VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN

(AUTONOMOUS)

M.Sc., (COMPUTER SCIENCE)

(Candidates admitted from 2020-2021 Onwards)

REGULATIONS

I. SCOPE OF THE PROGRAMME

Master of Computer Science can be considered to be one of the most prominent Master's level programs in our country. This program mainly deals with the development of computer applications for the purpose of updating computer programming languages. M.Sc.(CS) also aims at creating strong knowledge of theoretical computer science subjects who can be employed in research and development units of industries. The course has a time period of two years with four semesters.

II. SALIENT FEATURES

- > Regular conduct of guest lectures and seminars
- Campus recruitment
- > Provides facilities such as internet access and in-house library
- > Provides career guidance for Post Graduate Courses and the Certifications in programming languages
- Conduct of personality development program
- Visiting faculties from industries

III. OBJECTIVES OF THE COURSE

The course objective of the M.Sc.Computer Science program is to provide advanced and in-depth knowledge of computer science and its applications to enable students pursue a professional career in Information and Communication Technology in related industry, business and research. The course designed to impact professional knowledge and practical skills to the students.

IV. ELIGIBILITY FOR ADMISSION

A Candidate who has passed B.Sc. Computer Science /BCA/B.Sc. Computer Technology / B.Sc. Information Science Degree of Periyar university or any of the Degree of any other university accepted by the syndicate as equivalent thereto subject to such conditions as may be prescribed therefore shall be permitted to appear and qualified for the M.Sc. Computer Science Degree Examinations of the Periyar University after a course of study of two academic years.

V. DURATION OF THE PROGRAMME

- The course shall extend over a period of two academic years consisting of four semesters. Each academic year will be divided into two semesters. The First semester will consist of the period from July to November and the Second semester from December to April.
- The subjects of the study shall be in accordance with the syllabus prescribed from time to time by the Board of Studies of Vivekanandha College of Arts and Sciences for Women (Autonomous) with the approval of Periyar University.

VI. CONTINUOUS INTERNAL ASSESSMENT (CIA)

The performance of the students will be assessed continuously and the Internal Assessment Marks will be as under:

	Total	=	25 Marks
4.	Attendance	-	05 Marks
3.	Assignment	-	05 Marks
2.	Seminar	-	05 Marks
1.	Average of two Tests	-	10 Marks

Internal Assessment Marks for Practical

1. Attendance	-	10 Marks
2. Observation	-	10 Marks
3. Test	-	20 Marks

Total = 40 Marks

PASSING MINIMUM (Theory) - EXTERNAL

In the Semester Examinations, the passing minimum shall be 50 % out of 75 Marks. (38 Marks)

PASSING MINIMUM (Practical) - EXTERNAL

In the Semester Examinations, the passing minimum shall be 50 % out of 60 Marks. (30 Marks)

DISTRIBUTION OF MARKS

Program writing	: 10 Marks
Debugging	: 10 Marks
For Results	: 05 Marks
Viva – voce	:05 Marks

The Passing minimum shall be 50% out of 60 marks (30 Marks)

VII. ELIGIBILITY FOR EXAMINATION

PERCENTAGE	MARKS		
	THEORY	PRACTICAL	
75-80	1	2	
81-85	2	4	
86-90	3	6	
91-95	4	8	
96-100	5	10	

A candidate will be permitted to appear for the Semester Examination only on earning 75 % of attendance and only when her conduct has been satisfactory. A candidate having 65% to 74% of attendance should pay condination fees prescribed by the controller of Examination office.

VIII. CLASSIFICATION OF SUCCESSFUL CANDIDATES

Successful candidates passing the examination of Core Courses (Main and Elective subjects) and securing marks

- a) 75% and above shall be declared to have passed the examination in first class with Distinction provided they pass all the examinations prescribed for the course at first appearance itself.
- b) 60% and above but below 75% shall be declared to have passed the examinations in first class without Distinction.
- c) 50% and above but below 60% shall be declared to have passed the examinations in second class.
- d) Candidates who pass all the examinations prescribed for the course at the first appearance itself and within a period of two consecutive academic years from the year of admission only will be eligible for University rank.
- e) If she fails to complete her course within the specified period, she can extend for two year's to complete her course.

IX. ELIGIBILITY FOR AWARD OF THE DEGREE

A candidate shall be eligible for the award of the degree only if she has undergone the above degree for a period of not less than two academic years comprising of four semesters and passed the examinations prescribed and fulfilled such conditions have been prescribed therefore.

X. PROCEDURE IN THE EVENT OF FAILURE

If a candidate fails in a particular subject, she may reappear for the semester examination in the concerned subject in subsequent semesters and shall pass the examination.

XI. COMMENCEMENT OF THE REGULATIONS

- The regulations shall take effect from the academic year 2020-2021 (i.e.,) for the students who are to be admitted to the first year of the course during the academic year 2020-21 and thereafter.
- Candidates who were admitted to the PG course of study before 2018-19 shall be permitted to appear for the examinations under those regulations for the period of three years ie., upto and inclusive of the examinations of 2018-19. Thereafter, they will be permitted to appear for the examination only under the regulations then in force.

EVALUATION OF EXTERNAL EXAMINATIONS (EE) QUESTION PAPER PATTERN

Knowledge Level	Section	Marks	Description	Total
K1 ,K2,K3,K4	A (Answer All)	20 x 1 = 20 Marks	One Marks	
K1 ,K2,K3,K4	B (Either or Pattern)	5 x 5=25 Marks	Short Answers	75
K1 ,K2,K3,K4	C (3 out of 5)	3 x 10= 30 Marks	Descriptive Type	

External Evaluation (Theory)

Internal Evaluation (Theory)

Knowledge Level	Section	Marks
K1 ,K2,K3,K4	CIA -1 and CIA -2	5
K1 ,K2,K3,K4	Model	5
K1 ,K2,K3,K4	Seminar	5
K1 ,K2,K3,K4	Assignment	5
-	Attendance	5
	Total	25

QUESTION PAPER PATTERN – PRACTICAL

Time duration: 3 Hours

Max. Marks: 60

- 1. One compulsory question from the given list of programs : 30 Marks
- 2. One Either / OR type question from the given list of programs : 30 Marks The Passing minimum shall be 50% out of 60 marks (30 marks)

Distribution of Marks

Problem Understanding	:	05
Marks Program writing	:	10
Marks		
Debugging & Result	:	10
Marks		
Viva voce	: 05 N	Marks

QUESTION PAPER PATTERN – Project and Viva voce

Evaluation (External)	: 150 Marks
Viva-voce (External)	: 50 Marks

Continuous Assessment Test (CIA 1 and CIA 2)

Knowledge Level	Section	Marks	Description	Total	
K1	A (Answer All)	10 x1= 10 Marks	MCQ/define		
K2	B (Either or Pattern)1x 5= 5 MarksShort Answers		Short Answers	25	
К3	C (Answer 4 out of 6)	1x 10= 10 Marks	Descriptive		

VIVEKANANDHA COLLEGE OF ARTS AND SCIENCE FOR WOMEN (AUTONOMOUS)

ELAYAMPALAYAM, TIRUCHENGODE, NAMAKKAL DT.

VISION

To evolve into a center of excellence in higher education through creative and innovative practices to social equity for women.

MISSION

- To provide sufficient learning infrastructure to the students to pursue their studies.
- To provide good opportunity for higher education and favorable environment to the students to acquire education.
- To provide quality academic programs training activities and research facilities.
- To facilitate industry-institute interaction.

PG DEPARTMENT OF COMPUTER SCIENCE

VISION

To provide high academic goals to the students and make them the world leaders both in educational and research through effective teaching.

MISSION

- To create, share and apply knowledge in Computer Science including inter disciplinary areas that extends the scope of Computer Science and benefit humanity.
- To educate students to be successful, ethical and effective problem solvers.
- To prepare the students to contribute positively to the economic well being of our region and nation

						Marks	
Som	Course Code	Courses	Credits	Hours			
Sem	Course Code	Courses	Credits	nours	I.A.	E.E.	Total
					Marks	Marks	Marks
	20P1CSC01	Core Course-I - Advanced Computer Organization and Architecture	4	4	25	75	100
	20P1CSC02	Core Course-II -Design and Analysis of Algorithms	4	4	25	75	100
	20P1CSC03	Core Course-III –Web Technologies	4	4	25	75	100
	20P1CSC04	Core Course-IV- Advanced Database Management Systems	4	4	25	75	100
1	20P1CSE	Elective Course- I	4	4	25	75	100
•	20P1CSP01	Core Course-II Design and Analysis of Algorithms Lab	2	4	40	60	100
	20P1CSP02	Core Course-III- Web Technologies Lab.	2	4	40	60	100
		Library		1			
		Net Lab.		1			
	TOTAL	-	24	30	205	495	700
	20P2CSC05	Core Course-V – Advanced Concepts in Operating System	4	4	25	75	100
	20P2CSC06	Core Course-VI – Java Server Programming	4	4	25	75	100
	20P2CSC07	Core Course-VII – Dot Net Programming	4	4	25	75	100
	20P2CSC08 20P2CSE	Core Course-VIII – Mobile Computing Elective Course -II	4	4	25	75 75	100 100
	20P2CSE	Core Course-VI - Java server programming Lab	4	4	25 40	60	100
	20P2CSP03	Core Course-VII-Mini Project	2	4	40	60	100
		Library		1			
II		Net Lab		1			
	TOTAL		24	30	205	495	700
	20P3CSC09	Core Course-IX – Soft Computing	4	4	25	75	100
	20P3CSC10	Core Course-X - Python programming	4	4	25	75	100
	20P3CSC11	Core Course-XI – Data Mining and Warehousing	4	4	25	75	100
	20P3CSE	Elective Course III	4	4	25	75	100
	00000004	EDC- I Resource Management Techniques	4	4	25	75	100
III	20P3CSP04	Core Course-X - Python Programming Lab	2	4	40	60	100
	20P3CSP05	Core Course-XI - Data Mining Lab	2	4	40	60	100
		Human Rights	1	-	25	75	100
		Library		1			
		Net Lab		1			
		TOTAL	24	30	230	570	800
	20P4CSC12	Core Course-XII – Cloud Computing	4	5	25	75	100
	20P4CSC13	Core Course-XIII – Digital Image Processing	4	5	25	75	100
IV	20P4CSE	Elective Course -IV	4	5	25	75	100
	20P4CSPR02	Core Course-XVI – Project Lab	6	-	40	60	100
	TOTAL		18	15	115	285	400
	Total N	o. of credits (Core + EDC + HR + Elective)	70+4+1+ 16=91	105	675	1825	2600

ELECTIVE COURSES

Elective-I:

Course Code	Course Name		
20P1CSE01	Theory of Computing		
20P1CSE02	Software Project Management and Quality Assurance		
20P1CSE03	Client Server Technology		
20P1CSE04	Internet of Things		

Elective-II:

Course Code	Course Name
20P2CSE05	Network Security
20P2CSE06	Wireless Application Protocol
20P2CSE07	Multimedia and Virtual Reality
20P2CSE08	AI and Expert System

Elective-III:

Course Code	Course Name
20P3CSE09	Compiler Design
20P3CSE10	Object Oriented Analysis and Design
20P3CSE11	Embedded Systems
20P3CSE12	Professional Ethics

Elective-IV:

Course Code	Course Name
20P4CSE13	Big Data Analytics
20P4CSE14	Cyber Forensics
20P4CSE15	Distributed Computing
20P4CSE16	Ad Hoc Sensor Network

EDC-EXTRA DISCIPLINARY COURSE

Students are expected to opt EDC (Non Major Elective) offered by other departments.

I.A. – INTERNAL ASSESSMENT

E.E. – END SEMESTER EXAMINATIONS

The content of the syllabus and regulations may be followed for at least two sets of students from 2020-21 and it passed in the academic year 2022-2023.

VIVEKAN	ANDHA COLLEGE	OF ARTS .	AND SCIE	NCES FO)R	ISO 9001:2008					
WOMEN (AUTONOMOUS)											
	Elayampalayam, Ti	ruchengode-	637 205.								
M.Sc	Programme Code	Р	CS	Regulat	tions	2020-2021					
Con	Computer ScienceSemester1										
	Periods Credit Maximum Marks										
ADVANCED											
			4	25	75	100					
	XCHITECTURE	4 0 0		23	15	100					
On successful co	mpletion of this course we l	earn the funda	amentals of Op	erating Sys	tems ar	chitecture,					
			-								
-			c 1								
	PRO	GRAMME O	UTCOME								
Apply knowledge	e of computing fundamental	s, computing	specialization,	mathematio	cs, and	domain					
knowledge appro	opriate for the computing spe	ecialization to	the abstraction	n and conce	ptualiza	ation of					
					-						
Identify, formula	te, research literature, and so	olve complex	computing pro	blems reac	hing sul	ostantiated					
conclusions using	g fundamental principles of	mathematics,	computing scie	ences, and r	elevant	domain					
disciplines.											
-	-			-	luate sy	stems,					
	-			-	ts, analy	ysis and					
-		-			-41	1. (1					
		-		dern compi	ating too	ols to complex					
				ongibilitiog	and no	orma of					
		s and cyber re	gulations, resp	onsionnes	, and no	nins of					
-		engage in inde	pendent learni	ng for conti	inual de	evelopment as a					
-	-	inguge in inde	pendent ream	ing for cont	indui de	veropinent us u					
1 01		of the computi	ng and manage	ement princ	iples an	d apply these to					
		-		-	-						
environments.											
Communicate eff	fectively with the computing	g community,	and with socie	ty at large,	about co	omplex					
computing activi	ties by being able to compre	hend and writ	e effective rep	orts, design	docum	entation, make					
-											
-			-	1							
	ely as an individual and as a	a member or le	eader in divers	e teams and	l in mul	tidisciplinary					
	onnontunity and using innor	ution to mum	in that appartu	nite to ano	to voluo	and wealth for					
		-	ie mai opportu	inty to crea	te value	e and weatur for					
		-	ms and solution	ns for com	lex pro	blems					
		-		1	-						
demands.	······	• , • • •	. 0	±	1						
	M.Sc Com ADVANCED A ADVANCED A AND AI On successful co Algorithms for In operating System Apply knowledg knowledge appro- computing mode Identify, formula conclusions usin disciplines. Design and evalue components, or p Use research-bass interpretation of Create, select, ac computing activit Understand and a professional com Recognize the ne computing profe Demonstrate kno ones own work, environments. Communicate eff computing activit effective present Understand and global contexts, a Function effective environments. Identify a timely the betterment of To apply knowle	WOMEN (AU Elayampalayam, Ti M.Sc Programme Code Course Name ADVANCED COMPUTER ORGANIZA AND ARCHITECTURE On successful completion of this course we I Algorithms for Implementing DSM compose operating Systems. PRO Apply knowledge of computing fundamental knowledge appropriate for the computing spe computing models from defined problems an Identify, formulate, research literature, and sc conclusions using fundamental principles of disciplines. Design and evaluate solutions for complex co components, or processes that meet specified Use research-based knowledge and research interpretation of data, and synthesis of the in Create, select, adapt and apply appropriate te computing activities, with an understanding of Understand and commit to professional ethic professional computing practice. Recognize the need, and have the ability, to a computing professional. Demonstrate knowledge and understanding of ones own work, as a member and leader in a environments. Communicate effectively with the computing computing activities by being able to compre- effective presentations Understand and assess societal, environment global contexts, and the consequential respor Function effectively as an individual and as a environments. Identify a timely opportunity and using innov the beterment of the individual and society a To apply knowlege of computing to create of To identify, analyse and synthesize scholarly To develop scientific outlook that solves any	WOMEN (AUTONONO Elayampalayam, Tiruchengode-CM.ScProgramme CodePComputer SciencePeriods per WeekCourse NamePeriods per WeekADVANCED COMPUTER ORGANIZATION AND ARCHITECTURE 4 0 0On successful completion of this course we learn the funda Algorithms for Implementing DSM components and mana operating Systems.PROGRAMME OApply knowledge of computing fundamentals, computing knowledge appropriate for the computing specialization to computing models from defined problems and requirement Identify, formulate, research literature, and solve complex conclusions using fundamental principles of mathematics, disciplines.Design and evaluate solutions for complex computing prof components, or processes that meet specified needs with all Use research-based knowledge and research methods inclui interpretation of data, and synthesis of the information to pri Create, select, adapt and apply appropriate techniques, rese computing professional.Demonstrate knowledge and understanding of the computing computing professional.Demonstrate knowledge and understanding of the computing professional.Demonstrate knowledge and understanding of the computing professional.Demonstrate knowledge and understanding of the computing activities by being able to comprehend and write effective presentationsUnderstand and assess societal, environmental, health, safe global contexts, and the consequential responsibilities relee Function effectively as an individual and as a member of le environments.Identify a timely opportunity and using innovation to purst the betterment of the individual and society at large.To apply knowl	WOMEN (AUTONOUS) Elayampalayam, Tiruchengod-637 205.M.SeProgramme CodePCSComputer ScienceSemesterCurse NamePeriodsCredit per WekLTPCADVANCED COMPUTER ORGANIZATIONADVANCED COMPUTER ORGANIZATIONConclasional computing specialization, computin	WOMEN (AUTONOMOUS) Elayampalayam, Tiruchengode-637 205. M.Sc Programme Code PCS Regular Computer Science Semester Course Name Periods Credit Maximum L T P C CA ADVANCED COMPUTER ORGANIZATION AND ARCHITECTURE 4 0 0 4 25 On successful completion of this course we learn the fundamentals of Operating Sys Algorithms for Implementing DSM components and management aspects of Real thi operating Systems. PROGRAMME OUTCOME Apply knowledge of computing fundamentals, computing specialization, mathematik knowledge appropriate for the computing specialization to the abstraction and conce conclusions using fundamental principles of mathematics, computing problems read conclusions using fundamental principles of mathematics, computing sciences, and redisciplines. Design and evaluate solutions for complex computing problems, and design and eval components, or processes that meet specified needs with appropriate consideration Use research-based knowledge and research methods including design of experimen interpretation of data, and synthesis of the informations Understand and commit to professional ethics and cyber regulations, responsibilities professional. Communicate frectively with the computing community, and with soci	Elayampalayam, Tiruchengole-637 205.M.ScProgramme CodePCSRegulationsComputer ScienceSemesterLPeriodsCreditMaximum MarLDeriverPCCAESBADVANCED COMPUTER ORGANIZATIONAND ARCHITECTURE 4 0042575On successful completion of this course we learn the fundamentals of Operating Systems an Algorithms for Implementing DSM components and management aspects of Real time and operating Systems.PROGRAMME OUTCOMEApply knowledge of computing fundamentals, computing specialization, mathematics, and knowledge appropriate for the computing specialization to the abstraction and conceptualize computing models from defined problems and requirements.Identify, formulate, research literature, and solve compute computing problems reaching sul conclusions using fundamental principles of mathematics, computing problems reaching sul conclusions using fundamental principles of mathematics.Comistien and evaluate sy components, and relevant disciplines.Use research-based knowledge and research methods including design of experiments, anal interpretation of data, and synthesis of the information to provide valid conclusions.Understand and commit to professional ethics and cyber regulations, responsibilities, and no professional.Demostrate knowledge and understanding of the limitationsUnderstand and commit to professional ethics and cyber regulations, responsibilities, and no professional.Demostrate knowledge and understanding of the computing and management principles an ones own work, as a member and leader in a team, to manage projects					

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Advanced Concepts in Operating Systems lays down all the concepts and mechanisms involved in the
	design of advanced operating systems. The discussion is reinforced by many examples and cases

Knowledge Levels

1. Remembering, 2. Understanding, 3. Applying, 4. Analyzing, 5. Evaluating, 6. Synthesizing

	CO / PO / KL Mapping														
		(3/2	/1 indic	cates the					•	2-mediu	m, 1-we	eak)			
Co	DS	KLs						Pos				KLs			
									РО	1		3			
CC) 1				1			PO 2				2			
									PO	3			5	5	
									PO	4			Z		
CC	2				2				PO				2		
									PO				6		
									PO				3		
CC	3			3				PO 8						5	
									PO 9			1			
								PO 10				2			
CC) 4		4					PO 11				3			
								PO 12 PO 13				3			
CC	5				5			PO 13 PO 14				4			
	15				3			PO 14 PO 15				6			
						<u> </u>	PO Ma	nning	TUI	.5			()	
		(3/2)	/1 indic	cates the	e strens				trong. 2	2-mediu	m. 1-we	eak)			
		(2) _					rogram)			
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1 00	3	2	1	2	1	1	1
CO1 CO2		3							2						
	2		1	1	3	1	2	1		3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

1. Course End Delivery

	Overview	Periods	12						
	Introduction: Structure and Function-Computer Evaluation and Performan	ce: History of com	puters-						
Unit – I	Designing for Performance: Microprocessor speed-performance balance-In	nprovement in chi	ip organizatio						
Chint I	and architecture. Computer Function and Interconnection: Computer Comp	ponents-Computer	Function:						
	Instruction Fetch and Execute. Interconnection structures.								
	Architectures of Distributed Systems	Periods	12						
	Cache Memory: Characteristics of Memory Systems-Memory hierarchy-C		-						
Unit – II	of cache design: Cache size-Mapping function. Internal Memory: Semi-conductor main memory:								
	Organization-DRAM & SRAM. External Memory: Magnetic Disk: read a	nd write mechanis	sm						
	Multiprocessor System Architectures	Periods	12						
	Computer Arithmetic: ALU-Integer Representation: Sign magnitude representation	sentation-Twos co	mplement						
	Representation-Fixed point Representation. Integer Arithmetic: Negation-Addition & Subtraction.								
Unit – III	Instruction Sets: Characteristics & Functions: Machine Instruction characteristics: Elements of Machine								
	mstruction Sets. Characteristics & Functions. Machine mstruction character	eristics: Elements	of Machine						
	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing:								
Unit IV	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organization	Immediate- Direc Periods tion- Instruction c	tt- Indirect 12 ycle. Control						
Unit – IV	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organiza Operations: Micro Operations: The fetch cycle- The Indirect Cycle- The In	Immediate- Direc Periods tion- Instruction c terrupt cycle- The	tt- Indirect 12 ycle. Control						
Unit – IV	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organization	Immediate- Direc Periods tion- Instruction c terrupt cycle- The	tt- Indirect 12 ycle. Control						
Unit – IV	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organiza Operations: Micro Operations: The fetch cycle- The Indirect Cycle- The In	Immediate- Direc Periods tion- Instruction c terrupt cycle- The	tt- Indirect 12 ycle. Control						
Unit – IV Unit – V	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organization Operations: Micro Operations: The fetch cycle- The Indirect Cycle- The In The instruction Cycle. Control of the Processor: Functional Requirements-	Immediate- Direc Periods tion- Instruction c terrupt cycle- The Control Signals. Periods	t- Indirect 12 ycle. Control Execute Cycl 12						
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	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organizat Operations: Micro Operations: The fetch cycle- The Indirect Cycle- The In The instruction Cycle. Control of the Processor: Functional Requirements- CASE STUDY Parallel Processing: Multiple Processor Organizations: Types of	Immediate- Direct Periods tion- Instruction c terrupt cycle- The Control Signals. Periods of parallel proce ion-Multiproce	t- Indirect 12 ycle. Control Execute Cycl 12 essor Syste essor Opera						
	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organiza Operations: Micro Operations: The fetch cycle- The Indirect Cycle- The In The instruction Cycle. Control of the Processor: Functional Requirements- CASE STUDY Parallel Processing: Multiple Processor Organizations: Types Parallel Organizations. Symmetric Multiprocessors: Organization	Immediate- Direct Periods tion- Instruction c terrupt cycle- The Control Signals. Periods of parallel proct ion-Multiproce e MESI Prote	t- Indirect 12 ycle. Control Execute Cycl 12 essor Syste essor Opera pcol: Softw						
	Instruction. Instruction Sets: Addressing Modes and Formats: Addressing: Database Operating Systems Processor structure & Function: Processor Organization- Register organizat Operations: Micro Operations: The fetch cycle- The Indirect Cycle- The In The instruction Cycle. Control of the Processor: Functional Requirements- CASE STUDY Parallel Processing: Multiple Processor Organizations: Types of Parallel Organizations. Symmetric Multiprocessors: Organizations System Design considerations. Cache Coherence and the	Immediate- Direct Periods tion- Instruction c terrupt cycle- The Control Signals. Periods of parallel proct ion-Multiproce e MESI Prote	t- Indirect 12 ycle. Control Execute Cycl 12 essor Syste essor Opera pcol: Softw						

Text Books	
1	Computer Organization & Architecture - Designing for Performance by William Stallings, 9th Edition, 2012, PEARSON Prentice Hall Publication. (Unit –I: Chapter 1,2 &3 Unit-II : Chapter 4,5&6 Unit-III : Chapter 9,10&11 Unit – IV: Chapter 12 &16 Unit –V: Chapter 18)
References	
1	Computer Systems Organizations & Architecture by John D. Carpinelli, First Edition, 2007, PEARSON Prentice Hall Publication.
2	Computer Architecture: Concepts and Evaluation by Gerrit A. Blaauw, First Edition, 2008, PEARSON Prentice Hall Publication.
3	Computer System Architecture and Parallel Processing by Kai Hwang, Faye A. Briggs, 2009, McGraw- Hill Publications.
4	Computer organization & Design by David A Peterson and John L Hennessy, 2013, Fifth Edition.
E-References	
1	https://www.tutorialspoint.com/computer_organization/index.asp
2	https://en.wikipedia.org/wiki/Computer_architecture
3	https://www.slideshare.net/kumar_vic/computer-system-architecture

