behavior and competitive dynar	mics.	0		J		К3			
	CO4 Apply macroeconomic policies and their implications on business cycles, investment decisions, and economic stability.										
	CO5	CO5 Analyze recent economic trends, such as technological advancements and income inequality.									
UNIT-I	Introd	uction to Managerial Economics				Pe	eriods: 9				
Quantitative Met UNIT-II Production Func	hods. Produc	ng with the curve - Demand Forecastin tion Function and Cost Concepts aning, Types, Applications in Manageri	al Decision Ma	king - Law	of vari	able propo	eriods: 9 rtion and I	aw of	<u> </u>		
	arginal co	Quants - Producer Surplus: Price ceili ost - Revenue Concepts: Total Revenue t Structure				nd Average			CO2		
Market structure Based Pricing,	: Perfect Demand	Competition, Monopoly, Monopolistic (- Based Pricing, Competition - Based P Price Discrimination, Premium Pricing a	ricing, Psycholo			oly - Pricing	policies:		CO3		
UNIT-IV		economics					eriods: 9				
income - Mone	tary polic	nic Policies - National Income Concep by and Fiscal Policy - Business Cycles gn Institutional Investment (FII).							CO4		
UNIT-V		Trends in Economics				P	eriods: 9				
	conomic	merce, Fintech, and Online Services Decision-Making - Gig Economy : Gi							CO5		
Economies - Inco		equality : Causes, Effects, and Socio - p	olitical Impact								
Economies - Inco Lecture Periods		equality : Causes, Effects, and Socio - p Tutorial Periods:	olitical Impact	tical Perio	ds:	Total Pe	riods: 45				
Economies - Inco Lecture Periods Text Books	s: 45	Tutorial Periods:	political Impact Prac	tical Perio					Alilos		
Economies - Inco Lecture Periods Text Books 1. Samuel 2020.	s: 45 Ison, Willi	Tutorial Periods:	vial Economics:	t ical Perio Theory, A _l	oplicatio			edition, V	Viley,		
Economies - Inco ecture Periods Text Books 1. Samuel 2020. 2. Ahuja, I	s: 45 Ison, Willi H. L. Prin	Tutorial Periods: iam F., and Marks, Stephen G. Manage ciples of Managerial Economics, 7 th edi	rial Economics:	tical Perio Theory, A _l aw-Hill, 20	oplicatio			edition, \	Viley,		
Economies - Inco Lecture Periods Text Books 1. Samuel 2020. 2. Ahuja, I 3. Mithani	s: 45 Ison, Willi H. L. Prin , D. M. M	Tutorial Periods:	rial Economics:	tical Perio Theory, A _l aw-Hill, 20	oplicatio			edition, V	Viley,		
Economies - Inco Lecture Periods Text Books 1. Samuel 2020. 2. Ahuja, I 3. Mithani Reference Bool	s: 45 Ison, Willi H. L. Prin , D. M. M Ks	Tutorial Periods: iam F., and Marks, Stephen G. Manage ciples of Managerial Economics, 7 th edi anagerial Economics, 3 rd edition., Hima	rial Economics: tion, Tata McGr laya Publishing	t ical Perio Theory, A _l aw-Hill, 20 House,202	oplicatio 17 21.	ons, and Ca	ses, 10 th e		Viley,		
Economies - Inco ecture Periods Text Books 1. Samuel 2020. 2. Ahuja, I 3. Mithani Reference Bool 1. Varian, 2. Brickley 7 th editio	s: 45 Ison, Willi H. L. Prin , D. M. M Ks Hal R. In 7, James on., McG	Tutorial Periods: iam F., and Marks, Stephen G. Manage ciples of Managerial Economics, 7 th edi anagerial Economics, 3 rd edition., Hima termediate Microeconomics: A Modern A., Smith Jr., Clifford W., and Zimmerm raw-Hill Education, 2016.	rial Economics: tion, Tata McGr laya Publishing Approach, 9 th e an, Jerold L. Ma	tical Perio Theory, Ap aw-Hill, 20 House,202 dition., W.1 anagerial E	oplicatio 17 21. W. Norte conomi	ons, and Ca on & Compa cs and Org	ses, 10 th e				
Economies - Inco ecture Periods Text Books 1. Samuel 2020. 2. Ahuja, I 3. Mithani Reference Bool 1. Varian, 2. Brickley 7 th editi 3. Samuel	s: 45 Ison, Willi H. L. Prin , D. M. M ks Hal R. In /, James on., McG Ison, Pau	Tutorial Periods: iam F., and Marks, Stephen G. Manage ciples of Managerial Economics, 7 th edi anagerial Economics, 3 rd edition., Hima termediate Microeconomics: A Modern A., Smith Jr., Clifford W., and Zimmerm	rial Economics: tion, Tata McGr laya Publishing Approach, 9 th e an, Jerold L. Ma	tical Perio Theory, Ap aw-Hill, 20 House,202 dition., W.N anagerial E Graw-Hill E	pplicatic 17 21. W. Norte conomi ducatio	ons, and Ca on & Compa cs and Org n, 2019.	ses, 10 th e any, 2014. anizationa				

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COs/POs/PSOs Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	P07	PO8	PO9	PO10	PO11	PO12	Outc	ram Spe omes (P	SOs)
(COs)													PSO1	PSO2	PSO3
CO1	1	1	1		1	1				2	2		1	1	1
CO2	1	1	1	2	2	2	2			3	3	3	1	1	1
CO3	1	1	1	2	-	2	2			3	-	3	1	1	1
CO4	1	1	-	2	2	2	2	2		3	3	3	1	1	-
CO5	1	1	1	2	2	-	2	2		3	3	3	1	1	1

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Conti	nuous Assessme	ent Marks (CAM)		End Semester		
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Total Marks	
Marks	5	5	5	5	5	75	100	

Department	Comp	uter Scie	ence and Engineering	Programme	: B. Tecl	า					
Semester	Manag	jement S	studies	Course Cate	egory Co	de: OE	*End Sem	ester Exa	am Type	e: TE	
					riods/W		Credit		ximum		
Course Code	U23HS	SOC05		L	Т	Р	С	CAM	ESE	ТМ	
Course Name	MARK	ETING N	IANAGEMENT	3	0	0	3	25	75	100	
			Common to	ALL Branches	6		1				
Prerequisite											
	On co	mpletion	of the course, the student	s will be able	to				(Hig	ipping hest /el)	
	CO1	Explain t	he importance of marketing a	and differentiat	e betwee	en marke	ting and se	elling.		2	
	CO2 Apply the consumer decision-making process and differentiate between industrial and consumer buying behavior.							к	3		
Course Outcomes	СОЗ	Examine product life cycle management strategies and demonstrate the steps involved in new product development.									
			the role of distribution char for both consumer and indus		ign an e	ffective of	channel dis	stribution	к	3	
	1-115	-	emerging trends in marketin eriential marketing strategies.		Custome	r Relatio	nship Mana	agement	к	4	
UNIT-I	Introd	uction to	Marketing				Periods	: 9	•		
Marketing - Importa	ince of	Marketin	g - Difference between Mark	keting and Sel	ling - Ma	arketing E	Invironmer	nt: The M	acro		
		-	ortance of environment anal				-			CO1	
	egic pla	nning pro	cess and Steps in strategic	planning - Ethi	cal and S	Social Re	esponsibility	of Marke	eting	001	
 4 Ps of Marketing 	1						1				
			aviour and Marketing Strat	.			Periods	-			
Meaning and Step organizational mark	os in C kets, Ch	Consume naracteris	ehavior - Factors influencing r decision making Process stics, Difference between Ind ce – Targeting, Positioning a	 Organizati dustrial and C 	ional bu onsumer	ying beł [.] buying	naviour: C	lassification	on of	CO2	
		-	ricing Mix				Periods	: 9			
Product classificatic Importance and Ste kinds of packaging	ons - Pr eps in N g and	roduct Li lew Prod advanta	fe cycle - Strategies for mai uct Development – Packagir ges of packaging – Labe objectives – Pricing strategie	ng: Need for pa Iling: Function	ackaging	, Essent	ial qualities	of packa	aging,	CO3	
UNIT-IV	Place	and Pror	notion Mix				Periods	: 9			
 Channels of distril 	bution f		istribution: Meaning and Imp	ortance of dist	ribution (channel -	Channel c	lesign de			
		Promotion	mer and industrial goods – P n: Objectives, Types of sale ad Marketing Communication	hysical Distrib s promotion:	ution: Me			and comp		CO4	
promotion – Introdu	ction to	Promotion	n: Objectives, Types of sale ad Marketing Communication	hysical Distrib s promotion:	ution: Me			and comp id Dealer			