Signature of BOS Chairman

SUCHIONAL INSTITUT	VIVEKAN	NANDHA COLLEGE	OF ARTS A	AND SCIE	NCES F	OR	ſ	ISO 9001:2008				
		WOMEN (AU	TONOMO	US)				Rheinland ERTIFIED www.tuv.com ID 9105078407				
WOMEN EMPOWERMENT		Elayampalayam, Ti	ruchengode-6	37 205.								
Programme	M.Sc	Programme Code	P	CS	Regula	ations	2	2020-2021				
Department	Cor	nputer Science		Semester				1				
			Periods	Credit	Maxim	num Ma	rks					
Course Code	0	Course Name	per Week									
	DESIGNA	L T P C CA ESE Total DESIGN AND ANALYSIS										
20P1CSC02		DESIGN AND ANALYSIS OF ALGORITHMS 4 0 0 4 25 75 100										
							• •					
COURSE OBJECTIVES		Demonstrate a familiarity with major algorithms and data structures. Apply important algorithmic design aradigms and methods of analysis. Synthesize efficient algorithms in common engineering design ituations.										
Pos		PRO	GRAMME OU	ЛСОМЕ								
PO 1	Apply knowledg	e of computing fundamental	s, computing s	pecialization,	mathemat	ics, and	don	nain				
	• • • •	opriate for the computing spe			n and conc	eptualiz	atio	ı of				
PO 2		els from defined problems an ate, research literature, and se			blems rea	ching su	ihsta	ntiated				
	-	g fundamental principles of	-			-						
	disciplines.		,	1 0								
PO 3	-	uate solutions for complex co			-	aluate sy	yster	ns,				
PO 4		processes that meet specified sed knowledge and research		<u> </u>		nte anal	veie	and				
104		data, and synthesis of the in:			-		19515	anu				
PO 5	-	dapt and apply appropriate te					ols t	to complex				
		ities, with an understanding			•• •••.•							
PO 6	professional con	commit to professional ethic	s and cyber reg	gulations, resp	onsibilitie	es, and n	orm	s of				
PO 7		eed, and have the ability, to e	engage in inder	pendent learni	ng for con	tinual de	evel	opment as a				
	computing profe				-			-				
PO 8		owledge and understanding of	-		-	-		pply these to				
	ones own work, environments.	as a member and leader in a	team, to mana	ge projects and	d in multio	disciplin	ary					
PO 9		fectively with the computing	g community, a	and with socie	ty at large	, about c	comp	olex				
		ities by being able to compre			• •		-					
	effective present											
PO 10		assess societal, environment and the consequential respor										
PO 11	-	vely as an individual and as a										
	environments.							1 2				
PO 12		opportunity and using innov	-	e that opportu	nity to cre	ate valu	e an	d wealth for				
PO 13		f the individual and society a edge of computing to create of		ne and solution	ns for com	nley pro	blar	me				
PO 14		lyse and synthesize scholarly				<u> </u>						
PO 15	-	ntific outlook that solves any		-	_							
	demands.											
Cos		COURSE OUTCOME										

CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Design and Analysis of Algorithm lays down all the concepts and mechanisms involved in the
	Algorithms. The discussion is reinforced by many examples and cases

]	Know	ledge	Level	s						
1.Reme	mberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E [.]	valuat	ing, 6.	Synth	esiziną	5
		(3/2	/1 indic	cates the		CO / PC			-	2-mediu	m, 1-we	ak)			
Co	S	(- · · ·			KLs			,	Pos		,	,	K	Ls	
									PO	1			3		
СО	1				1				PO				2	2	
									PO	3			5	5	
									PO	4			4	ļ	
CO	2				2				PO				2		
								PO 6					6		
00	2							PO 7				3			
CO	3				3			PO 8 PO 9				5			
								PO 9 PO 10				2			
СО	4				4			PO 10				3			
								PO 12				2			
								PO 13				3			
CO	5				5			PO 14				4			
									PO 1	5			6	5	
		(2)	/ 1 · · ··				PO Ma		_			1.			
		(3/2	/1 indic	cates the	e streng				-		m, 1-we	eak)			
Cos							r	me Ou			D.C.L.	DQ 4 -			
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10		PO12			
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

1. Course End Delivery

	Overview	Periods	12
Unit – I	Introduction – Notion of Algorithm – Fundamentals of Algorithmic Sol Fundamentals of the Analysis of Algorithm Efficiency – Analysis Fram Mathematical Analysis of Recursive and Non-Recursive Algorithms.	• •	• •
	Architectures of Distributed Systems	Periods	12
Unit – II	Divide and conquer methodology – Merge Sort – Quick Sort – Binary s Multiplication of large integers- Strassen's matrix multiplication Greed Kruskal's algorithm – Dijkstra's Algorithm		
	Multiprocessor System Architectures	Periods	12
Unit – III	Transform and Conquer – Presorting - Balanced Search Tree – AVL Tr Dynamic Programming - Computing a binomial coefficient – Warshal		
	Database Operating Systems	Periods	12
Unit – IV	Database Operating Systems Optimal binary - search tree – Knapsack problem – Backtracking – N-Q problem – subset sum problem.		
Unit – IV	Optimal binary - search tree – Knapsack problem – Backtracking – N-Q		
Unit – IV Unit – V	Optimal binary - search tree – Knapsack problem – Backtracking – N-Q problem – subset sum problem.	Queens problem – Hami Periods	ltonian circu

Text Books	
1	Computer Organization & Architecture - Designing for Performance by William Stallings, 9th Edition, 2012, PEARSON Prentice Hall Publication. (Unit –I: Chapter 1,2 &3 Unit-II : Chapter 4,5&6 Unit-III : Chapter 9,10&11 Unit – IV: Chapter 12 &16 Unit –V: Chapter 18)
References	
1	Computer Systems Organizations & Architecture by John D. Carpinelli, First Edition, 2007, PEARSON Prentice Hall Publication.
2	Computer Architecture: Concepts and Evaluation by Gerrit A. Blaauw, First Edition, 2008, PEARSON Prentice Hall Publication.
3	Computer System Architecture and Parallel Processing by Kai Hwang, Faye A. Briggs, 2009, McGraw- Hill Publications.
4	Computer organization & Design by David A Peterson and John L Hennessy, 2013, Fifth Edition.
E-References	
1	https://www.tutorialspoint.com/computer_organization/index.asp
2	https://en.wikipedia.org/wiki/Computer_architecture
3	https://www.slideshare.net/kumar_vic/computer-system-architecture

Signature of BOS Chairman

VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)



Elayampalayam, Tiruchengode-637 205.

EMPOWER.		······································								
Programme	M.Sc	Programme Code			PCS	Regula	tions		2020-2021	
Department	Cor	nputer Science	Semester						1	
			Р	eriods	Credit	Maxim	um Ma	rks		
Course Code	Course Name			r Week						
				T I		CA	ESI	Ę	Total	
	L T P C CA ESE Tota WEB TECHNOLOGIES									
20P1CSC03			4	0) 4	25	75		100	
	_			1 1						
COURSE OBJECTIVES	Identify and correct problems related to concurrency in server-side programs. Explain common security threats such as cross-site scripting and misformed HTTP requests and demonstrate avoidance techniques for each.									
Pos		PROGRAMME OUTCOME								
PO 1		e of computing fundamenta								
		opriate for the computing sp				on and conc	eptualiz	atio	ı of	
		els from defined problems a					1.	1 .		
PO 2	-	ate, research literature, and g fundamental principles of		-			-			
	disciplines.	g fundamental principles of	i maun		, computing sc	lences, and	Televall	t uoi	IIaIII	
PO 3		Design and evaluate solutions for complex computing problems, and design and evaluate systems,								
	-	components, or processes that meet specified needs with appropriate consideration								
PO 4	Use research-bas	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.								
PO 5		lapt and apply appropriate t	-	-		odern comp	outing to	ols	to complex	
PO 6		ities, with an understanding commit to professional ethi				nonsibilitia	s and n	orm	s of	
100	professional con	-	cs and	cyber .	regulations, re	sponsionnue	s, and n	orm	3.01	
PO 7	-	eed, and have the ability, to	engag	e in inc	lependent lear	ning for con	tinual de	evel	opment as a	
	computing profe	ssional.								
PO 8		owledge and understanding		-	-		-		pply these to	
		as a member and leader in a	a team	, to mai	nage projects a	nd in multic	lisciplin	ary		
	environments.	······································		·····	1		-1		-1	
PO 9		fectively with the computir ities by being able to comp	-	•		• •		-		
	effective present		chena	and wi		ports, desig		ient	ation, make	
PO 10	-	assess societal, environmen	ital, he	alth, sa	fety, legal, and	l cultural iss	ues with	nin l	ocal and	
	global contexts,	and the consequential respo	onsibili	ties rel	evant to profes	sional comp	outing p	racti	ce.	
PO 11		vely as an individual and as	a men	nber or	leader in diver	rse teams an	d in mu	ltidi	sciplinary	
	environments.									
PO 12		opportunity and using inno		-	sue that opport	unity to crea	ate valu	e an	d wealth for	
PO 13		f the individual and society edge of computing to create	-		ions and soluti	one for com	play pro	bla	<u></u>	
PO 14		yse and synthesize scholarl								
PO 15		tific outlook that solves an	-		-					
	demands.					•	-			
Cos		(COUR	SE OU	ГСОМЕ					
CO 1	Understand the concepts of Operating System									

CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Go for web development and designing, you only need to learn basic scripting
-	languages and some server side languages such as HTML, CSS, JAVASCRIPT, PHP,
	SQL

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5
		(3/2	/1 india	rates the		CO / PC				-mediu	m, 1-we	ak)			
Co	05	(3/2			KLs			011, 5 5	Pos			uit)	K	[.s	
				-	1125				PO				3		
CO	1				1				PO				2		
									PO				5		
									PO	4			4	ł	
CO	2				2				PO				2		
								PO 6				6			
~~						PO 7				3					
CO	3		3				PO 8 PO 9				5				
								PO 10				2			
CO	4		4					PO 10				3			
								PO 12				2			
								PO 13				3			
CO	5		5					PO 14				4			
									PO 1	5			6	5	
		(2.12					PO Ma								
		(3/2	/1 indic	cates the	e streng				-		m, 1-we	eak)			
Cos	DOI	DCT	DCC	DC (D C -		-		tcome (Dett	DOIG	DOIG	DCL	DC 1
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10		PO12	PO13		
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

1. Course End Delivery

	Overview	Periods	12
	The internet: Basics of Internet – Addresses and Names for the Internet,	Dbjects and sites -	- E-mail - World
Unit - I	Wide Web – File Transfer – The Telnet – The Usenet – Gopher- Wais - A	Archie -Veronica -	- Internet Chat.
	Architectures of Distributed Systems	Periods	12
	Web Servers, Browsers and Security: The Wed server – The Proxy Serve	r – The fast ready	connections on
IL 1 II	the web - Web Browsers - Netscape Communication Suite - Microsoft I	nternet Explorer -	- The Virus
Unit - II	Menace in the Internet – Firewalls – Data Security.		
	Multiprocessor System Architectures	Periods	12
	-10 them side programming: the tayascript Language: introduction to taya	Script - JavaScri	nt in
	Client Side Programming: The JavaScript Language: Introduction to Java Perspective – Basic Syntax – Variables & Data types – Statements – Ope	-	•
Unit - III	Perspective – Basic Syntax – Variables & Data types – Statements – Ope Objects – Arrays – Built-in Objects – JavaScript Debuggers.	-	•
Unit - III	Perspective - Basic Syntax - Variables & Data types - Statements - Ope	-	•
	Perspective – Basic Syntax – Variables & Data types – Statements – Ope Objects – Arrays – Built-in Objects – JavaScript Debuggers.	rators – literals – Periods	Functions –
Unit - III Unit - IV	Perspective – Basic Syntax – Variables & Data types – Statements – Ope Objects – Arrays – Built-in Objects – JavaScript Debuggers. Database Operating Systems	rators – literals – Periods	Functions –
	Perspective – Basic Syntax – Variables & Data types – Statements – Ope Objects – Arrays – Built-in Objects – JavaScript Debuggers. Database Operating Systems Server-Side Programming: Java Servlets: Servlet Architecture Overview -	rators – literals – Periods	Functions –
Unit - IV	Perspective – Basic Syntax – Variables & Data types – Statements – Ope Objects – Arrays – Built-in Objects – JavaScript Debuggers. Database Operating Systems Server-Side Programming: Java Servlets: Servlet Architecture Overview – contents – Servlet Life Cycle – Parameter Data – sessions – Cookies CASE STUDY	rators – literals – Periods - Servlet Generati Periods	Functions – 12 ng Dynamic 12
	Perspective – Basic Syntax – Variables & Data types – Statements – Ope Objects – Arrays – Built-in Objects – JavaScript Debuggers. Database Operating Systems Server-Side Programming: Java Servlets: Servlet Architecture Overview – contents – Servlet Life Cycle – Parameter Data – sessions – Cookies CASE STUDY Web Services: JAX – RPC, WSDL, XML Schema and so	rators – literals – Periods - Servlet Generati Periods ap, Web Servi	Functions – 12 ng Dynamic 12 ice Concepts
Unit - IV	Perspective – Basic Syntax – Variables & Data types – Statements – Ope Objects – Arrays – Built-in Objects – JavaScript Debuggers. Database Operating Systems Server-Side Programming: Java Servlets: Servlet Architecture Overview – contents – Servlet Life Cycle – Parameter Data – sessions – Cookies CASE STUDY	rators – literals – Periods - Servlet Generati Periods ap, Web Servi	Functions – 12 ng Dynamic 12 ice Concepts

Text Books	
1	Rajkamal, "Internet and Web Technologies", Tata McGraw Hill, 2002. [UNIT – I & II]
2	Jeffrey C.Jackson, "Web Technologies – A Computer Science Perspective"- Pearson Education 2012
References	
1	
	R.N. Srivastava, "Web Technology" – Global academic Publishers & Distributors, 2015.
2	Ramesh Nagappan, Robert Skoczylas, Rima Patel Sriganesh,
	"Developing Java Web Services" - Wiley-India edition 2012
E-References	
1	https://differential.com//14-technologies-every-web-developer-should-be-able-to-ex
2	https://usersnap.com/blog/best-web-development-trends-2018/

Signature of BOS Chairman

A CONTRACT OF CONTRACT
WOMEN ENPOWERNENT

VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)



WOMEN EMPOWERMENT	Elayampalayam, Tiruchengode-637 205.								
Programme	M.Sc	Programme Code			PO	CS	Regula	tions	2020-2021
Department	Con	nputer Science	Semester						1
			Р	Period	ls	Credit	Maxim	um Marks	8
Course Code	C	Course Name	per Week						
		L	Т	Р	С	CA	ESE	Total	
	ADVAN	CED DATABASE							
20P1CSC04		EMENT SYSTEMS	4	0	0	4	25	75	100
OBJECTIVES	activity the obje	ompletion of this course we ectives are manifold. The a integrity, data security, a	mai	n ob	jecti	ves of databa			
POs		PRO	GRA	MMI	E OL	TCOME			
PO 1	Apply knowledg	e of computing fundamental	s, co	mput	ing s	pecialization,	mathemati	cs, and do	omain
	knowledge appro	opriate for the computing spe	eciali	zatio	n to t	he abstraction	and conce	eptualizati	ion of
	computing mode	els from defined problems an	d req	quirer	nents	5.			
PO 2	=	ate, research literature, and se		-				-	
		g fundamental principles of	math	emat	ics, c	computing scie	ences, and	relevant d	lomain
	disciplines.								
PO 3	-	late solutions for complex co	-		-		-	luate syst	ems,
		processes that meet specified			_				
PO 4		sed knowledge and research					-	-	is and
	-	data, and synthesis of the in			-				
PO 5		lapt and apply appropriate te		-			dern comp	uting tool	s to complex
DO (ties, with an understanding of						1	
PO 6	professional com	commit to professional ethic	s and	1 CYDE	er reg	gulations, resp	onsibilities	s, and nor	ms of
PO 7	*	eed, and have the ability, to e	maaa	no in	indor	andant laarni	ng for cont	inual day	elonment as a
107	computing profe	•	ngag	ge m	mueț		ing for com		elopinent as a
PO 8		owledge and understanding of	of the	com	nutin	a and manage	ment prin	vinles and	apply these to
100		as a member and leader in a			-		-	-	
	environments.	as a member and reader in a	ccum	I, to II	lana	se projects and	a ini intuittio	iiseipiinai	<i>y</i>
PO 9		fectively with the computing	, com	nmun	itv. a	nd with societ	v at large.	about cor	nplex
/		ities by being able to compre	-						*
	effective present					1			····· , ··· ·
PO 10	-	assess societal, environment	al, he	ealth,	safet	y, legal, and c	ultural iss	ues within	local and
		and the consequential respor							
PO 11	-	vely as an individual and as a				_	_		
	environments.								
PO 12	Identify a timely	opportunity and using innov	vatior	n to p	ursu	e that opportu	nity to crea	ate value a	and wealth for
		f the individual and society a		-		-			
PO 13		edge of computing to create of			-				
PO 14	To identify, anal	yse and synthesize scholarly	liter	ature	relat	ing to the field	d of Comp	uter Scien	ice.
PO 15	To develop scier demands.	tific outlook that solves any	prob	olem,	enco	mpassing the	expected a	spects of	market

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Basic knowledge of DBMS and its concepts.

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.	Under	rstand	ling, 3	B.App	lying,	4.An	alyzin	g, 5.E [.]	valuat	ing, 6.	Synth	esizin	3
		(3/2	/1 india	cates the) / KL] orrelati		-	?-mediu	m 1-we	eak)			
СО	COs KLs						011, 5 5	Pos		, 1	KLs				
	~								PO						
СО	1				1				PO				2		
									PO	3			5	5	
									PO				4		
CO	2				2				PO			2			
								PO 6				6			
СО	3			3				PO 7 PO 8				3 5			
0	3				5			PO 9				1			
								PO 10				2			
CO	4				4			PO 11				3			
								PO 12				2			
								PO 13				3			
CO	5		5					PO 14				4 6			
						CO	PO Ma		PO 1	5			6	5	
		(3/2	/1 india	rates th	e strend				trong	2-mediu	m 1_we	ak)			
		(3/2		cates in	e sueng	-	rogram				iii, i we	uix)			
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
C01	1	2	1 1	1	2	1	1	1	3	2	1	2	1	1	1
C01	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
C02	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO3													2	3	
	2	1	2	3	1	1	2	2	1	1	2	1			1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

1. Course End Delivery

	Overview	Periods	12							
	Advanced Data Modeling: Extended Entity Relationship Model, Entity C	lustering, Entity I	ntegrity, Desig							
тт •/ т	Cases Advanced SQL: Relational Set Operators, SQL Join Operators, Sub queries and Correlated									
Unit - I	Queries, SQL Functions, Views, Procedural SQL, Embedded SQL - Data	base design: SDL	C, DBLC.							
	Architectures of Distributed Systems	Periods	12							
	Advanced Database concepts: Transaction Management and Concurrency		se Performanc							
Unit - II	Tuning and Query optimization - Distributed Database Management Syste	ems.								
Unit - II										
	Multiprocessor System Architectures	Periods	12							
	Object Oriented Databases – Introduction – Evolution of Object Oriented Concepts- Object Oriented Concepts – Characteristics of an Object Oriented Data Models – OODM and Previous Models - OODBMS									
Unit - III	– How Object Orientation affects Database Design – Advantages and Dis									
			DDMD.							
	Databases in Electronic Commerce.									
	Databases in Electronic Commerce. Database Operating Systems	Periods	12							
Unit IV	Database Operating Systems Web Databases: Internet Technologies and Databases - Uses of Internet D	Databases - Web to) Database							
Unit - IV	Database Operating Systems	Databases - Web to) Database							
Unit - IV	Database Operating Systems Web Databases: Internet Technologies and Databases - Uses of Internet D	Databases - Web to) Database							
Unit - IV	Database Operating Systems Web Databases: Internet Technologies and Databases - Uses of Internet D Middleware - Server Side Extensions - The Web Browser - Internet Datab	Databases - Web to) Database							
	Database Operating Systems Web Databases: Internet Technologies and Databases - Uses of Internet D Middleware - Server Side Extensions - The Web Browser - Internet Datab Considerations - Database Administration.	Databases - Web to ase Systems: Spec Periods	Database cial							
Unit - IV Unit - V	Database Operating Systems Web Databases: Internet Technologies and Databases - Uses of Internet D Middleware - Server Side Extensions - The Web Browser - Internet Datab Considerations - Database Administration. CASE STUDY	Databases - Web to ase Systems: Spec Periods	Database cial							

Text Books	
1	Peter Rob and Carlos Coronel, "Database Systems – Design, Implementation and Management", Cengage Learning, 7th Edition, 2007. (Unit- I : Chapter 6, 8 &9, Unit-II : Chapter 10,11&12).
2	Peter Rob and Carlos Coronel, "Database Systems – Design, Implementation and Management", Thompson Learning, Course Technology, 5th Edition, 2003. (Unit – III :Chapter11&14, Unit –IV : Chapter15.1, 15.2, 15.3,15.4,15.6&16).
3	Ramez Elmasri, Shamkant B.Navathe, "Fundamentals of Database Systems" 5/E,Pearson Education, (Unit-V : Chapter 24&30).
References	
1	Thomas M. Connolly, Carolyn E. Begg, "Database Systems - A Practical Approach to Design, Implementation, and Management", 5th Edition, Pearson Education, 2009.
2	C.S.R.Prabhu, "Object Oriented Database Systems: Approaches & Architecture", PHI, 3rd Edition, 2010.
3	M.Tamer Ozsu , Patrick Ualduriel, "Principles of Distributed Database Systems", 3rd Edition, Pearson Education, 2007.
E-References	
1	1. www.itportal.in/2011/09/advance-database-management-systems-be.html

2020-2021 Onwards	DESIGN AND ANALYSIS OF	M.Sc. Computer Science
	ALGORITHM LAB	_
I Semester	20P1CSP01	Core: Practical – I
Hours: 60	Practical –I	Credit : 2

COURSE OBJECTIVE

- To implement the fundamental concepts of sorting , merging, backtracking and branch and bound algorithms using C++ Programming
- To implement real time problem using C++ Programming <u>COURSE OUTCOME</u>

On the successful completion of the course the student will be able to

CO Number	CO Statement
CO1	Demonstrate algorithms using divide and conquer approach
CO2	Solve problems using greedy method.
CO3	Employ dynamic programming techniques.
CO4	Problem solving Using backtracking techniques
CO5	Problem solving Using Branch and Bound techniques

LAB EXERCISE LIST

Apply the Divide and Conquer technique to arrange a set of numbers using Merge Sort method.

- 1. Perform Strassen's matrix multiplication using Divide and Conquer method.
- 2. Solve the Knapsack problem using Dynamic Programming.
- 2. Construct a Minimum Spanning Tree using Greedy method.
- 3. Perform Warshall's Algorithm using Dynamic Programming.
- 4. Solve Dijkstra's Algorithm using Greedy Technique.
- 5. Solve Subset Sum problem using Backtracking
- 6. Implement the 8-Queens Problem using Backtracking.
- 7. Implement Knapsack Problem using Backtracking.
- 8. Find the solution of Traveling Salesperson Problem using Branch and Bound technique.

Mapping with Programme Outcome

	PS01	PS02	PS03	PS04
CO1		S	S	S
CO2			S	S
CO3			S	S
CO4		S	S	S
CO5		S	S	S

S-Strong , M- Medium , L - Low

2020-2021 Onwards	WEB TECHNOLOGIES LAB	M.Sc. Computer Science
I Semester	20P1CSP02	Core: Practical – II
Hours: 60	Practical –II	Credit : 2

On the successful completion of the course the student will be able to develop various kind of web pages.

CO Number	CO Statement
CO1	Demonstrate basic skill needed for surfing internet.
CO2	Develop HTML coding for web features.
CO3	Employ java script programming techniques.
CO4	Program coding using ASP, JSP for authentication and commercial purpose.
CO5	Web page designing for database connection with application.

Programme Specific Outcomes

PS01: know the essential skill for developing simple web page.

PS02: Have the ability to design static web pages.

PS03: implement the programming principles of java script.

PS04: Apply JSP and ASP concept to develop dynamic web pages.

2020-2021 Onwards	WEB TECHNOLOGIES LAB	M.Sc. Computer Science
I Semester	20P1CSP02	Core: Practical – II
Hours: 60	Practical –II	Credit : 2

COURSE OBJECTIVE

- To familiar the students to the effective use of web pages.
- To implement web page development using java script, JSP and ASP.

Web technologies Practical Listing:

- 1. Write a XML program for job listing in HTML
- 2. Write a JavaScript code block, which checks the contents entered in a form's text element. If the text entered is in the lower case, convert to upper case
- 3. Write a JavaScript code block, which validates a username and password
 - a) If either the name or password field is not entered display an error message
 - b) The fields are entered do not match with default values display an error message
 - c) If the fields entered match, display the welcome message
- 4. Write a JavaScript code to display the current date and time in a browser
- 5. Write a JSP Program for user authentication
- 6. Write a JSP Program for a simple shopping cart
- 7. Write a JSP Program to prepare a bio data and store it in database
- 8. Write an ASP Program using Response and Request Object
- 9. Write an ASP Program using Ad Rotator Component
- 10. Write an ASP program using database connectivity for student's record

Mapping with Programme Outcome

	PS01	PS02	PS03	PS04
CO1	S	S	S	S
CO2	М	S	S	S
CO3	М	S	S	S
CO4	М	S	S	S
CO5		S	S	S

S – Strong, M- Medium, L - Low

Structure of the state of the s								
HOMEN EMPOWERNENT		Elayampalayam, Ti						CERTIFIED WWW.Bux.com ID 9105078407
Programme	M.Sc Programme Code PCS Regulations							
Department	Con	nputer Science			Semester			2
				iods	Credit	Maxim	um Ma	rks
Course Code	C	Course Name	-	Week	C	СА	ESI	E Total
	ADVANO	CED CONCEPTS IN	2			- Crr	2.51	
20P2CSC05		ATING SYSTEMS	4	0 0	4	25	75	100
COURSE		mpletion of this course we le						
OBJECTIVES	Algorithms for li operating System	mplementing DSM components.	ents and	mana	gement aspects	s of Real ti	me and	Mobile
POs		PRO	GRAM	ME O	JTCOME			
PO 1		e of computing fundamental	· •	0	•			
	• • • •	opriate for the computing spe				and conce	eptualiz	ation of
PO 2		ls from defined problems an				h 1	1. i.e. a. a.e.	hotontioto d
PO 2	-	te, research literature, and so g fundamental principles of p		-			-	
	disciplines.	g fundamentar principies of f	munen	iuties,	computing serv	inces, una	rerevan	t domum
PO 3	-	ate solutions for complex co	mputir	ıg prot	lems, and desi	gn and eva	aluate sy	ystems,
	components, or p	processes that meet specified	needs	with ap	opropriate cons	ideration		
PO 4		sed knowledge and research				-		ysis and
	-	data, and synthesis of the inf		-				1 / 1
PO 5		lapt and apply appropriate te ties, with an understanding of	-			dern comp	uting to	ools to complex
PO 6		commit to professional ethic				onsibilitie	s, and n	orms of
100	professional com			,	8414410110, 190p	01101011100	, and 1	01115 01
PO 7	Recognize the ne	eed, and have the ability, to e	ngage	in inde	pendent learnin	ng for cont	tinual d	evelopment as a
	computing profes							
PO 8		owledge and understanding o		-		-	-	
	ones own work, a environments.	as a member and leader in a	team, to	o mana	ige projects and	d in multid	lisciplin	ary
PO 9		fectively with the computing	comm	unity	and with societ	ty at large	about	complex
		• • •		•				-
	computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations							
PO 10	Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and							
	global contexts, and the consequential responsibilities relevant to professional computing practice.							
PO 11	Function effective environments.	vely as an individual and as a	memb	er or le	eader in diverse	e teams and	d in mu	ltidisciplinary
PO 12		opportunity and using innov	vation to	o pursi	e that opportu	nity to crea	ate valu	e and wealth for
1012		f the individual and society a		pulse	e unu opportu			
PO 13		dge of computing to create e		e desig	ns and solutior	ns for com	plex pro	oblems.
PO 14	To identify, anal	yse and synthesize scholarly	literatu	ire rela	ting to the field	d of Comp	uter Sci	ence.
PO 15	-	tific outlook that solves any	proble	n, enc	ompassing the	expected a	spects o	of market
	demands.							