promotion – Introdu UNIT-V Emerging trends ir Experiential Market Digital Marketing: M inbound and outbo	ction to Trends Marke ing: Me leaning, bund ma	Promotion Integrate s in Mark eting - (eaning, si , types of arketing	n: Objectives, Types of sale ad Marketing Communication	hysical Distrib s promotion: agement: Def ile Marketing: marketing: Mea	ution: Me Consum inition, f Definitic aning, fu	er, Sales eatures, in and ty ndamenta	Periods Types an pes of mo als and diff	and comp ad Dealer : 9 d importa bile mark erence be	ance - eting -	CO4	
promotion – Introdu UNIT-V Emerging trends ir Experiential Market Digital Marketing: M	ction to Trends Marke ing: Me leaning, bund ma able Ma	Promotion Integrate s in Mark eting - (eaning, si , types of arketing	n: Objectives, Types of sale ad Marketing Communication seting Customer Relationship Man trategies and benefits - Mob digital marketing – Inbound I	hysical Distrib s promotion: agement: Def ile Marketing: marketing: Mea	ution: Me Consum inition, f Definitic aning, fu nce, met	er, Sales eatures, in and ty ndamenta	Periods Types an pes of mo als and diff marketing	and comp ad Dealer : 9 d importa bile mark erence be	ance - eting - etween s - An	CO4	
promotion – Introduce UNIT-V Emerging trends ir Experiential Market Digital Marketing: M inbound and outbo overview of Sustain Lecture Periods: 4	ction to Trends Marke ing: Me leaning, bund ma able Ma	Promotion Integrate s in Mark eting - (eaning, si , types of arketing	n: Objectives, Types of sale ad Marketing Communication seting Customer Relationship Man trategies and benefits - Mob digital marketing – Inbound i - Marketing Analytics: Mea	hysical Distrib s promotion: agement: Def ile Marketing: marketing: Mea ning, importar	ution: Me Consum inition, f Definitic aning, fu nce, met	er, Sales eatures, in and ty ndamenta	Periods Types an pes of mo als and diff marketing	and comp nd Dealer : 9 d importa bile mark erence be analytics	ance - eting - etween s - An	CO4	
promotion – Introduc UNIT-V Emerging trends ir Experiential Marketi Digital Marketing: M inbound and outbo overview of Sustaina Lecture Periods: 4	ction to Trends in Marke ing: Me leaning, und ma able Ma 5	Promotion Integrate s in Mark eting - (eaning, si , types of arketing arketing	n: Objectives, Types of sale ad Marketing Communication seting Customer Relationship Man trategies and benefits - Mob digital marketing – Inbound i - Marketing Analytics: Mea	Physical Distrib s promotion: agement: Def ile Marketing: Mea ning, importar Practical Pe	ution: Me Consum inition, f Definitic aning, fu nce, met	er, Sales eatures, in and ty ndament rices of	Periods Types an pes of mo als and diff marketing	and comp and Dealer : 9 d importa bile mark erence be analytics otal Peric	r sales ance - eting - etween s - An ods: 45	CO4	

Referen	ce Books									
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Web Re	leb References									
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4.	http://www.publishingindia.com/ijamm/									
5.	https://onlinecourses.swayam2.ac.in/imb20_mg36/preview									

COs/POs/PSOs Mapping

Course Outcomes (COs)	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	P011	PO12			
Outcomes (COS)													PSO1	PSO2	PSO3
CO 1	1	2	-	-	-	2	1	1	-	2	1	1	2	2	2
CO 2	1	2	1	-	1	2	1	2	-	2	1	1	2	2	2
CO 3	1	2	3	-	1	2	1	2	-	2	1	1	2	2	2
CO 4	1	1	3	-	2	1	2	1	1	2	2	1	2	2	2
CO 5	1	3	2	2	2	3	2	2	1	2	2	3	2	2	2

Correlation Level: 1 - Low, 2 - Medium, 3 - High

Evaluation Methods

		Conti	nuous Assessme	nt Marks (CAM)		End Semester	
Assessment	CAT 1	CAT 2	Model Exam	Assignment*	Attendance	Examination (ESE) Marks	Total Marks
Marks	5	5	5	5	5	75	100