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Advanced Concepts in Operating Systems lays down all the concepts and mechanisms involved in the
	design of advanced operating systems. The discussion is reinforced by many examples and cases

	Knowledge Levels														
1.Remer	nberi	ng, 2.	Unde	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E [.]	valuat	ing, 6.	Synth	esizing	5
		(2)/2	/1 • 1•	1		CO / PC			-		1	1.			
CO	2	(3/2	/1 111010		e streng KLs	gth of c	orrelati	on, 3-s	rong, 2 POs		m, 1-we	ak)	K	[_	
	8				NLS				PO						
СО	1				1				PO				2		
00	-				1				PO				5		
									PO	4			4	1	
CO	2				2				PO	5			2	2	
									PO				6		
	2				2			PO 7				3			
CO	3		3					PO 8 PO 9				5			
								PO 10				2			
CO	4			4				PO 11				3			
				PO 12				2							
									PO 1				3	3	
CO	5				5			PO 14			4				
									PO 1	5			6	5	
		(3/)	/1 india	otos th	astron		PO Ma		rong	modiu	m, 1-we	ak)			
		(3/2		ales un	e su eng						III, 1-we	ак)			
COs	PO1	PO2	PO3	Programme Outcome (POs) PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PO13 PO14 PO							PO15				
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect
1. Course End Delivery

Direct

	Overview	Periods	12				
	Overview: Introduction- Functions of operating systems - Design Approa	ches - Types of A	dvanced				
Unit - I	Operating Systems. Synchronization Mechanisms: Introduction - Concep	t of Process - Con	current Proces				
Unit - I	The critical section Problem. Process Deadlocks: Introduction - Prelimina	aries - Models of I	Deadlocks -				
	Models of Resources - A Graph-Theoretic Model of a System State - Nec	essary and Suffici	ent Condition				
	for a Deadlock.						
	Architectures of Distributed Systems	Periods	12				
	Architectures of Distributed Systems: Introduction - Motivation - System	Architecture Typ	es - Distribute				
Unit - II	operating Systems - Issues in Distributed operating System - Communica	tion Network - Co	ommunication				
Unit - II	Primitives. Distributed Shared Memory: Introduction - Architecture and M	•	rithms for				
Implementing DSM - Memory Coherence - Coherence Protocols - Design Issues							
	Multiprocessor System Architectures	Periods	12				
	Multiprocessor System Architectures: Introduction - Motivations - Basic						
Unit - III	Architecture - Interconnection networks for Multiprocessor System - Caching - Hypercube Architecture.						
Unit in	Multiprocessor Operating Systems: Introduction - Structures - Operating System Design Issues - Threads -						
	Process Synchronization - Process Scheduling - Memory Management - I	Reliability/Fault T	olerance.				
	Database Operating Systems	Periods	12				
Unit - IV	Database Operating Systems: Introduction - Concurrency Control: Databa	•	•				
chit iv	Theory - Distributed database systems - Lock based and Timestamp based	d algorithm - Con	currency conti				
	algorithms.	1	1				
	CASE STUDY	Periods	12				
Unit - V	CASE STUDY: Linux History- Design Principles-Kernel Modules- Proce	-	-				
cant ,	Memory Management - File Systems- Input and Output - Inter process Co	ommunication -Ne	etwork Structu				
	Security						
	Total Periods		60				

Text Books	
1	Advanced Concepts in Operating Systems, Mukesh Singhal, Niranjan G.Shivarathr, 2011.
2	Operating System Concepts, Abraham Silberschatz, Peter B. Galvin and Greg Gagne, Ninth Edition, John
	Wiley and Sons Inc, 2012.
References	
1	Operating System in depth: Design and Programming, Thomas.W,Doeppner, First Edition 2010.
2	The Linux Programming Interface: A Linux and Unix System Programming handbook, Michal Kerisk,
	First Edition, 2010.
E-References	
1	https://books.google.co.in/books//Advanced_Concepts_InOperatingSystems.html
2	https://www.bookdepository.com/Advanced-Concepts-Operating-Systems
3	https://www.sfitengg.org//CSC201-advanced%20operating%20systems

Signature of BOS Chairman

VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)



Elayampalayam, Tiruchengode-637 205. Programme M.Sc Programme Code PCS Regulations 2020-2021 Department **Computer Science** Semester 2 Periods Credit Maximum Marks Course Code Course Name per Week Т Р С CA ESE Total L 20P2CSC06 JAVA SERVER PAGE 4 0 0 4 25 75 100 The application object is direct wrapper around the ServletContext object for the generated Servlet COURSE and in reality an instance of a javax. servlet. ServletContext object. This object is a representation **OBJECTIVES** of the JSP page through its entire lifecycle. POs PROGRAMME OUTCOME **PO** 1 Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements. **PO 2** Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines. Design and evaluate solutions for complex computing problems, and design and evaluate systems, PO 3 components, or processes that meet specified needs with appropriate consideration PO₄ 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. PO 5 Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations PO 6 Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice. PO 7 Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional. PO 8 Demonstrate knowledge and understanding of the computing and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. PO 9 Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations **PO** 10 Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice. PO 11 Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments. PO 12 Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large. PO 13 To apply knowledge of computing to create effective designs and solutions for complex problems. PO 14 To identify, analyse and synthesize scholarly literature relating to the field of Computer Science. PO 15 To develop scientific outlook that solves any problem, encompassing the expected aspects of market demands.

COs	COURSE OUTCOME
CO 1	Understand the .concepts of java JSP,RMI,Servers,Servlets and Hibernet.
CO 2	To know about Advance concept In EJB.
CO 3	To analyze the concepts of RMI.
CO 4	To apply RMI concepts in various networks.
CO 5	To Design and Establish the server pages with client interaction.
Pre-requisites	Basics of java, web development using HTML

]	Know	ledge	Level	S							
1.Remo	emberi	ng, 2.	Unde	rstand	ling, 3	3.App	lying,	4.An	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizinį	5	
		(2) (2)				CO / PC			-	. 1'	1	1.				
C	0.6	(3/2	/ 1 indic		-	gth of c	orrelati	on, 3-s	-		m, 1-we	eak)	V	[a		
	US		KLs					POs 1					KLs			
CO 1		1					PO 1 PO 2					2 2				
	CUT			1				PO 2 PO 3				3				
								PO 4				3				
CC	CO 2			2				PO 5				4				
								PO 6				5				
								PO 7					5			
CC	CO 3		3					PO 8				6				
								PO 9 PO 10					<u>6</u> 5			
CO) 4		4					PO 10					4			
								PO 12				5				
								PO 13				5				
CC	CO 5			5				PO 14				4				
								PO 15				4				
		(2)/2	/1 • •	1			PO Ma				1	1 \				
		(3/2	/ I indic	cates the	e streng	-			-		m, 1-we	eak)				
COs	DO1	DO2	DO2		DOF		rogram	1	1		DO11	DO12	DO12	DO14	DO1	
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9		PO11	PO12				
CO1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	1	
CO2	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1	
CO3	2	2	3	3	2	1	1	1	1	1	2	1	1	2	2	
CO4	1	1	2	2	3	2	2	1	1	2	3	2	2	3	3	
CO5	1	1	1	1	2	3	1	2	2	3	2	3	3	2	2	

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

Direct

1. Course End Delivery

ontent of the S	Syllabus								
	AWT	Periods	12						
Unit - I	AWT: Using AWT Controls, Layout Managers and Menus. SWING: A Tour of SWING - Event								
	Handling-Java Database Connectivity (JDBC).								
	Java Servlets	Periods	12						
Unit - II	Java Servlets: Life cycle of Servlet - constituents of javax.servlet.package Constituents of								
	javax.servlet.http.package-Cookies- Session Tracking. Java Server Pages: Introducing Java Server								
	Pages-Basic Elements-Actions Elements-Implicit Objects.								
	Remote method Invocation	Periods	12						
	Remote method Invocation: Remote Interface-java.rmi.server package-The Naming Class - RMI Security								
Unit - III	Manager Class -RMI Exceptions - Steps involved in creating RMI Client and Server Classes. Java Bean:								
	Advantages of Java Bean - Application Builder Tools-JAR files-Introspection - Developing a Simple Java								
	Bean using BDK- Persistence - Customizers - Java Mail.								
	Understanding EJB	Periods	12						
	Understanding EJB: EJB Architecture-Session Bean-Developing Session Beans-Entity Beans - Bean								
Unit - IV	managed persistence in Entity Beans. Understanding Struts: Introduction-MVC Framework- Struts Control								
	flow - Building Model Components - Building View Components - Building Control Components.								
	Hibernate	Periods	12						
Unit - V	Hibernate: Features of Hibernate-Hibernate Architecture - Understanding Hibernate O/R Mapping -								
	Hibernate Query Language. Spring: Introduction to the Spring Framework - Features of the Spring-Spring								
	Architecture-Spring AOP-Testing-Data Access using JDBC.								
	Total Periods								

Text Books								
1	Dr C.Muthu programming with Java, Vijay Nicole Imprints Private Ltd 2008							
2	Herbert Schildt, The complete Reference-Java2, fifth Edition 2002 TMH							
References								
1	Enterprise JavaBeans-Developing component based distributed Applications-Pearson Education, 2004.							
2	Deitel H.M. & Deitel P.J, Java How to Program, Prentice-Hall of India, 10th Edition, 2014.							
E-References								
1	www.dreamtechpress.com/programming/java/java-server-programming-j2ee							
2	https://www.amazon.com/Professional-Java-Server-Programming-							

Signature of BOS Chairman

HOREY ENDOWERING	VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS) Elayampalayam, Tiruchengode-637 205.								1:2008 :om 8407	
Programme	M.Sc Programme Code PCS Regulations							2020-2021		
Department	Computer Science Semester							2		
Course Code	С	Course Name	Perio per W L T	/eek	Credit	Maxim [*] CA	um Mai ESI			
20P2CSC07	DOT NE	T PROGRAMMING	5 (5	25	75	100		
COURSE OBJECTIVES	Learn .net framework and c# fundamentals,Understand Web form concepts,Familiarize with rich controls and Cookies,Implement ADO.NET and XML.									
POs	PROGRAMME OUTCOME									
PO 1	Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.									
PO 2	Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.									
PO 3	Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration									
PO 4	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.									
PO 5	Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations									
PO 6	Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.									
PO 7	Recognise the need, and have the ability, to engage in independent learning for continual development as a computing professional.									
PO 8	Demonstrate knowledge and understanding of the computing and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.									
PO 9	Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations									
PO 10	Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.									
PO 11	Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.									
PO 12	Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.									
PO 13	To apply knowledge of computing to create effective designs and solutions for complex problems.									
PO 14 PO 15	To identify, analyse and synthesize scholarly literature relating to the field of Computer Science. To develop scientific outlook that solves any problem, encompassing the expected aspects of market demands.									

COs	COURSE OUTCOME
CO 1	Understand the .NET framework (CLR, CTS, CLS etc.,) and its components
CO 2	Express the Web Form Fundamentals and Web Control Events
CO 3	To analyze the basics of ADO.NET Fundamentals
CO 4	To apply ADO.NET connection and Data Binding
CO 5	Design and Establish the Web based Software using ASP.NET and XML
Pre-requisites	Basic knowledge of java and HTML

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.An	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizin	5
		(3/2	/1 indic	cates the				Mappin on. 3-s		2-mediu	m, 1-we	eak)			
СО	S	(- · ·			KLs			- ,	PO		,	,	K	Ls	
									PO	1			1		
CO	1				1				PO				1		
									PO	3			2	2	
									PO				2		
CO	2				2				PO				3		
									PO 6			3			
60	2		2					PO 7				3			
CO	3		3					PO 8 PO 9				4 4			
								PO 10				4			
СО	4		3					PO 11				5			
								PO 12				5			
								PO 13				4			
CO	5		3					PO 14				4			
			PO 15 4						1						
							PO Ma								
		(3/2	/1 indic	cates the	e streng	-			-		m, 1-we	eak)			
COs							-	ime Ou		1					
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
CO2	2	2	3	3	2	2	2	1	1	1	1	1	1	1	1
CO3	1	1	2	2	3	3	1	2	2	2	1	1	2	2	2
CO4	1	1	2	2	3	3	1	2	2	2	1	1	2	2	2
CO5	1	1	2	2	3	3	1	2	2	2	1	1	2	2	2

Course Assessment Methods

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

Direct

1. Course End Delivery

	Introduction the .NET Framework	Periods	12
	Introduction the .NET Framework: .NET Framework - C#, VB.NET and		
Unit - I	Class library. Learning the C# languages: C# language Basics- Variables-	•••	
	-Object based Manipulation - Objects and Namespaces.	• 1	1
	Web Form Fundamentals	Periods	12
	Web Form Fundamentals: HTML Control classes - Page class - Web Con	trols: Web Contro	ol classes -
Unit - II	AutoPostBack and Web control events. Tracing, Logging and Error Hand	ling: Exception H	andling -
	Handling Exceptions -Throwing your own exception - Logging exception	is - Error Pages - I	Page Tracing.
	Validation and Rich Controls	Periods	12
	Validation and Rich Controls: Validation - Examples - Understanding Re	gular Expression	- Rich Contro
Unit - III	State Management: View state - Custom cookies - Session state - Applica	tion state. ADO.N	IET
	Fundamentals: ADO.NET and Data Management - ADO.NET Basics.		
	ADO.NET	Periods	12
	ADO.NET: Direct Data Access - Creating a Connection - Disconnected d	ata access. Data b	inding:
Unit - IV	Introducing Data Binding - Single Value Data Binding - Repeated value I	Data Binding - Da	ta Source
	Controls. The Data Controls: The Grid View -The Details View-The Forr	n View.	
	XML	Periods	12
	XML: XMLS hidden role in .NETXML Explained - XML Classes - XM	IL validation-XM	L display &
Unit - V	transforms XML Data Binding - XML in ADO.NET. Getting Started with	1 ASP.NET Ajax	- Understandi
	the ASP.NET Ajax Architecture - Working with the XML Http Request O	Object - JSON	
	Total Periods		60

Text Books	
1	Beginning ASP.NET 2.0 in C# 2005: From Novice to Professional (Beginning: From Novice to
	Professional). Matthew MacDonald (Author) publication: APress 2005.
2	Joydip Kanjilal and Sriram Putrevu, Sams Teach Yourself ASP.NET Ajax in 24 Hours, SAMS, 2008.
References	
1	William Sander, ASP. NET 3.5 A Beginnerâ€ [™] s Guide, 2008.
2	2. Pro ASP.NET 4.0 in C# 2012-Matthew Macdonald and Mario Szpuszta-Apress.
E-References	
1	www.learningtree.com
2	www.slideshare.net



SUCTIONAL INSTITUTE	VIVEKAN	ANDHA COLLEGE				NCES FO)R	ISO 9001:2008		
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WOMEN EMPOWERMENT		Elayampalayam, Ti	ruchengo	ode-6	37 205.					
Programme	M.Sc	Programme Code		P	2020-2021					
Department	Computer ScienceSemester2									
			Perio	ds	Credit	Maxim	um Mar	ks		
Course Code	C	Course Name per Week								
			L T	Р	С	CA	ESE	E Total		
20P2CSC08	MOBILE	COMPUTING	5 0	0	5	25	75	100		
COURSE	Introduce Mobi	le CommunicationUnders	stand Mo	bile	computing S	tandardsE	valuate	e Mobile data		
OBJECTIVES	and Adhoc netw	vorkImplement Mobile da	ta netwo	ork.						
POs		PROG	GRAMM	E OL	JTCOME					
PO 1	Apply knowledge	e of computing fundamental	s, compu	ting s	pecialization,	mathemati	cs, and	domain		
	knowledge appro	priate for the computing spe	cializatio	on to t	the abstraction	and conce	ptualiza	ation of		
		ls from defined problems an								
PO 2	-	te, research literature, and so		-			-			
		g fundamental principles of i	mathema	tics, c	computing scie	ences, and 1	relevant	domain		
PO 3	disciplines. Design and evaluate solutions for complex computing problems, and design and evaluate systems,									
PO 5	•	rocesses that meet specified		-		-	iuate sy	stems,		
PO 4		ed knowledge and research					ts. analy	vsis and		
		data, and synthesis of the inf				-	,	,		
PO 5	Create, select, ad	apt and apply appropriate te	chniques,	reso	urces, and mo	dern comp	uting to	ols to complex		
		ties, with an understanding of								
PO 6		commit to professional ethic	s and cyb	er reg	gulations, resp	onsibilities	s, and no	orms of		
	professional com									
PO 7	-	ed, and have the ability, to e	ngage in	indep	bendent learnir	ng for conti	inual de	velopment as a		
PO 8	computing profes	wledge and understanding o	f the corr	mutir	o and manage	ment princ	vinles an	d apply these to		
100		as a member and leader in a		-	•	-	-			
	environments.		,		8- F- J		r			
PO 9	Communicate eff	ectively with the computing	commur	nity, a	and with societ	y at large,	about c	omplex		
	computing activi	ties by being able to compre	hend and	write	e effective repo	orts, design	docum	entation, make		
	effective presenta	ations								
PO 10		assess societal, environmenta								
		and the consequential respon								
PO 11		ely as an individual and as a	member	or le	ader in diverse	e teams and	l in mul	tidisciplinary		
PO 12	environments.	opportunity and using innov	votion to r	117 011	a that opportur	nity to gran	to volue	and wealth for		
1012		the individual and society a		Jui su	e ulai opportui	inty to crea	le value	e and weatur for		
PO 13		dge of computing to create e	-	lesig	ns and solution	is for comr	olex pro	blems.		
PO 14		yse and synthesize scholarly		-			-			
PO 15		tific outlook that solves any			-					
	demands.									

COs	COURSE OUTCOME
CO 1	Understand the .NET framework (CLR, CTS, CLS etc.,) and its components
CO 2	Express the Web Form Fundamentals and Web Control Events
CO 3	To analyze the basics of ADO.NET Fundamentals
CO 4	To apply ADO.NET connection and Data Binding
CO 5	Design and Establish the Web based Software using ASP.NET and XML
Pre-requisites	Basic knowledge of java and HTML

]	Know	ledge	Level	s						
1.Reme	mberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5
		(3/2	/1 indic	rates the		CO / PC			-	2-mediu	m 1-we	vak)			
CC	s	(3/2			KLs	Sui oi e		011, 5 5	PO:		<u>, , , , , , , , , , , , , , , , , , , </u>	uix)	K	Ls	
	5								PO				1		
CO	1				1				PO				1		
									PO	3			2		
									PO	4			2	2	
CO	2				2				PO				(*)		
									PO 6			3			
C O	2						PO 7				3				
CO	3		3				PO 8 PO 9				4 4				
								PO 10				4			
CO	4		3					PO 11				5			
								PO 12				5			
								PO 13				4			
CO	5		3					PO 14				4			
									PO 1	5			2	1	
		(2)	(1 · · ·				PO Ma		_			1 \			
		(3/2	/I indic	cates the	e streng	-			-	2-mediu	m, 1-we	eak)			
COs	DOI	DOC	DOG	DO (705		-	me Ou		1	DOI	DOIS	DOIG	DOI	D01-
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9		PO11	PO12			
CO1	3	3	2	2	1	1	1	1	1	1	1	1	1	1	1
CO2	2	2	3	3	2	2	2	1	1	1	1	1	1	1	1
CO3	1	1	2	2	3	3	1	2	2	2	1	1	2	2	2
CO4	1	1	2	2	3	3	1	2	2	2	1	1	2	2	2
CO5	1	1	2	2	3	3	1	2	2	2	1	1	2	2	2

Course Assessment Methods

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect
1. Course End Delivery

Direct

Content of the Syllabus Periods 12 Introduction to Mobile Computing Introduction - Introduction to Telephone Systems - Mobile communication: Need for mobile Unit - I communication - Requirements of mobile communication - History of mobile communication -Introduction to Cellular Mobile Communication. Mobile Communication Standards 12 Periods Mobile Communication Standards - Mobility Management: Handoff Techniques - Handoff Detection and Unit - II Assignment - Types of Handoffs - Radio Link Transfer - Roaming Management - Frequency Management -Cordless Mobile Communication Systems. History of data Networks Periods 12 Mobile Computing: History of data Networks - Classification of Mobile data networks - CDPD System. Unit - III Satellites in Mobile Communication - Global Mobile Communication - Mobile Internet - Wireless Network Security - Wireless Local Loop Architecture - Wireless Application Protocol. WCDMA Technology Periods 12 WCDMA Technology and Fiber Optic Microcellular Mobile Communication - Ad Hoc Network and Unit - IV Bluetooth Technology - Intelligence Mobile Communication System - Fourth Generation Mobile Communication Systems. Mobile network layer Periods 12 Mobile network layer: Mobile IP - Dynamic host configuration protocol - Mobile Ad-Hoc networks. Mobile Unit - V transport layer: Traditional TCP - Classical TCP Improvement - TCP over 2.5/3G Wireless networks -Performance enhancing proxies - Support for Mobility: File Systems - World Wide Web. **Total Periods** 60

Text Books	
1	1. T.G. Palanivelu & R.Nakkeeran, Wireless and Mobile Communication, PHI Learning Private Limited ,
	2013.(Unit-I: Chapters–1,2,3,4. Unit-II: Chapters– 5,6,7,8.
	Unit-III:Chapters–9,10,11,14,15,16,17.Unit-IV:Chapter–18,19,20,21.)
2	2. Jochen Schiller, Mobile Communications, Pearson Education, Second Edition, 2012.(Unit-V:
	Chapters-8,9 &10)
References	
1	William Stallings, Wireless Communications and Networks, Pearson Education, 2015.
2	Asoke K Talukder http://www.amazon.com/Mobile-Computing-
	Applications-McGraw-Hill-Communications/dp/0071477330Mobile Computing: Technology,
	Applications, and Service Creation, TataMcGraw-Hill Communications Engineering, 2012.
E-References	
1	www.readorrefer.in/article/Mobile-Computing
2	www.readorrefer.in/article/Characteristics-of-Mobile-Computing

Subject Title	JAVASERVER PROGRAMMING LAB	Semester	ш
Subject Code	20P2CSP03	Specialization	NA
Туре	Practical – III	L:T:P:C	4:0:0:2

Objective:

- To develop the online program using JAVA.
 Implement JSP in real time processes.

On the successful completion of the course the student will be able to develop various kind of web pages.

CO Number	CO Statement
CO1	Demonstrate basic skill needed for surfing internet.
CO2	Develop HTML coding for web features.
CO3	Employ java script programming techniques.
CO4	Program coding using ASP, JSP for authentication and commercial purpose.
CO5	Web page designing for database connection with application.

Subject Title	JAVASERVER PROGRAMMING LAB	Semester	Ш
Subject Code	20P2CSP03	Specialization	NA
Туре	Practical – III	L:T:P:C	4:0:0:2

Practical programme list :

1. To Develop Student Information using AWT
2. To Prepare Electricity Bill Using Swing
3. To implement Library information using JDBC
4. To maintain Employee information using Servlets
5. To implement Session and Cookies concepts using Servlets
6. To develop Online Job Registration using JSP
7. Create an application using JSP and Java Beans
8. To develop Arithmetic Operation Using RMI
9. To create an application using Session Bean
10. To Implement Banking Operations using Entity Bean

Mapping with Programme Outcome

	PS01	PS02	PS03	PS04
CO1	S	S	S	S
CO2	М	S	S	S
CO3	М	S	S	S
CO4	М	S	S	S
CO5		S	S	S

S-Strong , M- Medium , L - Low

Subject Title	Mini Project	Semester	II
Subject Code	20P2CSPR01	Specialization	NA
Туре	Project	L:T:P:C	4:0:0:2
			<i></i>
FIRST REVIEW	•		(15 Marks)
1. Project Tit	le		
2. Project Pla	tform		
3. Details of	Guide		
4. Problem D	escription / Modules		
5. Presentatio	on (PPT)		
FINAL REVIEW	/:		(25 Marks)
1. Document	ation		
2. Screens Sh	nots		
3. DFD / ER	D / System Flow Diagram (W	hichever Applicable)	
4. Presentatio	on (PPT)		
5. Final Proje	ect Report (with executable for	ormat including complete s	source code)
Th	e Passing minimum shall be	40% out of 60 marks (24	Marks)



Elayampalayam, Tiruchengode-637 205.

WOMEN EMPOWERNENT		Elayampalayam, Ti	yam, Tiruchengode-637 205.						
Programme	M.Sc	Programme Code		P	CS	Regulatio	ons	2020-2021	
Department	Con	nputer Science			Semester			3	
Course Code	C	ourse Name		iods Veek	Credit	Maximui	m Marl	ks	
			-	Г Р	С	CA	ESE	Total	
20P3CSC09	SOFT C	OMPUTING	4	0 0	4	25	75	100	
COURSE OBJECTIVES	Develop the ski	evelop the skills to gain a basic understanding of neural network theory and fuzzy logic							
Pos		PROGRAMME OUTCOME							
PO 1	knowledge appro	Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain nowledge appropriate for the computing specialization to the abstraction and conceptualization of omputing models from defined problems and requirements.							
PO 2	=	Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain							
PO 3	•	ate solutions for complex corrections that meet specified	-			-	uate sys	stems,	
PO 4		ed knowledge and research data, and synthesis of the in			• •	-	s, analy	vsis and	
PO 5		apt and apply appropriate te ties, with an understanding o	-			dern comput	ting too	ols to complex	
PO 6	Understand and oppofessional com	commit to professional ethic puting practice.	s and cy	ber reg	gulations, resp	onsibilities,	and no	orms of	
PO 7	Recognize the ne computing profe	ed, and have the ability, to essional.	engage i	n indej	pendent learnin	ng for contin	ual de	velopment as a	
PO 8	Demonstrate kno	wledge and understanding on a member and leader in a		-			-		
PO 9		Sectively with the computing ties by being able to compre- ations	-	•		•		-	
PO 10		assess societal, environment and the consequential respor							
PO 11	•	ely as an individual and as a			1	1	• •		
PO 12	Identify a timely	opportunity and using innov the individual and society a		o pursu	e that opportu	nity to create	e value	and wealth for	
PO 13		dge of computing to create e	-	e desig	ns and solution	ns for compl	ex prol	blems.	
PO 14		yse and synthesize scholarly		-		_	-		
PO 15		tific outlook that solves any			-	_			

Cos	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
-	Soft computing is the use of approximate calculations to provide imprecise but usable solutions to complex computational problems

]	Know	ledge	Level	S						
1.Remen	nberi	ng, 2.	Under	rstand	ling, 3	B.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizinį	g
					(CO / PC) / KL]	Mappin	g						
		(3/2	/1 indic	ates the	e streng	gth of c	orrelati	on, 3-si	trong, 2	2-mediu	m, 1-we	eak)			
COs	COs]	KLs				Pos				KI	LS	
									PO	1			3	5	
CO	1				1				PO				2		
									PO				5		
	_								PO				4		
CO	2				2				PO :				2		
									PO PO				6		
CO	3				3			PO 7 PO 8				3 5			
								PO 9				1			
								PO 10				2			
CO 4	4		4				PO 11				3				
							PO 12					2			
			5				PO 13				3				
CO :	5						PO 14				4				
						<u> </u>	DO M.	• • • •	PO 1	.5			6)	
		(3/2	/1 indic	otos th	a strong		PO Ma		trong	modiu	m, 1-we	ak)			
		(3/2	/ I muit	ates th	5 Su Cilž	-		ime Ou			III, 1-wc	/dK)			
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Course Assessment Methods

Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect
1. Course End Delivery

	Overview	Periods	12				
Unit – I	Fundamentals of Neural Networks: Basic Concepts of Neural Network Neuron - Neural Network Architectures - Characteristics of Neural - Taxonomy of Neural Network Architectures - History of Neural Neural Network Architectures - Some Applications Domain.	Networks - Lea	rning Methods				
	Backpropagation Networks	Periods	12				
	Backpropagation Networks: Architecture of Backpropagation Network - Backpropaga						
Unit – II	Learning – Illustrations – Applications - Effect of	Tuning Paran	neters of th				
	Backpropagation Neural Network - Selection of various Parameters in Backpropagation						
	Neural Network - Variations of Standard Backpropagation Algorithms.						
	Adaptive Resonance Theory (ART)	Periods	12				
	Adaptive Resonance Theory (ART): Introduction - Classica	l ART network	ks - Simplifie				
Unit – III	ART Architecture - ART1 - Architecture of ART1 - Special Features of ART1 Models -						
	ART1 Algorithm - ART2 - Architecture of ART2 - ART2 Alg	gorithm - Appli	cations.				
	Fuzzy Set Theory	Periods	12				
Unit – IV	Fuzzy Set Theory: Fuzzy Sets - Fuzzy Relations. Fuzzy Systems: H						
Onit – I v	system - Defuzzification Methods - Applications. Fuzzy Backprop Fuzzy Numbers - Fuzzy Neuron - Fuzzy Backpropagation Architec		s: LR-type				
	Fundaments of Genetic algorithms	Periods	12				
Unit – V	Fundaments of Genetic algorithms: Basic Concepts - Creation of C		•				
Sint V	Reproduction. Genetic Modeling: Cross Over - Inversion and Dele	tion - Mutation (Operator - Bit				
	Wise Operators.						
	Total Periods		60				

Text Books	
1	Rajasekaran. S and Vijayalakshmi Pai, "Neural Networks, Fuzzy Logic and Genetic Algorithms", PHI, New Delhi-2012. (Unit I-Chapters: 2.1, 2.3-2.10, Unit-II- Chapters: 3.1-3.7, Unit-III- Chapters: 5.1- 5.4, Unit-IV- Chapters: 6.3, 6.5, 7.3-7.6, 12.1-12.3, Unit-V: Chapters: 8.2,8.3, 8.5,8.7, 9.2,9.3,9.4,9,5)
E-References	
1	rkala.in/lectures.php
2	https://en.wikipedia.org/wiki/Soft_computing



Elayampalayam, Tiruchengode-637 205.

MOMEN EMPOWERMEN		Elayampalayam, T	iruchen	gode-6	57 205.			
Programme	M.Sc	Programme Code		P	CS	Regula	ations	2020-2021
Department	Co	mputer Science	Semester					3
			Per	iods	Credit	Maximum Marks		
Course Code		Course Name	per V	Week				
			L '	ΓР	С	CA	ESE	Total
20002 CSC10	РҮТНО	N PROGRAMMING						
20P3CSC10			4	0 0	4	25	75	100
		nd develop a simple applicat			-	-	_	• -
		, numbers, and dates. Declar actionaries, and sets. Write c					tures, inc	luding lists,
Pos		PRC	GRAM	ME OU	JTCOME			
PO 1	Apply knowledg	ge of computing fundamenta	lls, comp	outing s	pecialization,	mathemat	ics, and o	lomain
	• • • •	opriate for the computing sp				n and conc	eptualiza	tion of
		els from defined problems a	-					
	-	ate, research literature, and s		-			-	
	conclusions using fundamental principles of mathematics, computing sciences, and relevant domain							
	disciplines.			1	1 11	• 1	1 /	
	•	uate solutions for complex c	-			-	aluate sys	stems,
	1	processes that meet specifie sed knowledge and research		-			nto onola	rais and
		data, and synthesis of the ir				-	-	
	1	dapt and apply appropriate t		-				ols to complex
		ities, with an understanding	-				outing too	no to complex
		commit to professional ethic				oonsibilitie	s, and no	rms of
		nputing practice.	•	, ,				
		eed, and have the ability, to	engage	in inde	pendent learn	ing for con	tinual de	velopment as a
	computing profe	essional.						
PO 8	Demonstrate kn	owledge and understanding	of the co	mputir	ng and manag	ement prin	ciples an	d apply these t
	ones own work, as a member and leader in a team, to manage projects and in multidisciplinary							
	environments.							
		ffectively with the computin	-	-				-
		ities by being able to compr	ehend ar	nd write	e effective rep	orts, desig	n docum	entation, make
	effective presen		. 1 1 1.	1 0	. 1 1 1	1, 1.	•.1 •	
		assess societal, environmen						
	-	and the consequential respo vely as an individual and as			-			
	environments.	very as an individual and as	a memo	er or ie	ader in divers	e teams an		laiscipinary
		y opportunity and using inno	vation to	nureu	e that opport	inity to cre	ate value	and wealth fo
		of the individual and society		' Pui su	e and oppoint		ute value	und weatur 10
		edge of computing to create	-	e desig	ns and solution	ns for com	plex prol	olems.
		lyse and synthesize scholarly		-				
	-	ntific outlook that solves any	-			-		
	demands.		•				•	

Cos	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
	Basic knowledge of any programming language concepts like what is a loop, what if and else does,
	how operators are used, etc. will be helpful. If you have strong command over the basics of any programming language, you can learn Python quickly.

Knowledge Levels

CO / PO / KL Mapping				
(3/2/1 indicates the strength of correlation, 3-strong, 2-medium, 1-weak)				
COs KLs Pos KLs	2S			
PO 1 3				
CO 1 1 PO 2 2				
PO 3 5				
PO 4 4				
CO 2 2 PO 5 2				
PO 6 6				
	3			
	5			
PO 9 1 PO 10 2	2			
	3			
	2			
PO 13 3				
CO 5 5 PO 14 4				
PO 15 6				
CO / PO Mapping				
(3/2/1 indicates the strength of correlation, 3-strong, 2-medium, 1-weak)				
Cos Programme Outcome (POs)				
PO1 PO2 PO3 PO4 PO5 PO6 PO7 PO8 PO9 PO10 PO11 PO12 PO13	PO14	PO15		
CO1 1 2 1 1 1 1 3 2 1 2 1	1	1		
CO2 2 3 1 1 3 1 2 1 2 3 2 3 2	1	1		
CO3 3 2 1 2 2 1 1 1 1 2 3 2 3	2	1		
CO4 2 1 2 3 1 1 2 2 1 1 2 1	3	1		
CO5 1 1 3 2 1 2 1 3 1 1 1 1 1	2	2		

Course Assessment Methods Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

1. Course End Delivery

	python	Periods	12					
Unit – I	Python: Introduction – Python interpreter and interactive mode – Va Expressions and Statements – Assigning Values in Python, Variable							
	Assignment – Operators – Types of Operators, Operator Precedence Modules, Function Definition and Use, Defining a Function, Calling Advantages of Functions - Flow of Execution	e – Modules and	Functions:					
	Parameters and Arguments	Periods	12					
	Parameters and Arguments: Functions with No Arguments	, Functions wi	th Argume					
Unit – II	Functions with Return Value. Conditionals: Booleans Values	and Operators	- Operator					
	Operator Precedence – Decision Making – if, if Else, IfEl	if Else & Ne	sted stateme					
	- Iteration - Fruitful Functions - Scope of Variable - Global and Local Variable i							
	Function, Nonlocal Variable – Composition – Recursion.							
	strings	Periods	12					
	Strings: String Slices - String are Immutable - String Fun	ctions and Me	thods – Str					
Unit – III	Module – Lists as Array. Lists: Accessing Elements in Lists U	Jsing Subscript	Operator, I					
	Operations, List Slices, List Methods, List Loop, Mutability, Aliasing, Cloning Lists, List							
	Parameters, Deleting List Elements, Python Functions	for List Op	perations, l					
	Comprehension.							
	tuples	Periods	12					
Unit – IV	Tuples: Advantages of Tuple Over List, Accessing Values, U							
	Elements, Tuple Assignment, Tuple Methods, Other Tuple Operations, Tuples As Retur							
	Values, Built-in Functions with Tuple, Variable Length Arguments Tuples – Dictionaries Built-in Dictionary Functions and Methods, Access update and Add Elements, Delete and							
	Remove Elements, Sorting, Iterating through, Reverse Lookup, Inverting a Dictionary							
	Memorization(Memos)	Kup, mverting	a Dictiona					
	files	Periods	12					
								
Unit – V	Files: Reading and Writing, Format Operator, Command Line Arguments – Errors and							
Unit - v	Exceptions: Errors Exceptions Modules: Writing Modules	L Ocating Made	$11\Delta c$ $P_{0,0} V_{0,0}$					
Unit – V	Exceptions: Errors, Exceptions. Modules: Writing Modules, Steps to create a Python Package.	Locating Modu	iles. Packag					

Text Books	
1	Dr. S. Suresh kumar, "Problem Solving and Python Programming" Charulatha Publications, 2018.
References	
1	Kenneth A. Lambert, The Fundamentals of Python: First Programs, 2011, Cengage Learning, ISBN: 978-1111822705. Python Essentials Reference (http://www.dabeaz.com/per.html): The definitive reference for both Python and much of the standard library
2	Hitchhikers Guide to Python (http://docs.python-guide.org/en/latest): Under active development, and still somewhat incomplete, but there is good stuff
3	Writing Idiomatic Python (https://www.jeffknupp.com/writing-idiomatic-python-ebook): Focused on not just getting the code to work, but how to write it in a really "Pythonic" way
E-References	
1	https://www.tutorialspoint.com/python programs
2	
	https://en.wikipedia.org/wiki/python programms



Southonal Institution	VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)						ISO 9001:2008	
HOMEN EMPONERINEN		Elayampalayam, Ti		,			CERTIFIED WWW.fax.com ID 9105078407	
Programme	M.Sc	Programme Code	P	ĊĊŚ	Regulat	ions	2020-2021	
Department	Con	nputer Science		Semester	1		3	
			Periods	Credit	Maximu	um Mar	'ks	
Course Code	C	ourse Name	per Week	C	CA	ESE	E Total	
				C	CA	ESI		
20P3CSC11	Data Mining ar	nd Warehousing	4 0 0	4	25	75	100	
COURSE OBJECTIVES		nd methods and techni	• •			•		
OBJECTIVES	for classification	on, clustering and asso sis.	ciation rule	analysis. Pra	actical us	e of so	ottware	
Pos		PRO	GRAMME O	UTCOME				
PO 1		e of computing fundamental		-				
	• • • •	priate for the computing spe Is from defined problems an			and conce	ptualiza	ation of	
PO 2	computing models from defined problems and requirements.Identify, formulate, research literature, and solve complex computing problems reaching substantiated							
	conclusions using fundamental principles of mathematics, computing sciences, and relevant domain							
PO 3	disciplines. Design and evaluate solutions for complex computing problems, and design and evaluate systems,							
	components, or processes that meet specified needs with appropriate consideration							
PO 4		ed knowledge and research		0 0		ts, anal	ysis and	
PO 5	-	interpretation of data, and synthesis of the information to provide valid conclusions.						
105		Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations						
PO 6	Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of							
	professional computing practice.							
PO 7	Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.							
PO 8	Demonstrate knowledge and understanding of the computing and management principles and apply these to							
		as a member and leader in a	team, to mana	age projects and	d in multidi	isciplina	ary	
PO 9	environments.	fectively with the computing	community	and with socie	tv at large	about c	ompley	
103			•		•		-	
	computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations							
PO 10	Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and							
	global contexts, and the consequential responsibilities relevant to professional computing practice.							
PO 11	environments.	ely as an individual and as a					_	
PO 12		Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.						
PO 13	To apply knowle	dge of computing to create e	effective desig	gns and solution	ns for comp	olex pro	blems.	
PO 14		yse and synthesize scholarly		-	_			
PO 15	-	tific outlook that solves any	problem, enc	ompassing the	expected as	spects o	of market	
	demands.							

Cos	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Data mining is carried by business users with the help of engineers. Data warehousing is the
	process of pooling all relevant data together. Data mining is considered as a process of extracting
	data from large data sets.

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.	Unde	rstand	ling, 3	3.App	lying,	4.An	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5
		(3/2	/1 indic	cates the				Mappin on. 3-s	•	2-mediu	m. 1-we	eak)			
CC)s	(- ·			KLs			- ,	Pos		,	,	K	Ls	
									PO	1			3	3	
CO	1				1				PO	2			2	2	
									PO	3			5	5	
									PO				4		
CO	2				2				PO				2		
									PO				6		
СО	3				3		PO 7 PO 8			3 5					
0	5				5			PO 9				1			
	PO 10							2							
CO	4	4 PO 11				3									
		PO 12				2									
	PO 13				3										
CO	5				5				PO 1			4			
						CO	PO Ma	nnina	PO 1	15			6)	
		(3/)	/1 india	ates th	e strend				trong 7	2-mediu	m 1-we	eak)			
		(3/2	2/1 indicates the strength of correlation, 3-strong, 2-medium, 1-weak) Programme Outcome (POs)												
Cos	PO1	PO2	PO3	PO4	PO5	PO6	-			PO11	PO12	PO13	PO14	PO15	
CO1	1	2	1	1	2	1	107	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
C04	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2
005	1	1	5	4	1	4	1	5	1	1	1	1	1	~	~

Course Assessment Methods
Direct

4. Continuous Assessment Test I, II & Model

5. Assignment

6. End Semester Examinations

Indirect

1. Course End Delivery

	Introduction	Periods	12				
Unit – I	Introduction: Data Mining – Data Mining Functionalities – Ki – Classification – Data Mining Task Primitives - Major	Issues. Data p	pre-processi				
	Descriptive Data Summarization - Data Cleaning – Data Integ Data Reduction – Data Discretization and concept Hierarchy (-	ansformation				
	Data warehouse and OLAP Technology	Periods	12				
Unit – II	Data warehouse and OLAP Technology: Data Warehouse	– A Multidim	nensional D				
	Model – Data Warehouse Architecture – Data Warehouse warehouse to data mining.	Implementation	n – From d				
	Mining Frequent Patterns, Associations, and Correlations	Periods	12				
	Mining Frequent Patterns, Associations, and Correlations: Ba	sic Concepts -	- Efficient a				
Unit – III	Scalable Frequent Itemset Mining Methods - Mining various kinds of Association Rules						
	From Association Mining to Correlation Analysis –. Constrain	nt Based Assoc	ciation Minin				
	Classification and prediction: Issues regarding classification	-					
	Tree Induction – Bayesian classification – Rule Based Clas	sification - Cl	assification				
	Back propagation – Prediction.						
	Cluster Analysis	Periods	12				
Unit – IV	Cluster Analysis: Types of Data in Cluster Analysis - A categ	orization of M	ajor Clusteri				
	Methods - Partitioning Methods - Hierarchical Methods - D	•					
	Based Methods - Model Based Clustering Methods - Outli	er Analysis -	Mining Tin				
	Series Data – Mining Sequence Patterns in Biological Data.						
	Spatial Data Mining	Periods	12				
Unit – V	Spatial Data Mining - Multimedia Data Mining - Text Mini						
·	Web. Applications and Trends in Data Mining: Applications - Data Mining System						
	Products and Research Prototypes – Additional Themes on D	Data Mining –	Social Impa				
	of Data Mining – Trends in Data mining.						
	Total Periods		60				

Text Books	
1	. Jiwei Han, Michelien Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann Publishers an Imprint of Elsevier, 2008. (Unit I: Chapter 1,2, Unit II: Chapter 3, Unit III: Chapter 5, 6, Unit IV: Chapter 7,8 Unit V: Chapter 10,11)
References	
1	1. Arun K.Pujari, "Data Mining Techniques", Universities Press (India) Limited, 2014.
2	Pang-NingTan,Michael Steinbach,Vipin Kumar, Introduction to Data Mining, Pearson, 2014
E-References	
1	freevideolectures.com > Computer Science > IIT Madras
2	videolectures.net/is2011_grobelnik_warehouses/
3	www.learnerstv.com/video/Free-video-Lecture-1636-Computer-Science
4	mydatamine.com/2011/04/top-10-data-mining-video-sites
5	www.slideshare.net/vivekjv/data-warehouse-modeling-presentation

Subject Title	Data Mining lab	Semester	III
Subject Code	20P3CSP05	Specialization	NA
Туре	Core Practical-V	L:T:P:C	0:0:6:2

Objectives

- To develop the program in WEKA to get knowledge on data mining concepts
- To familiarize with R programming to implement the process.
- Implement real world problems

COURSE OUTCOME

CO Number	CO Statement	Knowledge Level
CO1	Know the primitive functions of numerical operations	K1
CO2	Understand the matrix operations	K2
CO3	Implement various statistical operations with R script.	К3
CO4	Perform K-Means clustering operations	K4
CO5	Implement real world problems.	K4

Subject Title	Data Mining Lab	Semester	III
Subject Code	20P3CSP05	Specialization	NA
Туре	Core Practical V	L:T:P:C	0:0:6:2

Lab Exercise List :

- 1. To get the input from user and perform numerical operations (MAX, MIN, AVG, SUM, SQRT, ROUND).
- 2. To perform data import/export (.CSV, .XLS, .TXT) operations using data frames.
- 3. To get the input matrix from user and perform Matrix addition, subtraction, multiplication, inverse transpose and division operations using vector concept.
- 4. To perform statistical operations (Mean, Median, Mode and Standard deviation).
- 5. To perform data pre-processing operations i) Handling Missing data ii) Min-Max normalization
- 6. To perform dimensionality reduction operation using PCA.
- 7. To perform Simple Linear Regression and Multi Linear Regression.
- 8. To perform K-Means clustering operation and visualize it.
- 9. Write R script to diagnose any disease using KNN classification.
- 10. To perform market basket analysis using Apriori algorithm.

MAPPING WITH PROGRAM SPECIFIC OUTCOMES

CO PSO	PSO1	PSO2	PSO3	PSO4
CO1	S	М	L	L
CO2	S	М	S	Μ
CO3	S	S	L	М
CO4	Μ	М	L	М
CO5	Μ	S	L	L

2020-2021 Onwards	PYTHON PROGRAMMING	M.Sc. Computer Science
	LAB	
Semester III	20P3CSP04	Core: Practical - IV
Hours: 60	Practical –IV	Credit : 2

COURSE OBJECTIVE

- To familiar the students to the effective use of statements and syntax in python
- To implement various problems in python.

COURSE OUTCOME

On the successful completion of the course the student will be able to develop various kind of web pages.

CO Number	CO Statement
CO1	Recognize the operation of algorithmic problem solving Technique.
CO2	Identify and handle basic Statements of python programs and practice to write small coding in python.
CO3	Describe the computational operation of conditionals , function and string modules.
CO4	Demonstrate the operation list and advanced list operations and applications.
CO5	Recognize the operation of files and exceptions and illustrative programs.

2020-2021 Onwards	PYTHON PROGRAMMING	M.Sc. Computer Science
	LAB	
Semester III	20P1CSP04	Core: Practical – IV
Hours: 60	Practical -IV	Credit : 2

List of Programs:

- 1. To compute the GCD of Two Numbers.
- 2. Find square root of a Number.
- 3. To find the exponentiation of a given positive Number.
- 4. To perform Linear search from the list of Elements.
- 5. List the first N prime Numbers.
- 6. Find the Maximum of a list of Numbers.
- 7. Implementation Insertion Sort.
- 8. Remove all the duplicate elements in a list.
- 9. Implement a program that take command line Arguments.
- 10. Implement a python program find the most frequent words in a text read from a file.
- 11. Simulate bouncing ball using Pygame

Mapping with Programme Outcome

	PS01	PS02	PS03	PS04
CO1	S	S	S	S
CO2	М	S	S	S
CO3	М	S	S	S
CO4	М	S	S	S
CO5	-	S	S	S

S - Strong, M- Medium, L - Low



SUGNIONAL INSTITUT	VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)										
HOMEN EMPOWERNEN		Elayampalayam, Ti	ruchengod	le-6	37 205.						
Programme	M.Sc Programme Code PCS Regulations										
Department	Computer Science Semester										
	Periods Credit Maximum Marks										
Course Code	Course Name per Week L T P C CA ESE										
	L T P C CA ESE										
20P4CSC12	CLOUI	O COMPUTING	4 0	0	4	25	75	100			
COURSE	On successful co	mpletion of this course we l	earn the fu	nda	mentals of Ope	erating Sys	stems ar	chitecture,			
OBJECTIVES	Algorithms for Implementing DSM components and management aspects of Real time and Mobile operating Systems.										
Pos		PRO	GRAMME	οι	ЛСОМЕ						
PO 1		e of computing fundamental	· •	0	· ·						
		ppriate for the computing spectrum left from defined problems an				and conce	eptualiza	ation of			
PO 2		te, research literature, and se				blems reac	hing su	bstantiated			
		g fundamental principles of	mathemati	cs, c	computing scie	ences, and	relevant	domain			
	disciplines.			1		1	1 /				
PO 3	-	ate solutions for complex co processes that meet specified					iluate sy	stems,			
PO 4		ed knowledge and research					nts, anal	vsis and			
		data, and synthesis of the in				-)			
PO 5	-	apt and apply appropriate te		_				ols to complex			
		ties, with an understanding of									
PO 6		commit to professional ethic	s and cybe	r reg	gulations, resp	onsibilities	s, and no	orms of			
	professional com		· · ·		1 . 1 . 1	6					
PO 7	computing profes	ed, and have the ability, to e	engage in ii	nder	pendent learni	ig for cont	inual de	evelopment as a			
PO 8		wledge and understanding of	of the com	utir	g and manage	ment prin	ciples ar	and apply these to			
		as a member and leader in a	-		•	-	-				
	environments.										
PO 9		fectively with the computing	-	•		•		-			
		ties by being able to compre	hend and v	vrite	e effective rep	orts, design	n docum	nentation, make			
DO 10	effective present		1 1 1.1	6		1, 1,	•.1				
PO 10		assess societal, environment and the consequential respor									
PO 11	-	ely as an individual and as a			-	-					
1011	environments.							uuiserpiinui j			
PO 12	Identify a timely	opportunity and using innov	vation to pu	ırsu	e that opportu	nity to crea	ate value	e and wealth for			
		the individual and society a	-								
PO 13		dge of computing to create e		-							
PO 14		yse and synthesize scholarly			-						
PO 15	To develop scien demands.	tific outlook that solves any	problem, e	enco	ompassing the	expected a	spects o	of market			
L											

Cos	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Advanced Concepts in Operating Systems lays down all the concepts and mechanisms involved in the
	design of advanced operating systems. The discussion is reinforced by many examples and cases

	Knowledge Levels														
1.Reme	1.Remembering, 2.Understanding, 3.Applying, 4.Analyzing, 5.Evaluating, 6.Synthesizing												g		
	CO / PO / KL Mapping (3/2/1 indicates the strength of correlation, 3-strong, 2-medium, 1-weak)														
	~	(3/2	/1 1nd10		e streng KLs	gth of c	orrelati	on, 3-s	-		m, 1-we	eak)	KI		
Co	8				KLS				Pos PO				3		
СО	1				1				PO				2		
	1				1				PO				5		
									PO				4		
CO	2				2				PO	5			2	2	
									PO	6			6		
								PO 7				3			
CO	3		3					PO 8				5			
								PO 9 PO 10				1 2			
СО	4		4					PO 10 PO 11				3			
	+		4					PO 12				2			
								PO 12				3			
СО	5		5					PO 14				4			
								PO 15				6			
							PO Ma								
		(3/2	/1 indic	ates the	e streng	-				2-mediu	m, 1-we	eak)			
Cos								me Ou							
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Course Assessment Methods

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

Direct

1. Course End Delivery

	Cloud Computing Basics	Periods	12
	Cloud Computing Basics: Cloud Computing Overview-Applications-Intra		12
	Cloud. YourOrganization and Cloud Computing: Whenyou can use Cloud		fits-Limitation
Unit – I	Security Concerns.		
	Cloud Computing Technology	Periods	12
	Cloud Computing Technology: Cloud Hardware and Infrastructure-Client	•	k-Services.
Unit – II	Accessing the Cloud: Platforms-WebApplications-Web API's-Web Brows	sers.	
	Cloud Storage	Periods	12
	Cloud Storage: Overview- Cloud Storage Providers. Standards: Applicati	one Client Infrast	matura Comio
	cloud Storage. Overview Cloud Storage Hoviders. Standards. Applicati	ons-Chem-innasi	ructure-Servic
Unit – III	Cloud Storage. Overview Cloud Storage Providers. Standards. Applican	ons-enent-innast	ructure-servic
Unit – III	Software as a Service	Periods	12
		Periods	12
Unit – III Unit – IV	Software as a Service	Periods	12
	Software as a Service Software as a Service: Overview-Driving forces-Company offerings-Indu	Periods	12
Unit – IV	Software as a Service Software as a Service: Overview-Driving forces-Company offerings-Indu Overview-Mobile Device Integration-Providers-Microsoft Online. Local Clouds and Thin Clients Local Clouds and Thin Clients Local Clouds and Thin Clients	Periods stries. Software p Periods	12 lus Services: 12
	Software as a Service Software as a Service: Overview-Driving forces-Company offerings-Indu Overview-Mobile Device Integration-Providers-Microsoft Online. Local Clouds and Thin Clients Local Clouds and Thin Clients: Virtualization in Your Organization-Server to the Cloud: Cloud Services	Periods stries. Software p Periods	12 lus Services: 12
Unit – IV	Software as a Service Software as a Service: Overview-Driving forces-Company offerings-Indu Overview-Mobile Device Integration-Providers-Microsoft Online. Local Clouds and Thin Clients Local Clouds and Thin Clients Local Clouds and Thin Clients	Periods stries. Software p Periods	12 lus Services: 12

Text Books	
1	Advanced Concepts in Operating Systems, Mukesh Singhal, Niranjan G.Shivarathr, 2011.
2	Operating System Concepts, Abraham Silberschatz, Peter B. Galvin and Greg Gagne, Ninth Edition, John
	Wiley and Sons Inc, 2012.
References	
1	Operating System in depth: Design and Programming, Thomas.W,Doeppner, First Edition 2010.
2	The Linux Programming Interface: A Linux and Unix System Programming handbook, Michal Kerisk,
	First Edition, 2010.
E-References	
1	https://books.google.co.in/books//Advanced_Concepts_InOperatingSystems.html
2	https://www.bookdepository.com/Advanced-Concepts-Operating-Systems
3	https://www.sfitengg.org//CSC201-advanced%20operating%20systems



Elayampalayam, Tiruchengode-637 205.

MEN EMPOWERME	Elayampalayam, 111 uchengoue-057 205.										
Programme	M.Sc	Programme Code	P	CS	Regulatio	ons	2020-2021				
Department	Cor	Computer ScienceSemester4									
Course Code	C	Course Name	Periods per Week	Credit	Maximur						
		L T P C CA ESE Total									
20P4CSC13	Digital Image Processing										
COURSE OBJECTIVES	To develop experience with using computers to process images. To understand the basic principles and methods of digital image processingTo formulate solutions to general image processing problems.										
Pos		PRO	GRAMME OU	ЛСОМЕ							
PO 1	Apply knowledg	e of computing fundamental	ls, computing s	pecialization,	mathematics	s, and o	domain				
	• • • •	opriate for the computing spe ils from defined problems an			and concept	tualiza	tion of				
PO 2	Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.										
PO 3	Design and evalu	uate solutions for complex corrocesses that meet specified			-	iate sys	stems,				
PO 4		sed knowledge and research data, and synthesis of the in			-	, analy	sis and				
PO 5		lapt and apply appropriate te ties, with an understanding	-		dern comput	ing too	ols to complex				
PO 6	Understand and professional com	commit to professional ethic puting practice.	s and cyber rea	gulations, resp	onsibilities, a	and no	orms of				
PO 7	Recognize the ne computing profe	eed, and have the ability, to essional.	engage in inde	pendent learnin	ng for contin	ual de	velopment as a				
PO 8		owledge and understanding o as a member and leader in a									
PO 9	computing activite ffective present		chend and write	e effective repo	orts, design c	docum	entation, make				
PO 10		assess societal, environment and the consequential respor									
PO 11	Function effective environments.	vely as an individual and as a	a member or le	ader in diverse	teams and i	n mult	tidisciplinary				
PO 12		opportunity and using innov f the individual and society a		e that opportu	nity to create	value	and wealth for				
PO 13		dge of computing to create	-	ns and solutior	ns for comple	ex pro	blems.				
PO 14			-		_	-					
PO 15	To identify, analyse and synthesize scholarly literature relating to the field of Computer Science. To develop scientific outlook that solves any problem, encompassing the expected aspects of market demands.										

Cos	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Advanced Concepts in Operating Systems lays down all the concepts and mechanisms involved in the
	design of advanced operating systems. The discussion is reinforced by many examples and cases

	Knowledge Levels														
1.Remen	nberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5
		(3/2	/1 indic	rates the		CO / PC			-	-mediu	m, 1-we	eak)			
СО	s	(3/2			KLs	ui oi e		011, 5 5	Pos			un)	K	Ls	
									PO	1			3		
СО	1				1				PO				2		
									PO	3			5	5	
									PO 4	4			4	1	
CO	2				2				PO :				2		
									PO				6		
00	2		3					PO 7				3			
CO	3							PO 8 PO 9				5			
								PO 10				1 2			
СО	4		4					PO 10				3			
			+					PO 12				2			
								PO 13				3			
CO	5		5					PO 14				4			
								PO 15				6			
		(3/2	/1 india	ates the	e streng		PO Ma orrelati		trong 2	-mediu	m, 1-we	ak)			
		(2) _			2	-		me Ou			,)			
Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	- 1	2	3	- 1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2
	1	1	5	4	1	4	1	5	T	1	1	1	1	4	4

Course Assessment Methods Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

1. Course End Delivery

	Introduction	Periods	12								
	Introduction: What is Digital Image Processing? – Examples of Fieldstha	t Use Digital Imag	ge Processing -								
	Fundamental Steps in Digital ImageProcessing - Components of an Imag										
Unit – I	Image Fundamentals: Elements of Visual Perception – Light and ElectroMagnetic Spectrum – Image										
	Sensing and Acquisition – Image Samplingand Quantization – Some Bas	ic Relationships b	etween Pixels.								
	Image Enhancement in the Spatial	Periods	12								
	Domain										
	Image Enhancement in the Spatial Domain: Background. Some Basic Gra										
Unit – II	Histogram Processing- Enhancement Using Arithmetic/Logic Operations										
	Smoothing Spatial Filters. Image Enhancement in the Frequency: Backgr										
	Transform and the Frequency Domain- Smoothing Frequency-Domain F	ilters- Sharpening	Frequency								
	Domain Filters- Homomorphism Filtering- Implementation		1								
	Image Restoration Image Restoration: A Model of the Image Degradation / Restoration Proceedings	Periods	12								
Unit – III	the Presence of Noise OnlySpatial Filtering - Estimating the Degradation Minimum Mean Square Error (Wiener) Filtering. Color Image Processing Models- Pseudo color Image Processing- Basics of Full-Color Image Pro Smoothing and Sharpening- Image Segmentation Based on Color - Noise Compression.	Function- Inverse g: Color Fundament cessing- Color Tra	e Filtering- ntals- Color ansformations-								
	Object Recognition	Periods	12								
Unit – IV	Object Recognition: Knowledge Representation Statistical Pattern Recog	nition Neural Nets	s Syntactic								
	Pattern Recognition Optimization Techniques - Fuzzy Systems Mathema	tical Morphology	Basic								
	Morphological Concepts Binary Dilation and Erosion.										
	Image Data Compression	Periods	12								
	Image Data Compression: Image Data Properties Discrete Image Transfo										
Unit – V	Predictive Compression Methods Vector Quantization Hierarchal and Pro Comparison of Compression Methods Coding JPEG and MPEG Image C										

Text Books	
1	Rafael C. Gonzalez, Richard E. Woods, "Digital Image Processing", Prentice Hall, Third Edition, 2008. (Unit I to III : Chapter 1,2,3,4,5&6)
2	Sonka, Hlavac, Boyle, "Digital Image Processing and ComputerVision", Cengage Learning, Fourth Indian Reprint 2011. (Unit-IV:Chapters: 9&13,Unit-V:Chapters: 14&15)
References	
1	Anil.K.Jain, "Fundamentals of Digital Image Processing", PrenticeHall, 1989.
2	Chanda & amp; Majumdar, "Digital Image Processing and Analysis", Prentice Hall 3 rd Edition.
E-References	
1	www.nptel.ac.in
2	www.imageprocessingplace.com/
3	www.slideshare.net/sahilbiswas/image-processing

Subject Title	Project Lab	Semester	IV
Subject Code	20P4CSPR02	Specialization	NA
Туре	Major Project	L:T:P:C	2:0:6:2
FIRST REVIEV	۷.		(10 Marks)
	•		(10 Warks)
1. Proble	em Identification		
2. Proble	em definition		
3. Preser	ntation		
SECOND REVI	EW:	(10 M	arks)
1. Projec	t Analysis		
2. Desig	n & Module description		
	X 7.		(20 Mortes)
FINAL REVIEV	V:		(20 Marks)
1. DFD /	⁷ ERD / System Flow Diagram	n (Whichever Applicable)	
2. Codin	g and Implementation		
3. Preser	• •		
4. Final	Project Report (with executal	ble format including comple	ete source code)
	e Passing minimum shall be	• •	
	0		,

ELECTIVE -I

SUCHIONAL INSTITU	VIVEKAN	ISO 9001:2008											
Strington and State			TÜVRheinland CERTIFIED WWW.5ux.com ID 9105078407										
WOMEN EMPOWERNEN		Elayampalayam, Ti	ruchen	igode-6	37 205.								
Programme	M.Sc	Programme Code		P	CS	Regula	tions	2020-2021					
Department	Con	nputer Science			Semester			1					
			Per	iods	Credit	Maxim	um Mar	ks					
Course Code	C	ourse Name	per	Week			n						
			L	T P	С	CA	ESE	E Total					
20P1CSE01	THEORY	OF COMPUTING	4	0 0	4	25	75	100					
COURSE	To provide the k	nowledge on Learning about	autom	ata, gra	mmar. langua	ge, and the	eir relatio	onships. To					
OBJECTIVES	To provide the knowledge on Learning about automata, grammar, language, and their relationships. To gives an understanding of the power of Turing machine, and the decidable nature of a problem. To gives the idea on new trends and applications.												
POs		PROGRAMME OUTCOME											
PO 1		e of computing fundamental			-								
		priate for the computing spe				and conce	eptualiza	ation of					
PO 2	computing models from defined problems and requirements. Identify, formulate, research literature, and solve complex computing problems reaching substantiated												
PO 2	-			-			-						
	disciplines.	g fundamentar principies of	principles of mathematics, computing sciences, and relevant domain										
PO 3	-	ate solutions for complex co	omputi	ng prob	lems, and desi	gn and eva	aluate sy	stems,					
		processes that meet specified		-									
PO 4		ed knowledge and research				-		ysis and					
PO 5	*	data, and synthesis of the int		1				-1					
PO 3		apt and apply appropriate te ties, with an understanding of	-			dem comp	uting to	ois to complex					
PO 6		commit to professional ethic				onsibilities	s, and no	orms of					
	professional com				J / 1		,						
PO 7	Recognize the ne	ed, and have the ability, to e	engage	in inde	pendent learni	ng for cont	tinual de	evelopment as a					
	computing profes												
PO 8		wledge and understanding of											
	ones own work, a environments.	as a member and leader in a	team, t	o mana	ge projects and	d in multid	lisciplina	ary					
PO 9		fectively with the computing	, comm	unity a	and with societ	tv at large	about c	omplex					
107		• • •		•		•		-					
	computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations												
PO 10	Understand and a	assess societal, environmenta	al, heal	th, safe	ty, legal, and c	ultural iss	ues with	in local and					
	•	and the consequential respor			-	1	• •						
PO 11		ely as an individual and as a	ı memb	er or le	ader in diverse	e teams and	d in mul	tidisciplinary					
PO 12	environments.	opportunity and using innov	vation t	o purcu	e that opportu	nity to cre	ata value	and wealth for					
1012		the individual and society a		-	e mai opportu		are value						
PO 13		dge of computing to create e			ns and solution	ns for com	plex pro	blems.					
PO 14		yse and synthesize scholarly		-									
PO 15		tific outlook that solves any			-	-							
	demands.												

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	The theory of computation is a branch of computer science and mathematics combined that "deals with how efficiently problems can be solved on a model of computation, using an algorithm". It studies the general properties of computation which in turn, helps us increase the efficiency at which computers solve problems.

Knowledge Levels

1.Reme	emberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5	
		(2/2	/1 india	atas th				Mappin	-	madin	m, 1-we	alc)				
Co	08	(3/2			KLs		orrelati	011, 5-80	Pos		III, 1-we	ak)	KI	s		
									PO				3			
CC	CO 1				1				PO				2			
									PO	3			5	5		
									PO	4			4	ŀ		
CC) 2				2				PO				2			
									PO				6			
								PO 7					3			
CC) 3		3					PO 8 PO 9				5				
									PO 1				2			
CC) 4		4					PO 10				3				
ee	, ,								PO 1				2			
									PO 1				3			
CC) 5				5			PO 14					4	ŀ		
								PO 15					6			
							PO Ma									
	1	(3/2	/1 indic	ates the	e streng						m, 1-we	eak)				
COs		1	1			1	-	me Ou		r						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1	
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1	
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1	
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1	
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2	

Course Assessment Methods Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

1. Course End Delivery

	REGULAR LANGUAGES	Periods	12							
	REGULAR LANGUAGES : Finite Automata (FA) Deterministic Finite A									
TT '/ T	Finite Automata (NFA) Finite Automata with Epsilon transitions - Regula	-	-							
Unit - I	Expressions Pumping lemma for Regular languages - Equivalence and minimization of Finite Automata.									
	CONTEXT FREE LANGUAGES	Periods	12							
	CONTEXT FREE LANGUAGES : Context-Free Grammar (CFG) Parse	Trees Ambiguity i	n grammars ai							
	languages Equivalence of Parse trees and derivation - Normal forms for C									
Unit - II	automata Languages of a Pushdown Automata Equivalence of Pushdown	automata and CFC	3 Pumping							
	lemma for CFL.									
	CLOSURE PROPERTIES	Periods	12							
	CLOSURE PROPERTIES: and Turing machines 8 Closure properties of Regular Sets: Complement and									
TT '/ TT	Intersection Closure properties of CFL: Union, Concatenation, Kleene Closure, Intersection and									
Unit - III	Complement Turing Machines Language of a Turing machine Turing machine as a computing device -									
	Various techniques for construction of TMs Equivalence of one tape and	multi-tape Turing	machines							
Unit - IV	Various techniques for construction of TMs Equivalence of one tape and	multi-tape Turing Periods	machines 12							
Unit - IV	Various techniques for construction of TMs Equivalence of one tape and UNDECIDABILITY	multi-tape Turing Periods	machines 12 problem that							
Unit - IV	Various techniques for construction of TMs Equivalence of one tape and UNDECIDABILITY UNDECIDABILITY: A language that is not Recursively Enumerable (RE	multi-tape Turing Periods	machines 12 problem that							
Unit - IV	Various techniques for construction of TMs Equivalence of one tape and UNDECIDABILITY UNDECIDABILITY UNDECIDABILITY: A language that is not Recursively Enumerable (RE RE Undecidable problems about Turing Machine Rice theorem for Recursion)	multi-tape Turing Periods	machines 12 problem that							
	Various techniques for construction of TMs Equivalence of one tape and UNDECIDABILITY UNDECIDABILITY: A language that is not Recursively Enumerable (RE RE Undecidable problems about Turing Machine Rice theorem for Recursilanguages Posts Correspondence Problem.	multi-tape Turing Periods () An undecidable vive and Recursive	machines 12 problem that ely enumerable							
Unit - IV Unit - V	Various techniques for construction of TMs Equivalence of one tape and UNDECIDABILITY UNDECIDABILITY: A language that is not Recursively Enumerable (RE RE Undecidable problems about Turing Machine Rice theorem for Recursilanguages Posts Correspondence Problem. RECENT TRENDS & APPLICATIONS RECENT TRENDS & APPLICATIONS :Matrix grammar Programmed g	multi-tape Turing Periods) An undecidable vive and Recursive Periods rammar Random	machines 12 problem that ely enumerable 12 context grammer							
	Various techniques for construction of TMs Equivalence of one tape and UNDECIDABILITY UNDECIDABILITY: A language that is not Recursively Enumerable (RE RE Undecidable problems about Turing Machine Rice theorem for Recursilanguages Posts Correspondence Problem. RECENT TRENDS & APPLICATIONS	multi-tape Turing Periods) An undecidable vive and Recursive Periods rammar Random	machines 12 problem that ely enumerable 12 context grammer							

Text Books	
1	John E. Hopcroft and Jeffery D. Ullman, Introduction to Automata Theory, Languages and Computations, Narosa Publishing House, Delhi, 1989.
2	Kamala Krithivasan and R. Rama, Introduction to Formal Languages, AutomataTheory and Computation, Pearson Education, Delhi, 2009.
References	
1	Harry R. Lewis and Christos H. Papadimitriou, Elements of the theory of Computation, Second Edition, Prentice-Hall of India Pvt. Ltd, 2003.
2	J. Martin, Introduction to Languages and the Theory of Computation, ThirdEdition, Tata Mc Graw Hill, New Delhi, 2003.
3	Micheal Sipser, "Introduction of the Theory and Computation", ThomsonLearning, 1997.



Elayampalayam, Tiruchengode-637 205.	
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MOMEN EMPOWERMENT		Elayampalayam, Ti	rucheng	gode-6	37 205.								
Programme	M.Sc	Programme Code		P	CS	Regulat	tions	202	20-2021				
Department	Cor	nputer Science			Semester				1				
Course Code	C	Course Name	Perio per W	Veek	Credit	Maxim CA	um Mar ESE		Total				
	COF								Total				
20P1CSE02 COURSE		SOFTWARE PROJECT MANAGEMENT AND QUALITY ASSURANCE Jse of different Life cycle Model for software development Have the mathematical foundation in finding of											
OBJECTIVES	project cost of algorithms Understand different algorithmic design strategies Apply design principles and concepts to reengineering and reverse engineering												
POs	PROGRAMME OUTCOME												
PO 1	Apply knowledg	e of computing fundamental	s, comp	uting s	pecialization,	mathemati	cs, and	domaiı	n				
	• • • •	opriate for the computing spo ls from defined problems an				and conce	eptualiza	ation o	f				
PO 2	•	Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain											
PO 3	Design and evalu	ate solutions for complex corrected by the solutions for complex corrected by the specified	-			-	luate sy	rstems,					
PO 4	Use research-bas	ed knowledge and research data, and synthesis of the in	methods	inclu	ding design of	experimen		ysis an	d				
PO 5		lapt and apply appropriate te ties, with an understanding	-			dern comp	uting to	ols to c	complex				
PO 6		commit to professional ethic				onsibilities	s, and no	orms o	f				
PO 7		eed, and have the ability, to e	engage ii	n indej	pendent learnin	ng for cont	inual de	evelopr	nent as a				
PO 8	Demonstrate kno	wledge and understanding on a member and leader in a		-	•	-	-		y these to				
PO 9		fectively with the computing ties by being able to compre- ations	-	•		• •		-					
PO 10		assess societal, environment and the consequential respor											
PO 11	-	vely as an individual and as a											
PO 12		opportunity and using innov f the individual and society a		pursu	e that opportu	nity to crea	te value	e and w	vealth for				
PO 13	To apply knowle	dge of computing to create	effective	desig	ns and solutior	ns for com	plex pro	blems.					
PO 14 PO 15	÷	yse and synthesize scholarly tific outlook that solves any			-	-			cet				
	demands.		-			-	-						

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	SQA encompasses the entire software development process, including requirements engineering,
	software design, coding, code reviews, source code control, software configuration management, testing, release management and software integration.

]	Know	ledge	Level	s							
1.Remen	nberi	ng, 2.1	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E ⁻	valuat	ing, 6.	Synth	esizin	3	
		(3/2	/1 indic	rates the		CO / PC				-mediu	m, 1-we	ak)				
COs	3	(3/2)			KLs	541 01 0		01, 5 5	Pos		<u>, , , , , , , , , , , , , , , , , , , </u>	uix)	K	[.s		
	,				1125				PO							
CO	1				1				PO				2			
									PO	3			5	5		
									PO	4			4	1		
CO	2				2				PO				2			
								PO 6					6			
	-		3					PO 7					3			
CO	3								PO			5				
								PO 9 PO 10				1 2				
CO	4		4						PO 1			3				
	-		'					PO 12					2			
									PO 1	3		3				
CO	5		5					PO 14					4			
									PO 1	5		6				
				_			PO Ma					. .				
		(3/2	/1 indic	cates the	e streng	-			-		m, 1-we	eak)				
COs	D.C.	B 65				1	-	ime Ou	1		D.C. I					
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10			PO13		PO15	
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1	
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1	
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1	
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1	
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2	

Course Assessment Methods Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

	Introduction	Periods	12
Unit - I	Introduction – Product Life cycle – Project life cycle models - Water fall r model – Spiral Model – Process Models – The ISO-9001Model-The Capat	•1	0
	Software Configuration Management	Periods	12
Unit - II	Software Configuration Management – Definitions and terminology – Th Configuration Audit – Metrics –Tools and Automation- Software Quality Quality Control and Assurance – SQA Analysts Functions - QA Tools – G of a successful SQA-Measures of SQA success.	Assurance – Defi	ne Quality –
	Project Initiation	Periods	12
Unit - III	Project Initiation – Project Planning and Tracking – What, Cost, When an – Assigning Resources – Activities to specific to Project Tracking – Project	U	
	- Assigning Resources - Activities to specific to Project Placking - Proje		and How.
	Quality Management	Periods	12
Unit - IV		Periods eving Software Qu	12 ality-Softwar
Unit - IV	Quality Management Quality Management-Software Quality, Software Quality Dilemma-Achie Testing Strategies-Strategic Approach-Test Strategies for Conventional Software	Periods eving Software Qu	12 ality-Softwa
	Quality Management Quality Management-Software Quality, Software Quality Dilemma-Achie Testing Strategies-Strategic Approach-Test Strategies for Conventional So Software	Periods eving Software Qu oftware and Objec Periods	12 ality-Softwar t Oriented 12
Unit - IV Unit - V	Quality Management Quality Management-Software Quality, Software Quality Dilemma-Achie Testing Strategies-Strategic Approach-Test Strategies for Conventional So Software Project Management	Periods eving Software Qu oftware and Objec Periods eduling - Risk Ma	12 ality-Softwar t Oriented 12 nagement –
Unit - IV Unit - V	Quality Management Quality Management-Software Quality, Software Quality Dilemma-Achie Testing Strategies-Strategic Approach-Test Strategies for Conventional So Software Project Management Project Management - The People, The Product, The Process - Project Sch	Periods eving Software Qu oftware and Objec Periods eduling - Risk Ma	12 ality-Softwar t Oriented 12 nagement –

Text Books	
1	Gopalaswamy Ramesh, "Managing Global Software Projects" Tata McGraw Hill.Publishing Company Ltd, New Delhi, 2002. (Unit-I :Chapter 1,2,3,4&5, Unit-II: Chapter 6,7, Unit-III: Chapter 10,11 & 12)
2	Pressman, Roger, "Software Engineering ", A Practitioner's approach, 7th edition, Tata Mc- Graw Hill, 2006. 6 th Edition (Unit-IV: Chapter 25,26, Unit-V: 21,31
References	
1	Philip B Crosby, " Quality is Free: The Art of Making Quality Certain ", MassMarket, 2004.
2	Bob Hughes and Mike Cotterell "Software Project Management" 2 nd Edition, TataMcGraw Hill Publishing Company Ltd., New Delhi, 2002.
3	Software Project Management, Ashfaque Ahmed 2013
E-References	
1	https://en.wikipedia.org/wiki/Software_quality_managementhttps://en.wikipedia.org/wiki/ Software_quality_control



Elayampalayam, Tiruchengode-637 205.

NOMEN EMPOWERMENT		Elayampalayam, Ti	rucheng	gode-6	37 205.				
Programme	M.Sc	Programme Code		Р	CS	Regula	tions	2020-2021	
Department	Cor	nputer Science			Semester			Ι	
Course Code	C	Course Name	Peri per V	Veek	Credit		um Marks	1	
			L 1	P	С	CA	ESE	Total	
20P1CSE03	CLIENT / SERVER TECHNOLOGY 4 0 0 4 25 75								
COURSE OBJECTIVES	Know the basics of client /server technology. Understand the client server hardware and oftware components. Analyze the impact of client/server technology in business. Development and deployment of client server platform.								
POs		PRO	GRAMN	AE OU	ЛСОМЕ				
PO 1	knowledge appro	Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.							
PO 2	Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.								
PO 3	-	ate solutions for complex c processes that meet specified	-			-	aluate syst	ems,	
PO 4		ed knowledge and research data, and synthesis of the in				-	-	is and	
PO 5		lapt and apply appropriate te ties, with an understanding	-			dern comp	outing tool	s to complex	
PO 6	Understand and	Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.							
PO 7	Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional.								
PO 8	Demonstrate knowledge and understanding of the computing and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.								
PO 9	Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations								
PO 10		assess societal, environment and the consequential respo							
PO 11	-	rely as an individual and as a			-				
PO 12		opportunity and using inno f the individual and society a		pursu	e that opportu	nity to crea	ate value a	and wealth for	
PO 13		dge of computing to create		desig	ns and solution	ns for com	plex probl	ems.	
PO 14 PO 15	-	yse and synthesize scholarly tific outlook that solves any			-	_			

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Even though most people use the term "client/server" when talking about group computing with PC's on networks, PC network computing evolved before the client/server model

]	Know	ledge	Level	S						
1.Reme	nberi	ng, 2.	Under	rstand	ling, 3	B.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizinį	3
		(3/2	/1 indic	cates the		CO / PC				2-mediu	m, 1-we	ak)			
Cos	5	(3, 2			KLs				Pos			uit)	K	Ls	
	-								PO				3		
СО	1				1				PO					2	
									PO	3			5	5	
									PO				4		
CO	2				2				PO				2		
									PO				6		
CO	2						PO 7 PO 8				3 5				
0	3				3			PO 8 PO 9				1			
							PO 10				2				
CO	4		4				PO 11				3				
			-					PO 12				2			
				PO 13											
CO	5		5				PO 14				4				
						<u> </u>			PO 1	5			6	5	
		(2/7	/1 india	patae th	a strong		PO Ma		trong	modin	m, 1-we	ak)			
		(3/2		ales in	e su eng			ime Ou			III, 1-we	ак)			
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	105	104	2	100	107	100	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1		2	2	1	1	2	1	2	3	1
						1									
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Course Assessment Methods Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

1. Course End Delivery

	Introduction	Periods	12
Unit - I	Introduction to Client Server Computing-Benefits of Client Server Compu- Components of Client Server Applications-Categories of Client Server Applications-Categories of Client Server Applications-Categories and Standards-Setting Orga	plications-Dispel	ling the Myt
	Client Hardware and Software	Periods	12
Unit - II	Client Hardware and Software-Client Components-Client Operating Syste Windowing-Database Access-Application Logic-Client Server Products-F Standards-Open GUI Standards.		
	Server Hardware	Periods	12
Unit - III	Server Hardware-Benchmarks-Categories of Server-Features of Server M Machines-Server Environment-Eight layers of Software-Network Manag Computing Environment-Server Requirements-Platform Independence-T	ement Environme	nt-Network
	Connectivity-Intelligent Database-Stored Procedures-Triggers-Load Leve Diagnostic Tools-Reliability-Backup and Recovery Mechanisms- Server Tools.	eling-Optimizer-T	esting and
	Connectivity-Intelligent Database-Stored Procedures-Triggers-Load Leve Diagnostic Tools-Reliability-Backup and Recovery Mechanisms- Server	eling-Optimizer-T	esting and
Unit - IV	Connectivity-Intelligent Database-Stored Procedures-Triggers-Load Level Diagnostic Tools-Reliability-Backup and Recovery Mechanisms- Server Tools. Overview of Networking Overview of Networking-Layers, Interfaces and protocols-Standard Arch Characteristics-Network Management Standards-LAN Hardware and Sof	eling-Optimizer-T Data Managemen Periods itectures-Network	esting and ts and Acces
Unit - IV	Connectivity-Intelligent Database-Stored Procedures-Triggers-Load Level Diagnostic Tools-Reliability-Backup and Recovery Mechanisms- Server Tools. Overview of Networking Overview of Networking-Layers, Interfaces and protocols-Standard Arch	eling-Optimizer-T Data Managemen Periods itectures-Network	esting and ts and Acces
Unit - IV Unit - V	Connectivity-Intelligent Database-Stored Procedures-Triggers-Load Level Diagnostic Tools-Reliability-Backup and Recovery Mechanisms- Server Tools. Overview of Networking Overview of Networking-Layers, Interfaces and protocols-Standard Arch Characteristics-Network Management Standards-LAN Hardware and Sof Operating System.	eling-Optimizer-T Data Managemen Periods itectures-Network tware-LAN Hardy Periods ing Screen Interfa	esting an ts and Ad a ware-Net 1 ces-Appl

Text Books	
1	Dawna Travis Dewire, "Client/Server computing, 11th Reprint 2009, Tata McGraw Hill.
	(Unit–I:Chapter 1,2,3&4, Unit-II: Chapter 5,6&7,Unit-III :Chapter 8,9,10,11&12) Unit – IV:Chapter 15 & 16, Unit –V:Chapter 18,18 & 19)
References	
1	Jafferey D. Schank, "Novell's guide to Client/Server Application and Architecture", 2005 Edition, BPB Publications
2	Robert Orfali, Dan Harkey and Jeri Edwards, "Client/Server Survival Guide", 3rd Edition, 2009 John Wiley & Sons, Inc.
E-References	
1	www.opengroup.org/comsource/techref2/NCH1222X.HTM
2	www.springer.com/productFlyer

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HOMEN EMPOWERMENT	Elayampalayam, Tiruchengode-637 205.									1D 9105078407
Programme	M.Sc	Programme Code	PCS Regulations						2	2020-2021
Department	Con	Computer Science Semester								Ι
				Periods Credit				um Ma	rks	
Course Code	Course Name			r We	ek					
				Т	Р	С	CA	CA ESI		Total
20P1CSE04	_	·	4	0						100
	Internet o	Internet of Things			0	4	25 75			100
		Fundamentals, charac nologies Implementin nmercial IoT.					0			
POs		PRO	OGRAI	MMI	E OU	TCOME				
PO 1	Apply knowledg	e of computing fundamenta	als, cor	nputi	ing sj	pecialization,	mathemati	cs, and	dom	nain
	• • • •	opriate for the computing sp					and conce	eptualiz	atio	n of
	1 0	ls from defined problems a	-							
PO 2	Identify, formula	te, research literature, and	solve c	omp	lex c	omputing pro	blems reac	hing su	bsta	ntiated

conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.
 Design and evaluate solutions for complex computing problems, and design and evaluate systems.

PO 3	Design and evaluate solutions for complex computing problems, and design and evaluate systems,
	components, or processes that meet specified needs with appropriate consideration
PO 4	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.
PO 5	Create select adapt and apply appropriate techniques, resources, and modern computing tools to complex

PO 5 Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations

PO 6	Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of
	professional computing practice.
PO 7	Recognize the need, and have the ability, to engage in independent learning for continual development as a
	computing professional.

	computing professional.
PO 8	Demonstrate knowledge and understanding of the computing and management principles and apply these to
	ones own work, as a member and leader in a team, to manage projects and in multidisciplinary
	environments.
PO 9	Communicate effectively with the computing community, and with society at large, about complex
	computing activities by being able to comprehend and write effective reports, design documentation, make
	effective presentations

PO 10	Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and
	global contexts, and the consequential responsibilities relevant to professional computing practice.
PO 11	Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary
	environments.
PO 12	Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for
	the betterment of the individual and society at large.
PO 13	To apply knowledge of computing to create effective designs and solutions for complex problems.
PO 14	To identify, analyse and synthesize scholarly literature relating to the field of Computer Science.
PO 15	To develop scientific outlook that solves any problem, encompassing the expected aspects of market

demands.

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Having a basic conceptual understanding of electric circuits is very helpful, so students can better
	understand how to correctly connect the parts in their IoT electronics kit (and how to troubleshoot connection issues)

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.	Unde	rstand	ling, 3	3.App	lying,	4.An	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5
		(3/2	/1 india	cates the				Mappin on 3-s	-	2-mediu	m 1-we	eak)			
Co	s	(0/=			KLs	541 01 0		011, 0 5	Pos			((((K	Ls	
									PO	1			3		
CO	1				1				PO				2		
									PO	3			5	5	
									PO				4		
CO	2				2				PO				2		
									PO						
CO	3		3				PO 7 PO 8				3 5				
0	5							PO 9				1			
								PO 10				2			
CO	4		4					PO 11					3		
								PO 12					2	2	
								PO 13				3			
CO	5		5 PO 14					4							
						<u> </u>	DO M.		PO 1	5			6	5	
		(2/7	/1 india	pates the	a strand		PO Ma orrelati		trong	2-mediu	m 1 w	ak)			
		(3/2	/ I mun	ates un	c such	-		ime Ou	-		III, 1-we	ак)			
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
C01	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
	_						2								
CO2	2	3	1	1	3	1		1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

1. Course End Delivery

	Introduction	Periods	12
	Introduction: Introduction to Internet of Things - Definition & Characteria	stics of IoT - Thir	igs in IoT – Io
Unit - I	Protocols – Logical Design of IoT: IoT functional Blocks – IoT Commun Communication APIs	ication Models –	ΙοΤ
	IoT Enabling Technologies	Periods	12
Unit - II	IoT Enabling Technologies: Wireless Sensor Networks – Cloud computin Communication Protocols – Embedded Systems. Domain Specific IoTs: H – Health & Monitoring.		
	Developing IoT	Periods	12
	Developing IoT: Introduction – IoT Design Methodology – Case Study of Monitoring.	n for System for	Weather
Unit - III	Mointoinig.		
Unit - III	IoT and M2M	Periods	12
	IoT and M2M		
Unit - IV	IoT and M2M IoT and M2M: Introduction – M2M – Difference between IoT and M2M		
Unit - III Unit - IV Unit - V	IoT and M2M IoT and M2M: Introduction – M2M – Difference between IoT and M2M Software defined Networking – Network Function Virtualization. IoT System Management with	– SDN and NFV : Periods	for IoT: 12

Text Books	
1	Arshdeep Bahga, Vijay Madisetti "Internet of Things, A Hands on Approach" Universities Press 2015.
References	
1	Oliver Hersent, David Boswarthick, Omar Elloumi. "The Internet of Things – Key applications and Protocols", Wiley, 2012
E-References	
1	www.theinternetof things.eu



Sichtonal INSTITUT	VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR										
	WOMEN (AUTONOMOUS)										
HUN + 1992 + 1340		Elayampalayam, Tiruchengode-637 205.									
Programme	B.Sc	Programme Code	PCS Regulations 2					2020-2021			
Department	Computer ScienceSemester2										
			Pe	eriods	Credit	Maxim	um Mai	rks			
Course Code	C	course Name	per	Week							
			L	T P	С	CA	ESH	E	Total		
20P2CSE05	Net	twork security	4		4	25	75		100		
COURSE	1 To learn about	the Security architecture se	curity	types an	d security med	chanisms 2	To lea	arn a	bout the		
OBJECTIVES		ity has four objectives: c	•	• •	•						
		lge of Securing inform		57	0.1						
POs		PRO	GRAN	MME OU	ЛСОМЕ						
PO 1	Train by Fundam	nental knowledge in problem	ı solvi	ng,gener	al computing,	and in dep	th know	wled	ge		
		inInformation Technology.									
PO 2	-	Prepare to be creators of new knowledge leading toinnovation and entrepreneurship employable in									
	varioussectors su	•									
PO 3		lve upcoming technologies i			1						
PO 4		e in lifelong learning process									
PO 5	Understand and J Learning	provide analytical solutions	to real	l life prot	olems in Data	Science wi	th thrus	st in	lifelong		
PO 6	Apply the knowl	edge of technology and mar	agem	ent princ	iples to manag	ge projects	effectiv	/ely	in diverse		
		a member or a leader in the									
PO 7		appropriate tools and techn									
PO 8	5	y, analyze, design, optimize		-	t system solut	ions using	suitable	e cor	nputing		
	-	ng to propulsion towards em		-							
PO 9	-	and conduct experiments /cr			-	-					
PO 10		fectively with a range of auc	lience	s using a	range of mod	alities inclu	iding w	ritte	n, oral and		
DO 11	Graphical		1				1 1	1			
PO 11	-	brate the findings of Biologi				-		edge			
PO 12		e a given real-time problems			1	0		densit			
PO 13		l knowledge to assess profes	siona	i, iegai, n	leann, social a	na cultural	issues	auri	ng		
PO 14	profession practic	ce lves through e-learning and	self_o	tudy cour	rses						
PO 14		nciples and responsibilities		· ·							
1015	1 sppry cuncar pri	norpres and responsionities	Guill	5 protessi	onai practice						

COs	COURSE OUTCOME					
CO 1	To understand the concept of security and Encryptionalgorithms					
CO 2	To analyze public key cryptography and Message Authentication algorithms					
CO 3	o Describe and learn about the Electronic mail Security concepts					
CO 4	To Demonstrate about the web security considerations					
CO 5	To learn about the intruders and virus protections					
	The majority of entry-level cybersecurity jobs do not require coding skills. However, being able to write and understand code may be necessary for some mid-level and upper-level cybersecurity positions that you will become qualified for after you've built a few years of experience.					

Knowledge Levels							
1. Remembering, 2. Understanding, 3. Applying, 4. Analyzing, 5. Evaluating, 6. Synthesizing							
	CO / PO / F	KL Mapping					
(3/2	/1 indicates the strength of corre	elation, 3-strong, 2-medium, 1-w	eak)				
COs	KLs	POs	KLs				
		PO 1	1				

		(3/2	/1 indic	cates the			orrelati		-	2-mediu	m, 1-we	ak)			
COs		KLs						POs					K	Ls	
									РО	1		1			
CO 1	l				1				PO	2			3	3	
									PO	3			Z	1	
									PO				2		
CO 2	2				2				PO				3		
									PO				2		
	_				_				PO				2		
CO 3	3				3				PO				4		
									PO				5		
			4				-	PO 10				3			
CO 4	ł							PO 11 PO 12				3 4			
								PO 12 PO 13				3			
CO 5	5		4						PO 1				2		
0.5)		т 						PO 1						
						CO /	PO Ma	nning	101	5				r	
		(3/2	/1 indic	cates the	e streng				trong, 2	2-mediu	m, 1-we	ak)			
						Р	rogram	me Ou	tcome ((POs)					
COs -	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	3	1	1	2	1	1	1	1	1	1	1	1	1	2	1
CO2	2	2	1	3	2	1	1	1	1	2	2	1	2	3	1
CO3	1	3	2	2	3	2	2	2	1	3	3	2	3	2	2
CO4	1	2	3	1	2	3	1	3	2	2	2	3	2	1	3
CO5	1	2	3	1	2	3	1	3	2	2	2	3	2	1	3

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

Direct

1. Course End Delivery

ntent of the	Syllabus								
	Introduction	Periods	12						
	Security Trends-The OSI Security Architecture - Security Attacks - Security Services- Security								
Unit - I	Mechanisms- Model for networkSecurity - Symmetric Encryption and Me	essage Confidentia	ality: Symmetr						
Unit - I	Encryption Principles - Symmetric Block Encryption Algorithms - Stream	n Ciphers and RC4	4 - Cipher Blo						
	Modes of Operations - Location of Encryption Devices-Key Distribution.								
	Public Key Cryptography and Message Authentication	Periods	12						
	Approaches to Message Authentication - Secure Hash Functions and HM.	AC - Public Key (Cryptography						
Unit - II	Principles - Public Key Cryptography Algorithms - Digital Signatures - Key Management. Authentication								
	Applications: Kerberos - X.509 Authentication service - Public Key Infrastructures								
	Electronic mail Security:	Periods	12						
Unit - III	Pretty Good Privacy (PGP) - S/MIME. IP Security: IP Security Overview - IP Security Architecture -								
Unit - III	Authentication Header - Encapsulating Security Payload - Combining security Associations .								
	Web Security	Periods	12						
Unit - IV	Web Security Considerations- Security Sockets Layer (SSL) and Transport Layer Security (TLS) - Secure								
	Electronic Transaction. Network Management Security: Basic Concepts of SNMP - SNMPV1 Community								
	facility - SNMPV3.								
	Intruders:	Periods	12						
	Intruders - Intrusion Detection - Password Management - Malicious Softw	vare: Viruses and	Related Threa						
Unit - V	- Virus Countermeasures - Distributed Denial of Service Attacks. Firewal	ls: Firewall Desig	n Principles -						
	Trusted Systems - Common Criteria for IT Security Evaluation.								
	Total Periods		60						

Text Books	
1	1. William Stallings, "Network Security Essentials â€" Applications and Standards", 3rd Edition, Pearson
	Education, 2009 Edition.
References	
1	1. V.K.Pachghare, "Cryptography and Information Security", PHI 2013.
2	2. William Stallings, "Cryptography and Network Security", Pearson Education – 2008.
3	Behrouz A Forouzan, Sophia Chung Fegan, "Data Communications and Networking", TMH-2013.
E-References	
1	https://laptrinhx.com/network-security-essentials-application-and-standards-6th-edition-4052395665/
2	https://developer.mozilla.org/en-US/docs/Web/Security
3	http://mercury.webster.edu/aleshunas/cosc%205130/chapter-20.pdf



	VIVEKAN	WOMEN (AU	TONOMO	US)	NCES FOR	TÜVRheinland CERTIFIED Www.lux.com ID 915677407				
WOMEN EMPOWERMENT		Elayampalayam, Ti	ruchengode-6	537 205.						
Programme	M.Sc Programme Code PCS Regulations									
Department	Cor	Computer Science Semester II								
			Periods	Credit	Maximum N	Marks				
Course Code		Course Name	per Week							
			L T P	С	CA H	ESE Total				
20P2CSE06	WIR	RELESS APPLICATION	N PROTOCO)L						
COURSE	To und	erstand fundamental trends	of technologic	al evolution of	f Wireless tech	nology. Have hands				
OBJECTIVES		vledge in developing simple and develop WAP pages								
	interacti	ivity of WAP pages.								
POs		PRO	GRAMME OU	JTCOME						
PO 1	Apply knowledg	ge of computing fundamental	ls, computing s	specialization,	mathematics, a	nd domain				
	• • • •	opriate for the computing sp			and conceptua	lization of				
		els from defined problems ar								
PO 2	-	ate, research literature, and s	-		-					
		g fundamental principles of	mathematics, o	computing scie	ences, and relev	ant domain				
	disciplines.									
PO 3	•	Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration								
PO 4	-	sed knowledge and research	-			nalveis and				
104		data, and synthesis of the in		• •	-	narysis and				
PO 5	-	dapt and apply appropriate te	-			g tools to complex				
		ities, with an understanding	-		1 0	, I				
PO 6	Understand and	commit to professional ethic	s and cyber re	gulations, resp	onsibilities, and	d norms of				
	professional con									
PO 7	•	eed, and have the ability, to	engage in inde	pendent learni	ng for continua	l development as a				
	computing profe									
PO 8		owledge and understanding of	-	• •						
		as a member and leader in a	team, to mana	ge projects and	d in multidiscip	linary				
	environments.									
PO 9		ffectively with the computing ities by being able to compresent the second state of th								
	effective present			e enecuve rep	orts, design doc	Jumentation, make				
PO 10	-	assess societal, environment	al. health. safe	ty, legal, and o	cultural issues w	within local and				
		and the consequential respon								
PO 11	-	vely as an individual and as a		-						
	environments.									
PO 12	Identify a timely	opportunity and using inno	vation to pursu	e that opportu	nity to create va	alue and wealth for				
		f the individual and society a	-							
PO 13		edge of computing to create				=				
PO 14	-	lyse and synthesize scholarly		-						
PO 15	-	ntific outlook that solves any	problem, enco	ompassing the	expected aspec	ts of market				
	demands.									

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Wireless application protocol (WAP) is an application environment and set of communication protocols for wireless devices designed to enable manufacturer-, vendor-, and technology-independent access to the Internet and advanced telephony services.

]	Know	ledge	Level	S						
1.Remer	nberi	ng, 2.1	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5
		(2/2	/1 india	atos th				Mappin	-	modiu	m, 1-we	alc)			
COs	2	(3/2)			KLs	gui or c		011, 5-80	Pos		III, 1-we	ак)	KI	c.	
	COS				IXL3				PO				3		
СО	CO 1				1				PO				2		
									PO				5		
									PO	4			4	ŀ	
CO	CO 2				2				PO				2		
								PO 6				6			
CO				2				PO 7 PO 8				3			
CO	3		3					PO 9				5			
								PO 10				2			
CO	4		4					PO 11				3			
								PO 12				2			
								PO 13				3			
CO	5		5					PO 14				4			
								PO 15 6							
		(3/2	/1 indic	patas th	a strong			O Mapping relation, 3-strong, 2-medium, 1-weak)							
		(3/2)	/ marc	ates th	e su eng			me Ou			iii, i we	uk)			
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Course Assessment Methods Direct

7. Continuous Assessment Test I, II & Model

8. Assignment

9. End Semester Examinations

Indirect
1. Course End Delivery

	Introduction	Periods	12						
	Introduction - Key Services for the Mobile Internet - Business Opportun								
	"Mobile": Challenges and Pitfalls – The Origins of WAP – WAP Architer	cture – Componen	ts of the WAP						
Unit - I	Standard – Network Infrastructure services Supporting WAP Clients.								
	The Wireless Markup Language	Periods	12						
	The Wireless Markup Language: Overview – The WML Document Mod	el – WML Author	ing – URLs						
	Identify Content - Markup Basics - WML Basics - Basic Content - Events, Tasks and Bindings - Variabl								
Unit - II	- Other Contents - Controls - Miscellaneous Markup - Sending Information - Application Security -								
	Document Type Declaration – Errors and Browser Limitations.								
	User Interface Design	Periods	12						
	User Interface Design: Making wireless Application easy to use: Web Sit	e Design: Comput	er Terminals						
	versus Mobile Terminals – Designing a usable WAP Site – Structured Us	sability Methods –	User Interface						
Unit - III									
	Design Guidelines.								
		Periods	12						
	Tailoring Content to the Client	Periods	12						
Unit - IV	Tailoring Content to the Client Tailoring Content to the Client-Push Messaging: Overview of WAP Push	n – Push Access Pr	rotocol – WAP						
Unit - IV	Tailoring Content to the Client Tailoring Content to the Client-Push Messaging: Overview of WAP Push Push Addressing – Push Message – MIME media types for Push -Message	a – Push Access Pr ges – Push Proxy (rotocol – WAF						
Unit - IV	Tailoring Content to the Client Tailoring Content to the Client-Push Messaging: Overview of WAP Push Push Addressing – Push Message – MIME media types for Push -Message Over – the – Air Protocol – Push Initiator Authentication and Trusted Co	a – Push Access Pr ges – Push Proxy (ntent.	rotocol – WAF Gateway – Pus						
Unit - IV	Tailoring Content to the Client Tailoring Content to the Client-Push Messaging: Overview of WAP Push Push Addressing – Push Message – MIME media types for Push -Message Over – the – Air Protocol – Push Initiator Authentication and Trusted Co Wireless Telephony Applications	n – Push Access Pr ges – Push Proxy C ntent. Periods	rotocol – WAF Gateway – Pus 12						
Unit - IV Unit - V	Tailoring Content to the Client Tailoring Content to the Client-Push Messaging: Overview of WAP Push Push Addressing – Push Message – MIME media types for Push -Message Over – the – Air Protocol – Push Initiator Authentication and Trusted Co Wireless Telephony Applications Wireless Telephony Applications: Overview of the WTA Architecture –	n – Push Access Pr ges – Push Proxy C ntent. Periods	otocol – WAF Gateway – Pus 12						
	Tailoring Content to the Client Tailoring Content to the Client-Push Messaging: Overview of WAP Push Push Addressing – Push Message – MIME media types for Push -Message Over – the – Air Protocol – Push Initiator Authentication and Trusted Co Wireless Telephony Applications	n – Push Access Pr ges – Push Proxy C ntent. Periods	otocol – WAF Gateway – Pus 12						

Text Books	
1.	Sandeep Singhal, Thomas Bridgman, Lalitha Suryanarayana, Daniel Mauney, Jari Alvinen, David Bevis, Jim Chan., "The Wireless Application Protocol – Writing Application for the mobile internet ", Pearson Education, 2010.
	(UNIT-I :Chapter - 1 to 6, UNIT-II :Chapter - 7, UNIT-III :Chapter - 10, UNIT-IV: Chapter - 11&12, UNIT-V :Chapter - 13 to 15).
Reference Bool	ks
1	Charless Arehare, Nirmal Chidambaram, and others, "Professional WAP", Wrox Press Ltd., Shroff publ. And Dist – Pvt. Ltd., 2001
2	Ryan Sean Younger, "WAP & WML : Designing Usable Mobile Sites", 2011.
E-References	
1	www.//en.wikipedia.org/wiki/Wireless Application Protocol
2	www.readorrefer.in/article/Wireless-Application-Protocol-Overview



Elayampalayam, Tiruchengode-637 205.

WOMEN EMPOWERMENT	Elayampalayam, Tiruchengode-637 205.									
Programme	M.Sc	Programme Code	P	CS	Regulatio	ons	2020-2021			
Department	Con	nputer Science		Semester	·		2			
			Periods	Credit	Maximur	n Mark	S			
Course Code	C	ourse Name	per Week							
			L T P	С	CA	ESE	Total			
20P2CSE07	Multim	edia And Virtual Reality	4 0 0	4	25	75	100			
COURSE	To Und	erstand fundamental trend	edia Techno	ology.	Have hands-or					
OBJECTIVES						•••				
		knowledge in developing simple Audio and Video technology.Be able to plan, design, and develop Multimedia devices.Acquire creative skills in design, layout, and interactivity of 3D modeling and Animation.To learn about multimedia skills, 3D modeling and animation tools.								
POs	PROGRAMME OUTCOME									
PO 1		e of computing fundamenta		-						
		priate for the computing sp			and concept	tualizat	ion of			
	computing models from defined problems and requirements.									
PO 2	Identify, formulate, research literature, and solve complex computing problems reaching substanti									
		g fundamental principles of	mathematics, o	computing scie	ences, and re	levant o	domain			
	disciplines.				<u> </u>					
PO 3	-	ate solutions for complex c			-	ate sys	tems,			
DO 4		processes that meet specifie				1	· · · · · · · · · · · · · · · · · · ·			
PO 4		ed knowledge and research data, and synthesis of the ir			-	s, analys	sis and			
PO 5	-	apt and apply appropriate to	1			ing too	ls to complex			
105		ties, with an understanding	-		dem comput	ing too	is to complex			
PO 6		commit to professional ethic			onsibilities.	and nor	ms of			
100	professional com		, , , , , , , , , , , , , , , , , , ,	5414410115, 1 0 5p						
PO 7	*	eed, and have the ability, to	engage in inder	pendent learnin	ng for contin	ual dev	velopment as a			
	computing profe	-		L.	0					
PO 8	Demonstrate kno	wledge and understanding	of the computir	ng and manage	ement princip	oles and	l apply these to			
	ones own work, as a member and leader in a team, to manage projects and in multidisciplinary									
	environments.									
PO 9	Communicate effectively with the computing community, and with society at large, about complex									
	computing activities by being able to comprehend and write effective reports, design documentation, make									
	effective present									
PO 10		assess societal, environmen								
	•	and the consequential respo		1	1	• •				
PO 11		ely as an individual and as	a member or le	ader in diverse	e teams and i	n multi	disciplinary			
DO 12	environments.	onnontunity on during inco	untion to and	a that are art-	nites to analy		and marith fr			
PO 12		opportunity and using inno	-	e mai opportu	muy to create	e value	and wealth for			
PO 13		the individual and society dge of computing to create	-	ne and colution	ne for comple	av nroh	lame			
PO 13 PO 14		yse and synthesize scholarly								
PO 14	-	tific outlook that solves any		-	_					
1015	demands.	the outlook that solves all		mpassing uit	expected asp		market			
	aomanas.									

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
	Requirements for Multimedia are Sound and Image. * They also contain animations, and GIFs along with sound and images. * By using multimedia, one can easily explain all the information pictorially.

]	Know	ledge	Level	S						
1.Remen	nberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E ⁻	valuat	ing, 6.	Synth	esizin	5
		(3/2	/1 indic	cates the		CO / PC			-	2-mediu	m, 1-we	eak)			
Cos	Cos				KLs	-			Pos				K	Ls	
									PO	1			3	}	
CO	CO 1				1				PO	2			2	2	
									PO	3			5	5	
									PO				4		
CO	CO 2				2				PO				2		
								PO 6				6			
CO 2	CO 3			3				PO 7 PO 8				3 5			
	5		5					PO 9				1			
								PO 10				2			
CO 4	4		4					PO 11				3			
					PO 12						2				
								PO 13				3			
CO	5				5			PO 14				4			
						<u> </u>		PO 15 6					ó		
		(2)	/1 in Ji				PO Ma)		• 1 •)			
		(3/2		cates the	e streng				-	2-mediu	m, 1-we	eak)			
COs	DO1	DO2	DO2	DO 4	DO5		PO7	me Ou PO8			DO11	DO12	DO12	DO14	DO15
	PO1	PO2	PO3	PO4	PO5	PO6			PO9		PO11	PO12			
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

	Introduction	Periods	12
Unit - I	Introduction – what is multimedia – making multimedia – multimedia skil	ls – Text.	
	Sound	Periods	12
Unit - II	Sound : Digital Audio-MIDI-Music CDs. Images: Making Still In Animation-Video.	nages-Color-Imag	ge File Fori
	Hardware	Periods	12
Unit - III	Hardware: Macintosh versus Windows-Networking-Connections-Memor devices- Output Hardware- Communication Devices	ry and Storage dev	vices-Input
	Basic Software Tools	Periods	12
Unit - IV	Basic Software Tools: Text Editing and Word Processing Tools – OCR Tools. 3D Modeling and Animation Tools – Image Editing Tools – An Tools – Multimedia Authoring Tools.		-
	-		1.0
	Virtual Reality	Periods	12
Unit - V	Virtual Reality Virtual Reality: Introduction – A Generic VR System: Virtual	Periods	12
Unit - V	•	or Hardware, Hea	d Coupled

Text Books										
1	Tay Vaughan, "Multimedia making it work", 2014, TMH.									
	(Unit-I :Chapter-1,2,3& 4, Unit-II :Chapter-5,6,7& 8, Unit-III :Chapter-9,Unit-IV :Chapter-									
	10 & 11)									
2	John Vince, "Virtual Reality Systems", Addison Wesley, 4 th Edition 2014. (Unit- V)									
References										
1	Free T. Hofstetter, "Multimedia LITERACY", TMH, 1995.									
2	Simoin j., Gibbs, Dionysios C and Tsichriziz "Multimedia Programming", Addison Wesley, 2010.									
3	John F.Koegel Buford, " Mutimedia Systems", Addison Wesley, 2014.									
4	Ralf steinmetz and klaranahrstedt, "Multimedia : Computing, communications Applications" 2013									
E-References										
1	www.richardbrice.net/chap01.htm									



Elayampalayam, Tiruchengode-637 205. Programme M.Sc Programme Code PCS Regulations 2020-2021 Department **Computer Science** Semester 2 Periods Credit Maximum Marks Course Code Course Name per Week Т L Р С CA ESE Total 20P2CSE08 AI AND EXPERT SYSTEMS 4 0 0 4 25 75 100 COURSE To enable the students to learn the concepts of Artificial Intelligence **OBJECTIVES** Pos PROGRAMME OUTCOME PO 1 Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements. PO 2 Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines. Design and evaluate solutions for complex computing problems, and design and evaluate systems, PO 3 components, or processes that meet specified needs with appropriate consideration PO 4 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. PO 5 Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations PO 6 Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice. PO 7 Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional. PO 8 Demonstrate knowledge and understanding of the computing and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. PO 9 Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations PO 10 Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice. PO 11 Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments. PO 12 Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large. PO 13 To apply knowledge of computing to create effective designs and solutions for complex problems. PO 14 To identify, analyse and synthesize scholarly literature relating to the field of Computer Science. PO 15 To develop scientific outlook that solves any problem, encompassing the expected aspects of market demands.

COs	COURSE OUTCOME							
CO 1	derstand the concepts of Operating System							
CO 2	To learn about DSM							
CO 3	analyze the basics of Operating System Algorithms							
CO 4	o implement distributed database operating system in various places							
CO 5	Design and Establish the Operating system to apply in various places							
Pre-requisites	Strong knowledge of Mathematics.							
	Good command over programming languages.							
	Good Analytical Skills.							
	Ability to understand complex algorithms.							
	Basic knowledge of Statistics and modeling.							

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	5
		(3/)	/1 india	votos th				Mappin	-) modiu	m 1 w	nalz)			
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	01								PO	3			5		
									PO	4			Z	ļ	
CO	CO 2				2				PO				2		
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CO				2				PO 7 PO 8				3			
CO	3		3						PO PO			5			
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CO	4		4					PO 11				3			
								PO 12				2			
								PO 13				3			
CO	5		5					PO 14				4			
								PO 15				6	6		
		(2)2	/1 · 1·	, . .				PO Mapping rrelation, 3-strong, 2-medium, 1-weak)							
		(3/2	/1 1nd10	cates the	e streng	-		on, 3-si ime Ou	-		m, 1-we	eak)			
COs	DO 1	DO2	DO2	DO 4	DO5		-		1		DO11	DO12	DO12	DO14	DO15
001	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10		PO12	PO13		
CO1	1	2	1	1		1	1	1	3		1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect
1. Course End Delivery

Direct

Content of the Syllabus 10 Introduction Periods Introduction to artificial intelligences - semantic nets and description matching: semantic nets: good Unit - I representation are the key to good problem solving-good representation support explicit, exposing description - a representation has four fundamental parts - the describe and match methods and analogy problem - the describe – and - match method and recognition of abstractions **The Problem-Reduction Method** 10 Periods Generate and test, means - ends analysis, and problem reduction: the generate – and - test method -Unit - II the means - ends analysis method – the problem - reduction method **Blind methods** Periods 10 Blind methods: net search is really tree search-search tress explode exponentially – depth - first search Unit - III dives into the search tree – breadth - first search pushes uniformly into the search tree - the right search depends on the tree - nondeterministic search moves randomly into the search tree heuristically informed methods: quality measurements turn depth - first search into hill climbing foothills, plateaus, and ridges make hill hard to climb - beam search expands several partial paths and purges the rest – best - first search expands the best partial path-search may lead to discovery - search alternatives form a procedure family - nets and optimal search: the best path - redundant paths Trees and adversarial search Periods 10 Trees and adversarial search: algorithmic methods-heuristic method-rules and rule chaining: rule-based Unit - IV deducting system - procedures for forward and backward chaining - rules, substrates, and cognitive modeling: rule - based system Viewed as substrate-rule-based system Viewed as models for human problem solving **Biological Actions and Studies** Periods 10 Fuzziness as Multivalence - Neurons as functions- signal Monotonicity - Biological Actions and signals Unit - V Common Signal Functions - Additive Neuronal Dynamics Learning as Encoding Change and uantization **Total Periods** 50

Text Books	
1	
	Patrick Henry Winston, "Artificial Intelligence", Addison Wesley Third Edition.
2.	
	. Bart Kosko " Neural Networks and Fuzzy Systems" Second Edition , 2004
References	
1	Nils J.Wilson "Artificial Intelligence", Morgan Kauf Mann Publishers, Reprinted 2009
2	Elaine Rich ,Kevin knight, Sivasangaran B Nair "Artificial Intelligence", TMH, Third Edition,
	Fourth Reprint 2010
3	V.S. Janakiraman, K. Sarukesi, P.Gopalakrishnan, "Foundations of artificial intelligence and
	expert systems" Macmillan Publications, 2005.
4	Er. Rajiv Chopra, S. Chand, "Artificial Intelligence: A Practical Approach" S. Chand &
	Company Pvt. Ltd., 2nd edition 2014
	Company 1 vi. E.u., 2nd Cutton 2014

SCATIONAL INSTITUT	VIVEKAN	NANDHA COLLEGI	E OF ARTS	AND SCIE	NCES F	OR	ISO 9001:2008				
STATISTICS	WOMEN (AUTONOMOUS)										
HOMEN EMPOWERNENT		Elayampalayam, Tiruchengode-637 205.									
Programme	M.Sc	Programme Code]	PCS	Regula	ations	2020-2021				
Department	Con	nputer Science		Semester			3				
			Periods	Credit	Maxin	S					
Course Code	C	Course Name	per Week								
			L T F	С	CA	ESE	Total				
20P3CSE09	COMPII	LER DESIGN	4 0 0	4	25	75	100				
COLIDEE	0		1		C		·/				
COURSE OBJECTIVES		mpletion of this course we		-							
ODJECTIVES	operating System	mplementing DSM compositions.	ments and mana	igement aspects	s of Real fi	me and M	oblie				
POs			OGRAMME (UTCOME							
	A multi lin and a da										
PO 1		e of computing fundament opriate for the computing s		-							
	• • • •	els from defined problems a	-			pruanzan					
PO 2		ate, research literature, and			blems reac	hing subs	tantiated				
	conclusions using fundamental principles of mathematics, computing sciences, and relevant domain										
	disciplines.										
PO 3	Design and evaluate solutions for complex computing problems, and design and evaluate systems,										
PO 4		processes that meet specifie sed knowledge and research				ta analua	ic and				
FO 4		data, and synthesis of the i			-	-	is and				
PO 5		lapt and apply appropriate					s to complex				
		ties, with an understanding	-		-	-	-				
PO 6		commit to professional eth	ics and cyber r	egulations, resp	onsibilities	s, and norr	ns of				
DO 7	professional com				<u>.</u>		1				
PO 7	computing profe	eed, and have the ability, to	engage in ind	ependent learni	ng for cont	inual deve	elopment as a				
PO 8	1 01	ssional. wledge and understanding	of the comput	ing and manage	ement prind	ciples and	apply these to				
		as a member and leader in	-		-	-					
	environments.										
PO 9		fectively with the computing					-				
	1 0	ties by being able to comp	rehend and wri	te effective rep	orts, desigi	n documer	ntation, make				
PO 10	effective present	ations assess societal, environmer	ntal health saf	ety legal and o	ultural issu	ues within	local and				
1010		and the consequential resp									
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	environments.										
PO 12		opportunity and using inner	-	ue that opportu	nity to crea	ate value a	nd wealth for				
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PO 13 PO 14		dge of computing to create yse and synthesize scholar									
PO 15		tific outlook that solves an									
	demands.		/		• ·						
COs			COURSE OU	TCOME							
COs CO 1	Understand the c	concepts of Operating Syste		TCOME							
CO 1 CO 2	To learn about D	concepts of Operating Syste	em	TCOME							
CO 1	To learn about D To analyze the b	concepts of Operating Syste	em Algorithms								

Pre-requisites	This tutorial requires no prior knowledge of compiler design but requires basic understanding of at least
	one programming language such as C.

]	Know	ledge	Level	S								
1.Remen	nberi	ng, 2.	Under	rstand	ling, 3	B.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizin	5		
		(2/2	/1 • 1•	1		CO / PC			-		1	1.					
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CO 2					2				PO				2				
										PO 6				6			
									PO 7					3			
CO	3		3					PO 8				5					
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00	4		4						PO 1				2				
CO	4				4			PO 11 PO 12					2				
								PO 12 PO 13						3			
CO	5		5						PO 1				4				
									PO 1	5			e	5			
						CO /	PO Ma	pping									
		(3/2	/1 indic	cates the	e streng	-			-		m, 1-we	eak)					
COs						P	rogram	ime Ou	tcome	(POs)							
205	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO1		
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1		
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1		
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1		
004	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1		
CO4																	

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

1. Course End Delivery

	Overview	Periods	12						
Unit - I	Introduction to Compliers: Compliers and Translator – Need of Translator – The structure of a Complier Lexical analysis – Syntax analysis – Intermediate code generation –Optimization – Code generation – Complier writing tools. Finite automata and lexical Analysis: The role of the lexical analysis – A simple approach to the design of lexical analyzers- Regular expressions to finite automata – Minimizing the								
	number of states of a DFA. Architectures of Distributed Systems	Periods	12						
	•								
	The Syntactic specification of programming languages: Context free gram - Capabilities of context free grammars. Basic parsing techniques: Parsers		-						
Unit - II	- Capaointies of context free grammars. Basic parsing techniques: Parsers precedence parsing – Top down parsing – Predictive parsers.	– sinit reduce pa	using – Opera						
	precedence parsing – rop down parsing – Predictive parsers.								
		D ' 1	10						
	Multiprocessor System Architectures	Periods	12						
	Syntax directed translation: Intermediate code – Postfix notation – Parse tr	ees and syntax tr	ees – 3 addres						
		•							
Unit - III	code – Quadruples and triples –Boolean expressions – Statements that alte	r the flow of con	trol. Symbol						
Unit - III	code – Quadruples and triples –Boolean expressions – Statements that alte tables: The contents of a symbol table – Data structures for symbol table –	r the flow of con	trol. Symbol						
Unit - III	tables: The contents of a symbol table – Data structures for symbol table –	r the flow of con Representing sco	trol. Symbol						
Unit - III	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems	r the flow of com Representing sco Periods	trol. Symbol ope 12						
	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocated	r the flow of com Representing sco Periods tion scheme –Imp	trol. Symbol ope 12 blementation o						
Unit - III Unit - IV	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocat block-structured languages. Error deduction and recovery: Errors – Lexical	r the flow of com Representing sco Periods tion scheme –Imp	trol. Symbol ope 12 blementation o						
	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocated	r the flow of com Representing sco <u>Periods</u> tion scheme –Imp phase errors – S	trol. Symbol ope 12 blementation o						
	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocat block-structured languages. Error deduction and recovery: Errors – Lexical	r the flow of com Representing sco Periods tion scheme –Imp	trol. Symbol ope 12 blementation o						
Unit - IV	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocat block-structured languages. Error deduction and recovery: Errors – Lexical errors – Semantic errors.	r the flow of com Representing sco Periods tion scheme –Imp phase errors – S Periods	trol. Symbol ope 12 olementation o yntactic phase 12						
	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocat block-structured languages. Error deduction and recovery: Errors – Lexical errors – Semantic errors. CASE STUDY	r the flow of com Representing sco Periods ion scheme –Imp phase errors – S Periods s of optimiz	trol. Symbol ope 12 olementation o yntactic phase 12 ation – Lo						
Unit - IV	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocat block-structured languages. Error deduction and recovery: Errors – Lexical errors – Semantic errors. CASE STUDY Introduction of code optimization: The principle sources	r the flow of com Representing sco Periods tion scheme –Imp phase errors – S Periods s of optimiz bal data flow	trol. Symbol ope 12 olementation of yntactic phase 12 ation – Lo analysis. Co						
Unit - IV	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocat block-structured languages. Error deduction and recovery: Errors – Lexical errors – Semantic errors. CASE STUDY Introduction of code optimization: The principle sources optimization – The DAG representation of basic blocks –Glo generation: Object programs – Problems in code generation-	r the flow of com Representing sco Periods ion scheme –Imp phase errors – S Periods s of optimiz bal data flow –A simple co	trol. Symbol ope <u>12</u> blementation of yntactic phase <u>12</u> ation – Lo analysis. Co de generato						
Unit - IV	tables: The contents of a symbol table – Data structures for symbol table – Database Operating Systems Run time storage administration: Implementation of a simple stack allocate block-structured languages. Error deduction and recovery: Errors – Lexical errors – Semantic errors. CASE STUDY Introduction of code optimization: The principle sources optimization – The DAG representation of basic blocks –Glo	r the flow of com Representing sco Periods ion scheme –Imp phase errors – S Periods s of optimiz bal data flow –A simple co	trol. Symbol ope <u>12</u> blementation of yntactic phase <u>12</u> ation – Lo analysis. Co de generato						

Text Books	
1	Principles of Complier Design by Alfred V.Aho, Jeffrey D.Ullman, Narosa
	Publications House.
References	
1	Modern Compiler Design by David Galles, Fifth Edition 2012.
E-References	
1	www.tutorialspoint.com
2	https://en.wikipedia.org
3	www.faadooengineers.com



SUCATIONAL INSTITUT	VIVEKAN	ISO 9001:2008													
		WOMEN (AU	JTON	омо	US)			TÜVRheinland CERTIFIED WWW.5uv.com ID 9105078407							
HOMEN EMPOWERNEN		Elayampalayam, T	iruchen	gode-6	37 205.										
Programme	M.Sc	Programme Code		P	CS	Regula	ations	2020-2021							
Department	Con	nputer Science			Semester			3							
			Per	iods	Credit	Maxin	num Mar	ks							
Course Code	C	Course Name	per V	Week											
			L	ΓР	С	CA	ESE	E Total							
20P3CSE10		CORIENTED						I							
	ANALYSIS	AND DESIGN	4	0 0	4	25	75	100							
COURSE	On successful co	mpletion of this course we	learn the	funda	mentals of On	erating Sx	etems ar	chitecture							
OBJECTIVES	On successful completion of this course we learn the fundamentals of Operating Systems architecture, Algorithms for Implementing DSM components and management aspects of Real time and Mobile														
0202011125	operating Systems.														
POs					JTCOME										
PO 1		e of computing fundamenta	· •	U	• ·										
		knowledge appropriate for the computing specialization to the abstraction and conceptualization of													
PO 2		ls from defined problems at te, research literature, and s				bloma roo	ohing gu	batantiatad							
FO 2		g fundamental principles of		-			-								
	disciplines.	g fundamentar principles of	mathen	iunes, v	computing sere	inces, and	relevant	doman							
PO 3	-	ate solutions for complex c	omputir	ng prob	lems, and desi	gn and ev	aluate sy	vstems,							
	-	processes that meet specifie	-			-	5								
PO 4	Use research-bas	ed knowledge and research	method	s inclu	ding design of	experime	nts, anal	ysis and							
	-	data, and synthesis of the ir		-											
PO 5		lapt and apply appropriate t	-			dern comj	puting to	ols to complex							
PO 6		ties, with an understanding													
PO 6	professional com	commit to professional ethic	cs and cy	yder reg	gulations, resp	onsidinue	es, and no	orms of							
PO 7		eed, and have the ability, to	engage	in inder	oendent learni	ng for con	tinual de	evelopment as a							
	computing profes		88-			-8									
PO 8		wledge and understanding	of the co	omputir	ng and manage	ement prin	ciples ar	nd apply these to							
	ones own work, a	as a member and leader in a	team, to	o mana	ge projects and	d in multi	disciplina	ary							
	environments.														
PO 9		fectively with the computin	-	•		•		-							
	effective present	ties by being able to compr	ehend ar	nd write	e effective rep	orts, desig	in docum	ientation, make							
PO 10	-	assess societal, environmen	tal healt	th safe	ty legal and a	ultural iss	mes with	in local and							
1010		and the consequential respo													
PO 11	-	vely as an individual and as			-										
	environments.	-													
PO 12		opportunity and using inno			e that opportu	nity to cre	ate value	e and wealth for							
		the individual and society					-								
PO 13		dge of computing to create		-											
PO 14 PO 15		yse and synthesize scholarly tific outlook that solves an													
1015	demands.	time outlook that solves an	y problei	in, ence	mpassing uie	expected	aspects c	n market							
COs		(OURSE	E OUTO	COME										
CO 1	Understand the	concepts of Operating Syster													
CO 1 CO 2	To learn about D														
CO 2 CO 3		asics of Operating System A	Algorith	ms											
005		asies of operating bystelling													

CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	No former experience with object-oriented analysis and design is required, but knowledge
	about the elementary object-oriented concepts (classes, objects, inheritance) is useful.

]	Know	ledge	Level	S							
1.Remen	nberi	ng, 2.	Under	rstand	ling, 3	B.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizinş	5	
		(3/2	/1 india	rates the				Mappin on 3-st	-	-mediu	m, 1-we	eak)				
CO	s	(3/2			KLs	ui oi e		011, 5 5	Pos		, r	KLs				
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CO	CO 2				2				PO				2			
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60	2							PO 7					3			
CO	3		3					PO 8 PO 9				5				
								PO 9 PO 10					2			
CO	4			4				PO 11					3			
								PO 12					2			
								PO 13				3				
CO	5				5			PO 14				4				
						<u> </u>			PO 1	5			6	5		
		(2/2	/1 india	not on the	a atron		PO Ma		trong	madin	m, 1-we	alc)				
		(3/2		cates the	e streng				tcome (III, 1-we	ak)				
COs	PO1	PO2	PO3	PO4	PO5	r PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15	
001																
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1	
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1	
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1	
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1	
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2	

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

	Overview	Periods	12
	An overview of object oriented systems development - Object Basics -	object oriented sy	ystems
Unit - I	development life cycle.		
	Architectures of Distributed Systems	Periods	12
	Object Oriented Methodologies: Introduction - Rumbaugh Object Model	ing Technique – T	The Booch
Unit - II	Methodology – The Jacobson Methodologies – Patterns – Frameworks –	The Unified App	roach.
		-	
	Multiprocessor System Architectures	Periods	12
Unit - III	Multiprocessor System Architectures Unified Modeling Language: Introduction – static and dynamic models – – UML class diagram – use-case diagram – UML dynamic modeling – U	- why modeling? -	
Unit - III	Unified Modeling Language: Introduction – static and dynamic models -	- why modeling? -	
Unit - III Unit - IV	Unified Modeling Language: Introduction – static and dynamic models – – UML class diagram – use-case diagram – UML dynamic modeling – U	- why modeling? - JML extensibility. Periods Approaches for Ide	- UML diagran
	Unified Modeling Language: Introduction – static and dynamic models – – UML class diagram – use-case diagram – UML dynamic modeling – U Database Operating Systems Object Analysis: Classification – Introduction – Classification Theory – A Noun Phrase Approach – Common Class Patterns Approach – Use Case	- why modeling? - JML extensibility. Periods Approaches for Ide	- UML diagran
Unit - IV	Unified Modeling Language: Introduction – static and dynamic models – – UML class diagram – use-case diagram – UML dynamic modeling – U Database Operating Systems Object Analysis: Classification – Introduction – Classification Theory – A Noun Phrase Approach – Common Class Patterns Approach – Use Case I Responsibilities And Collaborators – Naming Classes. CASE STUDY	- why modeling? - JML extensibility. Periods Approaches for Ide Driven Approach - Periods	- UML diagram 12 entifying Class - Classes, 12
	Unified Modeling Language: Introduction – static and dynamic models – – UML class diagram – use-case diagram – UML dynamic modeling – U Database Operating Systems Object Analysis: Classification – Introduction – Classification Theory – A Noun Phrase Approach – Common Class Patterns Approach – Use Case I Responsibilities And Collaborators – Naming Classes.	- why modeling? - JML extensibility. Periods Approaches for Ide Driven Approach - Periods luction – The C	- UML diagram 12 entifying Class - Classes, 12 Dbject Orien
Unit - IV	Unified Modeling Language: Introduction – static and dynamic models – – UML class diagram – use-case diagram – UML dynamic modeling – U Database Operating Systems Object Analysis: Classification – Introduction – Classification Theory – A Noun Phrase Approach – Common Class Patterns Approach – Use Case I Responsibilities And Collaborators – Naming Classes. CASE STUDY Object Oriented Design Process and Design Axioms: Introd	- why modeling? - JML extensibility. Periods Approaches for Ide Driven Approach - Periods luction – The C s – design patte	- UML diagram 12 entifying Class - Classes, 12 Dbject Orien rns - Design
Unit - IV	Unified Modeling Language: Introduction – static and dynamic models – – UML class diagram – use-case diagram – UML dynamic modeling – U Database Operating Systems Object Analysis: Classification – Introduction – Classification Theory – A Noun Phrase Approach – Common Class Patterns Approach – Use Case I Responsibilities And Collaborators – Naming Classes. CASE STUDY Object Oriented Design Process and Design Axioms: Introd Design Process – Object oriented design axioms – corollaries	- why modeling? - JML extensibility. Periods Approaches for Ide Driven Approach - Periods luction – The C s – design patte designing well	- UML diagram 12 entifying Class - Classes, 12 Dbject Orien rns - Design

Ali Bahrami, "Object Oriented Systems Devlopment", McGRAW - Hill										
international editions, computer science series.										
Grady Booch, Robert A. Maksimchuk, Michael W. Engel, and Bobbi J. Young										
"Object-Oriented Analysis and Design with Applications", 3rd Edition										
Simon Bennett, Steve McRobb, and Ray Farmer," Object-oriented Systems										
Analysis and Design Using UML".										
www.uml-diagrams.org										
www.utdallas.edu										



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Programme	M.Sc	Programme Code			P	CS	Regula	tions	2	020-2021				
Department	Cor	nputer Science				Semester				3				
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Course Code	0	Course Name	per	We	ek									
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	-		4	0	0	4	25	75		100				
COURSE	On successful co	On successful completion of this course we learn the fundamentals of Operating Systems architecture,												
OBJECTIVES		mplementing DSM compone				-								
	operating System	ns.												
POs		PRO	GRAI	MME	E OI	JTCOME								
PO 1	Apply knowledg	e of computing fundamental	s, con	nputi	ngs	specialization,	mathemati	ics, and	dom	ain				
	Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of													
	computing mode	els from defined problems an	d requ	uiren	nent	s.								
PO 2	•	ate, research literature, and se		-				-						
	conclusions usin disciplines.	g fundamental principles of	mathe	emati	cs, (computing scie	ences, and	relevan	t don	nain				
PO 3	Design and eval	uate solutions for complex co	omput	ing p	prob	lems, and desi	gn and eva	aluate s	ystem	18,				
		processes that meet specified												
PO 4		sed knowledge and research					-		lysis a	and				
PO 5	-	data, and synthesis of the in- lapt and apply appropriate te			_				ole te	o complex				
105		ities, with an understanding	-				dern comp	uning it.	J015 II	Jeompiex				
PO 6		commit to professional ethic					onsibilitie	s, and n	orms	of				
	professional con	1		2										
PO 7	Recognize the ne	eed, and have the ability, to e	engag	e in i	nde	pendent learnii	ng for cont	tinual d	evelo	pment as a				
	computing profe													
PO 8		owledge and understanding of		-	-	• •	-	-	-	ply these to				
		as a member and leader in a	team,	to n	nana	ge projects and	d in multid	lisciplin	ary					
PO 9	environments.	factively with the computing				and with appiat	trat lange	about	ame					
PO 9	Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write affective reports design documentation make													
	computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations													
PO 10	-	assess societal, environment	al, hea	alth,	safe	ty, legal, and c	ultural iss	ues with	hin lo	cal and				
		and the consequential respor				• •								
PO 11	Function effective	vely as an individual and as a	a mem	ber	or le	ader in diverse	e teams an	d in mu	ltidis	ciplinary				
	environments.													
PO 12		opportunity and using innov		-	ursu	e that opportu	nity to crea	ate valu	e and	l wealth for				
		f the individual and society a					<u></u>							
PO 13		edge of computing to create e			-									
PO 14 PO 15	-	yse and synthesize scholarly ntific outlook that solves any				-								
1013	demands.	nine outlook that solves ally	PLOD	UII,		sinpassing the	capecieu i	specis		unui				

COs	
	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Basic electronics, digital electronics, knowledge of microcontrollers and C programming. Since you are from
	computer science background you would need a development board of any 8-bit microcontroller (students of
	EE and ECE have enough knowledge and background to build it on breadboard or pcb).

]	Know	ledge	Level	S						
1.Remen	nberi	ng, 2.	Under	rstand	ling, 3	3.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizinį	3
		(3/2	/1 indic	cates the				Mappin on, 3-st	-	2-mediu	m, 1-we	ak)			
СО	COs					KLs				elation, 3-strong, 2-medium, 1-w Pos					
									PO	1			3	3	
CO	CO 1				1				PO	2			2	2	
									PO				5		
									PO				4		
CO	CO 2				2				PO				2		
									PO				6		
СО	3		3					PO 7 PO 8				3 5			
0	5							PO 9				1			
								PO 10				2			
CO	4		4					PO 11				3			
								PO 12					2		
								PO 13					3		
CO	5		5					PO 14				4			
						<u> </u>			PO 1	5			6	5	
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COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	105	104	2	100	107	100	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
										2			3	2	
CO3	3	2	1	2	2	1	1	1	1		3	2			1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

	Overview	Periods	12
	Introduction to Embedded Systems-Categories of embedded Systems-spe	cialties of embedd	led systems-
TT '/ T	requirements of embedded systems -challenges and issues in embedded s	oftware developm	ent – recent
Unit - I	trends in embedded systems-Architecture of embedded systems: Hardwar	re architecture – so	oftware
	architecture-application software - Communication software - Embedded	systems on a Chi	p (SoC) and th
	use of VLSI designed circuits.		
	Architectures of Distributed Systems	Periods	12
	Processor and memory organization-Devices and buses for Device Netwo	ork Device driver	s and Interrupt
Unit - II	servicing mechanismprogram modeling concepts in single and multiproc	cessor systems sof	ftware-
Unit - II	development process.		
	Multiprocessor System Architectures	Periods	12
	Software Engineering Practices in the Embedded software development	process Inter pro	•
	Software Engineering Fluences in the Enfocuted Software development	process- mer-pre	ocess
Unit - III	communication and synchronization of process, tasks and threads- Hardw		
Unit - III			
Unit - III	communication and synchronization of process, tasks and threads- Hardwembedded system.	vare-software co-o	
Unit - III	communication and synchronization of process, tasks and threads- Hardwenbedded system. Database Operating Systems	vare-software co-o Periods	design in an 12
	communication and synchronization of process, tasks and threads- Hardweiter embedded system. Database Operating Systems Hardware software co-design and program modeling-Embedded hardware	vare-software co-o Periods e design and devel	design in an 12 lopment-
Unit - III Unit - IV	communication and synchronization of process, tasks and threads- Hardweiter embedded system. Database Operating Systems Hardware software co-design and program modeling-Embedded hardware embedded firmware design and development-Real-time operating system	vare-software co-o Periods e design and devel	design in an 12 lopment-
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	communication and synchronization of process, tasks and threads- Hardweighter tasks embedded system. Database Operating Systems Hardware software co-design and program modeling-Embedded hardware embedded firmware design and development-Real-time operating system design- CASE STUDY	vare-software co-o Periods e design and devel (RTOS) based en Periods and MicroC	lesign in an 12 lopment- nbedded syster 12 /OS-II RTO
Unit - IV	communication and synchronization of process, tasks and threads- Hardweige embedded system. Database Operating Systems Hardware software co-design and program modeling-Embedded hardware embedded firmware design and development-Real-time operating system design- CASE STUDY Introduction to embedded system design with vx works	vare-software co-o Periods e design and devel (RTOS) based en Periods and MicroC firmware-emb	lesign in an 12 lopment- bedded syster 12 /OS-II RTC edded syst

Text Books	
1	Rajkamal, Embedded Systems Architecture, Programming and Design, TATA
	McGraw- Hill, Twelfth Reprint 2007. (Unit- I: Chapter 1, Unit -II: Chapter 2,3,4
	&6, Unit- III: Chapter 7,8 &12)
2	Introduction to Embedded systems - SHIBU K V TATA McGraw- Hill
	2009(Unit – IV: Chapter - 8,9&10, Unit-V: Chapter 11,12,13 & 15)
References	
1	Embedded system design, ARNOLD S.BERGER, south Asian edition -2005
2	Embedded system design ,Frank Vahid/Tony givargis-reprint-2009
E-References	
1	https://en.wikipedia.org/wiki/Embedded_system
2	https://en.wikibooks.org/wiki/Embedded_Systems/Atmel_AVR



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CO 3 To analyze the basics of Operating System Algorithms			1 1 0 1									
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CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Professionals and those working in acknowledged professions exercise specialist knowledge and skill. How
	the use of this knowledge should be governed when providing a service to the public can be considered a
	moral issue and is termed professional ethics

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.1	Under	rstand	ling, 3	B.App	lying,	4.Ana	alyzin	g, 5.E [.]	valuat	ing, 6.	Synth	esizinį	8
		(3/2	/1 india	sates the		CO / PC			•	-mediu	m, 1-we	(ak)			
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СО	CO 1		1					PO				2			
			_					PO 3				5			
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CO	2				2			PO 5					2		
									PO				6		
СО	2				2				PO					3	
CO	3		3				PO 8 PO 9				5				
									PO 1				2		
CO	4				4				PO 1				3		
									PO 1	2			2	2	
									PO 1				(1)	3	
CO	5				5			PO 14				4			
						<u> </u>			PO 1	.5			6	5	
		(3/2	/1 india	ates the	e strend		PO Ma orrelati		trong 7	-mediu	m, 1-we	ak)			
		(3/2	/ I mare		e sueng	-			tcome (iii, i we	uix)			
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

Indirect

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

	Overview	Periods	12
	Nature and Scope of Business Ethics: Introduction – Scope of Business	Ethics - Religion ar	nd Ethics -
Unit - I	Types of Ethics – Sources of Business Ethics - Factors Influencing Busin Business Ethics.	ness Ethics – Import	tance of
	Architectures of Distributed Systems	Periods	12
	Professional Ethics: Introduction – professional ethics – ethical problem	s faced by manager	rs – new skill
Unit - II	required for managers – managing ethical conduct in modern times.		
	Multiprocessor System Architectures	Periods	12
	Corporate Governance and CSR: Principles of corporate governance – i	ssues involved in co	rnoroto
	1 1 0		1
Unit - III	governance - theories of corporate governance $-$ CSR $-$ introduction $-$ V and against CSR		
Unit - III	governance - theories of corporate governance - CSR - introduction - V		
Unit - III Unit - IV	governance - theories of corporate governance $-$ CSR $-$ introduction $-$ V and against CSR	arious dimensions - Periods	- argument fo
	governance - theories of corporate governance – CSR – introduction – V and against CSR Database Operating Systems Ethics in India: Religious foundations of ethics - Hinduism - Buddhism -	arious dimensions - Periods	- argument fo
Unit - IV	governance - theories of corporate governance – CSR – introduction – V and against CSR Database Operating Systems Ethics in India: Religious foundations of ethics - Hinduism - Buddhism - Gandhi, Vivekananda, Aurobindo and Tagore.	arious dimensions - Periods - Jainism - Ethical V Periods	- argument fo 12 Values of 12
	governance - theories of corporate governance – CSR – introduction – V and against CSR Database Operating Systems Ethics in India: Religious foundations of ethics - Hinduism - Buddhism - Gandhi, Vivekananda, Aurobindo and Tagore. CASE STUDY	arious dimensions - Periods - Jainism - Ethical V Periods	- argument fo 12 Values of 12

Text Books	
1	R.Nandagopal, Ajithsankar.R.N, "Indian Ethos and ValuE Management", Tata McGraw Hill education Private Ltd, New Delhi, 2010
2	S.Prabakaran, "Business Ethics and Corporate Governance", Excel books (2010), First Edition.
References	
1	Charles B. Fleddermann, "Engineering Ethics", Pearson Prentice Hall, New Jersey, 2004.
2	Charles E. Harris, Michael S. Pritchard and Michael J. Rabins, "Engineering Ethics – Concepts and Cases", Cengage Learning, 2009
3	John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003
4	Edmund G Seebauer and Robert L Barry, "Fundametals of Ethics for Scientists and Engineers" Oxford University Press, Oxford, 2001
5	Laura P. Hartman and Joe Desjardins, "Business Ethics: Decision Making for Personal Integrity and Social Responsibility" Mc Graw Hill education, India Pvt. Ltd.,New Delhi 2013.
6	World Community Service Centre, " Value Education", Vethathiri
E-References	
1	www.onlineethics.org
2	www.nspe.org
3	www.globalethics.org

A	ISO 9001:2008
TÜVRheinland	
CERTIFIED	WWW.tuv.com ID 9105078407

Elayampalayam, Tiruchengode-637 205. Programme M.Sc Programme Code PCS Regulations 2020-2021 Department **Computer Science** Semester 4 Periods Credit Maximum Marks Course Code Course Name per Week L Т Р С CA ESE Total 20P4CSE13 4 4 100 **Big Data Analytics** 0 0 25 75 COURSE Big Data analytics is a process used to extract meaningful insights, such as hidden patterns, **OBJECTIVES** unknown correlations, market trends, and customer preferences. Big Data analytics provides various advantages—it can be used for better decision making, preventing fraudulent activities, among other things. POs PROGRAMME OUTCOME PO 1 Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements. PO 2 Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines. PO 3 Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration PO 4 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. PO 5 Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations PO 6 Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice. PO 7 Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional. PO 8 Demonstrate knowledge and understanding of the computing and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. PO 9 Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations PO 10 Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice. PO 11 Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments. PO 12 Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large. PO 13 To apply knowledge of computing to create effective designs and solutions for complex problems. PO 14 To identify, analyse and synthesize scholarly literature relating to the field of Computer Science. PO 15 To develop scientific outlook that solves any problem, encompassing the expected aspects of market demands.

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	SQL. SQL, or Structured Query Language, is the ubiquitous industry-standard database
	language and is possibly the most important skill for data analysts to know.

]	Know	ledge	Level	S						
1.Remen	nberi	ng, 2.	Unde	rstand	ling, 3	B.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizinį	5
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CO	4		4					PO 11				3			
								PO 12				2			
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CO	5		5					PO 14				4			
						CO	PO 15 6								
		(3/2	/1 india	cates the	e strend				trong ?	2-mediu	m, 1-we	eak)			
		(3/2	, i marc		e su eng	-		me Ou	-		iii, i we	uix)			
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	- 1	1	- 1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2
005	1	1	3	2	1	2	1	Э	1	1	1	1	1	2	2

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect 1. Course End Delivery

Direct

Content of the Syllabus 12 Periods . INTRODUCTION TO BIG DATA Introduction to Big Data Platform – Challenges of Conventional Systems - Intelligent data analysis - Nature of Data - Analytic Processes and Tools -Unit - I Analysis vs Reporting - Modern Data Analytic Tools - Statistical Concepts: Sampling Distributions - Re-Sampling - Statistical Inference - Prediction Error. MINING DATA STREAMS Periods 12 MINING DATA STREAMS Introduction To Streams Concepts – Stream Data Model and Architecture - Stream Computing - Sampling Data in a Stream – Filtering Streams Unit - II Counting Distinct Elements in a Stream – Estimating Moments – Counting Oneness in a Window – Decaying Window - Real time Analytics Platform(RTAP) Applications - Case Studies - Real Time Sentiment Analysis, Stock Market Predictions. HADOOP Periods 12 HADOOP: History of Hadoop- The Hadoop Distributed File System - Components of Hadoop-Analyzing the Data with Hadoop- Scaling Out- Hadoop Streaming- Design of HDFS-Java Unit - III interfaces to HDFS- Basics-Developing a Map Reduce Application-How Map Reduce Works-Anatomy of a Map Reduce Job run-Failures-Job Scheduling-Shuffle and Sort – Task execution -Map Reduce Types and Formats- Map Reduce Features HADOOP ENVIRONMENT Periods 12 HADOOP ENVIRONMENT: Setting up a Hadoop Cluster - Cluster specification Unit - IV Cluster Setup and Installation - Hadoop Configuration-Security in Hadoop - Administering Hadoop – HDFS - Monitoring-Maintenanc Hadoop benchmarks- Hadoop in the cloud. **FRAMEWORKS** Periods 12 FRAMEWORKS : Applications on Big Data Using Pig and Hive – Data processing Unit - V operators in Pig – Hive services – HiveQL – Querying Data in Hive - fundamentals of HBase and ZooKeeper - IBM InfoSphere BigInsights and Streams. Visualizations - Visual data analysis techniques, interaction techniques; Systems and applications. Total Periods 60

Text Books	
1	. Michael Berthold, David J. Hand, "Intelligent Data Analysis", Springer, 2007.
2	Tom White "Hadoop: The Definitive Guide" Third Edition, O'reilly Media, 2012
References	
1	. Chris Eaton, Dirk DeRoos, Tom Deutsch, George Lapis, Paul Zikopoulos, "Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data", McGrawHill Publishing, 2012
2	Anand Rajaraman and Jeffrey David Ullman, "Mining of Massive Datasets", Cambridge University Press, 2012.
E-References	
1	www.greatlearning.in
2	www.edx.org



BU CONTINUE INSTITUTION	VIVEKAN	OR	ISO 9001:2008											
NONEN CONFUT		WOMEN (AU Elayampalayam, Ti					CERTIFIED WWW IJW.com ID 9105078407							
Programme	M.Sc	Programme Code	P		Regulat	tions	2020-2021							
Department	Con		4											
			Periods	Credit	Maxim	um Mar	ks							
Course Code	C	ourse Name	per Week											
	L T P C CA ESE													
20P4CSE14	CYBER FORENSICS 4 0 4 25 75													
COURSE OBJECTIVES	On successful completion of this course we learn the fundamentals of From a technical standpoin the main goal of computer forensics is to identify, collect, preserve, and analyze data in a way that preserves the integrity of the evidence collected so it can be used effectively in a legal case.													
POs		PROGRAMME OUTCOME												
PO 1	Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.													
PO 2	Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines.													
PO 3	Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration													
PO 4	Use research-bas	ed knowledge and research data, and synthesis of the in	methods includ	ling design of	experimen	-	ysis and							
PO 5	Create, select, ad	apt and apply appropriate te	chniques, reso	urces, and mo			ols to complex							
PO 6	Understand and o	ties, with an understanding commit to professional ethic			onsibilities	s, and no	orms of							
PO 7	•	ed, and have the ability, to e	engage in indep	pendent learni	ng for cont	inual de	evelopment as a							
PO 8		wledge and understanding of a member and leader in a												
PO 9		fectively with the computing ties by being able to compre ations												
PO 10		assess societal, environment and the consequential respo												
PO 11	Function effectiv environments.	ely as an individual and as a	a member or le	ader in diverse	e teams and	l in mul	tidisciplinary							
PO 12	Identify a timely	opportunity and using inno- the individual and society a	-	e that opportu	nity to crea	te value	e and wealth for							
PO 13		dge of computing to create	-	ns and solution	ns for comp	plex pro	blems.							
PO 14 PO 15		yse and synthesize scholarly tific outlook that solves any		-	_									
	demands.													

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre- requisites	'Computer Forensics' rolls in the modern technological world, efficiently engaging authorities whose purpose is to research and investigate criminal activities of organizations and individuals that are not in compliance with the rule of law.

]	Know	ledge	Level	S						
1.Reme	mberi	ng, 2.	Under	rstand	ling, 3	B.App	lying,	4.An	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizinį	3
		(3/2	/1 indic	cates th		CO / PC			-	2-mediu	m, 1-we	eak)			
CC	Ds	(- ·			KLs			- ,	Pos		,	,	K	Ls	
									PO				3		
CO	1				1				PO				2		
									PO	3			5	5	
									PO	4			4	1	
CO	2				2				PO				2		
									PO				6		
			3					PO 7				3			
CO	3							PO 8 PO 9				5			
								PO 10				2			
CO	4		4					PO 11				3			
								PO 12				2			
									PO 1	3			3	3	
CO	5		5					PO 14				4			
									PO 1	15			6	5	
		(a) =		-			PO Ma					. .			
		(3/2	/1 indic	cates th	e streng						m, 1-we	eak)			
COs							-	ime Ou	1						
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

10. Continuous Assessment Test I, II & Model

11. Assignment

12. End Semester Examinations

Indirect

Direct

1. Course End Delivery

Content of the	Syllabus												
	v	Periods	12										
	INTRODUCTION TO COMPUTER FORENSICS: Introduct												
Unit - I	Computer Crime, Traditional problems associated with Con	nputer Crime.	Introduction to										
	Identity Theft & Identity Fraud. Types of CF techniques - In	ncident and inc	ident response										
	methodology - Forensic duplication and investigation. P	Preparation for	IR: Creating										
	response tool kit and IR team. Forensics Technolog	y and System	ns- Compute										
	Investigation- Data Acquisition.												
		Periods	12										
Unit - II	System: Roles of Firewalls – Firewall related terminology- Types of Firewalls - Firewalls for E-Commerce Transactions.												
	EVIDENCE COLLECTION AND FORENSICS TOOLS	Periods	12										
Unit - III	EVIDENCE COLLECTION AND FORENSICS TOOLS: Proc Scenes – Working with Windows and DOS Systems. Current Com Software/ Hardware Tools.												
	DATA RECOVERY	Periods	12										
Unit - IV	DATA RECOVERY: Data Recovery Defined Data Backup	o and Recover	y, The Role o										
Chit IV	Backup in Data Recovery, The Data-Recovery Solution, Hiding and Recoverate												
	DUPLICATION AND PRESERVATION OF DIGITAL EVIDENCE	Periods	12										
Unit - V	DUPLICATION AND PRESERVATION OF DIGITAL EVIDENCE : Preserving the												
	Digital Crime Scene, Computer Evidence Processing Steps .Computer Image Verification												
	and Authentication, Special Needs of Evidential Authentication	on, Practical Co	onsiderations.										
	Total Periods		60										

Text Books	
1	1. Dr.L.Aruna, "Cyber Forensics", Published by Charulatha Publications, Chennai,
	First edition, 2019. (Units - I to III).
2	John R. Vacca, Computer Forensics: Computer Crime Scene Investigation, 2nd Edition, Charles, River Media, 2005 (Units - IV, V).
References	
1	Michael G. Noblett; Mark M. Pollitt; Lawrence A. Presley (October
	2000). "Recovering and examining computer forensic evidence"
2	A.Yasinsac,R.F.Erbacher,D.G.Marks,M.M.Pollitt(2003)."Computer forensics
	education". IEEE Security & Privacy.
3	Computer Forensics: Investigating Network Intrusions and Cyber Crime (Ec-
	Council Press Series:Computer Forensics), 2010
4	Ali Jahangiri, Live Hacking: The Ultimate Guide to Hacking Techniques & Countermeasures forEthical Hackers & IT Security Experts, Ali Jahangiri, 2009
E-References	
1	https://en.wikipedia.org/wiki/Computer_forensics
2	https://forensiccontrol.com/resources/beginners-guide-computer-forensics/
3	https://www.us-cert.gov/sites/default/files/publications/forensics.pdf



Elayampalayam, Tiruchengode-637 205. Programme M.Sc Programme Code PCS Regulations 2020-2021 Department **Computer Science** Semester 4 Periods Credit Maximum Marks Course Code Course Name per Week Т L Р С CA ESE Total **Distributed Computing** 20P4CSE15 4 0 0 4 25 75 100 COURSE An important goal of a distributed system is to make it easy for users (and applications) to access and **OBJECTIVES** share remote resources. Resources can be virtually anything, but typical examples include peripherals, storage facilities, data, files, services, and networks, to name just a few. POs PROGRAMME OUTCOME PO 1 Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements. **PO 2** Identify, formulate, research literature, and solve complex computing problems reaching substantiated conclusions using fundamental principles of mathematics, computing sciences, and relevant domain disciplines. PO 3 Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration PO₄ 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. PO 5 Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations PO 6 Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice. Recognize the need, and have the ability, to engage in independent learning for continual development as a PO 7 computing professional. PO 8 Demonstrate knowledge and understanding of the computing and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. PO 9 Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations PO 10 Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice. PO 11 Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments. PO 12 Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large. To apply knowledge of computing to create effective designs and solutions for complex problems. PO 13 PO 14 To identify, analyse and synthesize scholarly literature relating to the field of Computer Science. PO 15 To develop scientific outlook that solves any problem, encompassing the expected aspects of market demands.

COs	COURSE OUTCOME
CO 1	Understand the concepts of Operating System
CO 2	To learn about DSM
CO 3	To analyze the basics of Operating System Algorithms
CO 4	To implement distributed database operating system in various places
CO 5	Design and Establish the Operating system to apply in various places
Pre-requisites	Resource sharing, Openness, Concurrency. Scalability, Fault Tolerance,
	Transparency.

Knowledge Levels

1.Remei	nberi	ng, 2.	Under	rstand	ling, 3	B.App	lying,	4.Ana	alyzin	g, 5.E	valuat	ing, 6.	Synth	esizing	g
		(3/2	/1 indic	cates the				Mappin on, 3-st	-	2-mediu	m, 1-we	eak)			
CO	s			-	KLs				Pos	5			K	LS	
									РО	1			3	;	
CO	1				1				PO	2			2)	
									PO				5		
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CO	2				2				PO				2		
									PO				6		
СО	2		3					PO 7 PO 8				3 5			
	5							PO 9					1		
			4					PO 10				2			
СО	4							PO 11				3			
								PO 12				2			
								PO 13				3			
CO	5		5					PO 14				4			
								PO 15				6			
		(3/2	/1 indic	cates the	e streng		PO Ma orrelati		trong, 2	2-mediu	m, 1-we	eak)			
CO.						Р	rogram	me Ou	tcome ((POs)					
COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PO13	PO14	PO15
CO1	1	2	1	1	2	1	1	1	3	2	1	2	1	1	1
CO2	2	3	1	1	3	1	2	1	2	3	2	3	2	1	1
CO3	3	2	1	2	2	1	1	1	1	2	3	2	3	2	1
CO4	2	1	2	3	1	1	2	2	1	1	2	1	2	3	1
CO5	1	1	3	2	1	2	1	3	1	1	1	1	1	2	2

Direct

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect
1. Course End Delivery

	Introduction	Periods	12			
Unit - I	. Introduction: Definition Of distributed system- goals - Types of Distributed Systems Architectures: Architectural Styles - System Architectures - Architectures Vs Middleware – Set Management in Distributed Systems. Processes: Threads – Virtualization - Clients Servers - Co Migration					
	Communication	Periods	12			
	Communication: Fundamentals - Remote Procedure	Call – Me	ssage-Orie			
Unit - II	Communication – Stream-Oriented Communications - Multicast Communication. Nami					
	Names, Identifiers and Addresses - Flat Naming - Structur	red Naming -A	Attribute-Ba			
	Naming.					
	Synchronization: Clock Synchronization	Periods	12			
	Synchronization: Clock Synchronization - Logical Clocks - Mutual Exclusion -Glo					
Unit - III	Positioning of Nodes - Election Algorithms. Consistency and Replication: Introduction					
	Data-Centric Consistency Models – Client-Centric Consistency Models-Repl					
	Management - Consistency Protocols.					
	Fault Tolerance	Periods	12			
Unit - IV	Fault Tolerance: Introduction to Fault Tolerance - Process Resilience - Reliable Clie					
	Server Communication - Reliable Group Communication - Distributed Commit- Recover					
	Security: Introduction to Security - Secure Channels - Access Control -Secu					
	Management.					
Unit - V	Distributed Object-Based Systems	Periods	12			
	Distributed Object-Based Systems: Architecture – Processes – Communication –Naming – Synchronization - Consistency and Replication – Fault Tolerance -Security. Distributed file system Architecture –Processes-communication-Naming-Synchronization-Consistency and Replication - Fault Tolerance – Security – Distributed Web-Based Systemsv					

Text Books				
1	. Andrew S.Tanenbaum, Maarten Van Steen, "Distributed Systems" Principles and Paradigms. Second Edition, PHI Publications, New Delhi -2008			
References				
1	. Birman, Kenneth P, "Reliable Distributed Systems - Technologies, Web Services, and Applications", Springer Publications, 2005 Edition			
2	G.coulouris, Jean Dollimore & Tim Kindberg, Distributed Systems: Concepts and Design (4 th Edition), Addison Wesley Publications, 2005 Edition.			
E-References				
1	www.dezyre.com			
2	www.techtarget.com			



STORAL INSTITUTE	VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS) Elayampalayam, Tiruchengode-637 205.						ISO 9001:2008	
HOMEN ENDOWERNEN							CERTIFIED Www.tux.com ID 9105078407	
Programme			PCS		Regulations		2020-2021	
Department	Computer Science			Semester				4
	Periods Credit					Maxim	um Ma	rks
Course Code		ourse Name	per We	Pek	С	СА	ESI	E Total
20P4CSE16	Adhoc Sensor Networks 4 0 0 4 25				75	100		
COURSE OBJECTIVES	The main objective of these protocols is to efficiently disseminate observations gathered by individual sensor nodes to all the sensor nodes in the network. Simple protocols such as flooding and gossiping are commonly proposed to achieve information dissemination in WSNs.							
POs	PROGRAMME OUTCOME							
PO 1	Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.							
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PO 3	Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration							
PO 4	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.							
PO 5	Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations							
PO 6	Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of							
PO 7	professional computing practice. Recognize the need, and have the ability, to engage in independent learning for continual development as a computing professional							
PO 8	 computing professional. Demonstrate knowledge and understanding of the computing and management principles and apply these to ones own work, as a member and leader in a team, to manage projects and in multidisciplinary environments. 							
PO 9	Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations							
PO 10	Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.							
PO 11	Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.							
PO 12	Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.							
PO 13	To apply knowledge of computing to create effective designs and solutions for complex problems.							
PO 14 PO 15	To identify, analyse and synthesize scholarly literature relating to the field of Computer Science. To develop scientific outlook that solves any problem, encompassing the expected aspects of market demands.							

COs	COURSE OUTCOME			
CO 1	Understand the concepts of Operating System			
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CO 4	To implement distributed database operating system in various places			
CO 5	Design and Establish the Operating system to apply in various places			
	Ad hoc networks are multi-hop networks consisting of wireless autonomous hosts, where each host may serve as a router to assists traffic from other nodes. Sensors provide service to monitoring stations.			

Knowledge Levels 1. Remembering, 2. Understanding, 3. Applying, 4. Analyzing, 5. Evaluating, 6. Synthesizing CO / PO / KL Mapping (3/2/1 indicates the strength of correlation, 3-strong, 2-medium, 1-weak) Cos KLs Pos KLs PO 1 PO 2 CO 1 PO 3 PO 4 PO 5 CO 2 PO 6 **PO** 7 CO 3 PO 8 PO 9 PO 10 CO 4 PO 11 PO 12 PO 13 CO 5 PO 14 PO 15 CO / PO Mapping (3/2/1 indicates the strength of correlation, 3-strong, 2-medium, 1-weak) Programme Outcome (POs) COs PO2 PO3 PO4 PO7 PO10 PO11 PO12 PO13 PO14 PO1 PO5 PO6 PO8 PO9 PO15 CO1 CO2 CO3 CO4 CO5

1. Continuous Assessment Test I, II & Model

2. Assignment

3. End Semester Examinations

Indirect

Direct

1. Course End Delivery

	INTRODUCTION AND MAC PROTOCOLS	Periods	12				
Unit - I	. INTRODUCTION AND MAC PROTOCOLS: Cellular and Ad hoc Networks - Issues in Ad ho Networks - Design Issues and Design Goals of MAC protocol for Ad hoc Networks - Classification of MAC protocols - Contention Based Protocols - Reservation and Scheduling Mechanisms - Other Protocols.						
	ROUTING PROTOCOLS	Periods	12				
	ROUTING PROTOCOLS: Design Issues and Classifications of unicast and multicated						
Unit - II	Routing Protocols - Proactive, Reactive and Hybrid routing protocol - Tree based a						
	Mesh based multicast protocols, Energy Efficient and QoS guaranteed multicast protocol						
	TRANSPORT LAYER AND SECURITY ISSUES	Periods	12				
Unit - III	TRANSPORT LAYER AND SECURITY ISSUES : Design Issues, Design Goals and Classifications of Transport layer protocols - TCP over Ad Hoc – Security in Ad hoc Network Network Security Requirements - Network Security Attacks - Key Management - Secure Rout in Ad hoc Networks						
	SENSOR NETWORKS AND NETWORKING SENSORS	Periods	12				
Unit - IV	SENSOR NETWORKS AND NETWORKING SENSORS: Unique Constraints and Challenges – Advantages and Applications – Collaborative Processing – Key Definitions – Localization and Tracking – Networking Sensors – MAC – Geographic, Energy Aware and Attribute based						
	Routing.	Periods	12				
Unit - V	INFRASTRUCTURE ESTABLISHMENT AND NETWORK DATABASE	Periods	12				
	INFRASTRUCTURE ESTABLISHMENT AND NETWORK DATABASE Topolo						
	Control - Clustering - Time Synchronization - Localization and Localization Services						
	Task Driven Sensing – Roles of Sensor Nodes and Utilities –	Network Datab	ase				
	Total Periods						

Text Books				
1	C. Siva Ram Murthy and B.S. Manoj, "Ad Hoc Wireless Networks – Architectures a			
	Protocols", Pearson Education, 2nd Edition, 2005.			
2	Feng Zhao and Leonidas Guibas, "Wireless Sensor Networks – An Information Processing			
	Approach", Elsevier Publications, 2004.			
References				
1	C.K.Toh, "Ad hoc Mobile Wireless Networks – Protocols and Systems", Pearson Education,			
	1st Edition, 2007.			
2	George Aggelou, "Mobile Ad hoc Networks - From Wireless LANs to 4G Networks", Tata			
	McGraw Hill, 2009			
3	Holger Karl and Andreas Willing, "Protocols and Architectures for Wireless Sensor Networks"			
	Wiley Publications, 2005.			
E-References				
1	www.uta.edu			
2	www.oldcitypublishing.com			