

MOTHER TERESA WOMEN'S UNIVERSITY, KODAIKANAL - 624101



DEPARTMENT OF INFORMATION TECHNOLOGY

M.Sc., Information Technology

Curriculum Framework, Syllabus and Regulations (Based on TANSCHE syllabus under Choice Based Credit System - CBCS)



(For the candidates to be admitted from the Academic Year 2023-24)

TANSCHE REGULATIONS ON LEARNING OUTCOMES-BASED CURRICULUM FRAMEWORKFOR POSTGRADUATE EDUCATION

Duration - 2 years for PG Programme Outcomes (Pos):

PO1: Problem Solving Skill: Apply knowledge of Management theories and Human Resource practices to solve business problems through research in Global context.

PO2: Decision Making Skill: Foster analytical and critical thinking abilities for data-based decision-making.

PO3: Ethical Value: Ability to incorporate quality, ethical and legal value-based perspectives to all organizational activities.

PO4: Communication Skill: Ability to develop communication, managerial and interpersonal skills.

PO5: Individual and Team Leadership Skill: Capability to lead themselves and the team to achieve organizational goals.

PO6: Employability Skill: Inculcate contemporary business practices to enhance employability skills in the competitive environment.

PO7: Entrepreneurial Skill: Equip with skills and competencies to become an entrepreneur.

PO8: Contribution to Society: Succeed in career endeavours and contribute significantly to society.

PO9: Multicultural competence: Possess knowledge of the values and beliefs of multiple cultures and a global perspective.

PO 10: Moral and ethical awareness/reasoning: Ability to embrace moral/ethical values in conducting one's life.

Programme Specific Outcomes (PSOs)

PSO1 – Placement: To prepare the students who will demonstrate respectful engagement with others' ideas, behaviors, beliefs and apply diverse frames of reference to decisions and actions.

PSO 2 – Entrepreneur: To create effective entrepreneurs by enhancing their critical thinking, problem solving, decision making and leadership skill that will facilitate startups and high potential organizations.

PSO3 – Research and Development: Design and implement HR systems and practices grounded in research that comply with employment laws, leading the organization towards growth and development.

PSO4 – Contribution to Business World: To produce employable, ethical and innovative professionals to sustain in the dynamic business world.

PSO 5 – Contribution to the Society: To contribute to the development of the society by collaborating with stakeholders for mutual benefit.

METHODS OF EVALUATION

Continuous Internal Assessment Test

Internal

Evaluation	Assignments / Snap Test / Quiz	25 Marks					
	Seminars						
	Attendance and Class Participation						
External	End Semester Examination	75 Marks					
Evaluation							
	Total	100 Marks					
	METHODS OF ASSESSMENT						
Remembering	The lowest level of questions require s	student store					
(K1)	call information from the course conte	nt					
	 Knowledge questions usually require s 	tudents to					
	identify information in the text book.						
Understandi	Understanding off acts and ideas by						
ng (K2)	comprehending organizing, comparir	ng, translating,					
	interpolating and interpreting in their	r own words.					
	Ihe questions go beyond simple reca	all and require					
· · · ·	students to combine data together	• •					
Application	 Students have to solve problems by 	 Students have to solve problems by using/ 					
(K3)	applying a concept learned in the classroom.						
	 Students must use their knowledge to determine a overt reasonable 						
Apolyzo	Applyzing the guestion is one that as	ske the					
	Analyzing the question is one that asks the						
	component parts						
	 Analyzing requires students to identify reasons 						
	causes or motives and reach conclusions or						
	generalizations.						
Evaluate	 Evaluation requires an individual to make judgment 						
(K5)	on something.						
	• Questions to be asked to judge the value of an						
	idea, a character, a work of art, or a solution to a						
	problem.						
	Students are engaged in decision-making and						
	problem-solving.						
	Evaluation questions do not have single right						
Create (K6)	The questions of this category challe	nae students					
	to get engaged in creative and origin	nal thinking.					
	 Developing original ideas and problem 	solvina skills					

Syllabus and Framework for PG Programme in Information Technology

	M.Sc., Information Technology		
	First Year Semester-I	Credit	Hours per week(L/T/P)
Part A	CC1 - Python Programming	5	7
	CC2 - Python Programming – Practical	5	7
	CC3 - Web Development using Word Press- Practical	4	6
	Elective I – Department Elective – a. Data Structures b. Object Oriented Analysis and Design	3	5(4L+1T)
	Elective II – Generic Elective – Women Empowerment	3	5(4L + 1T)
	Total	20	30
	Semester-II	Credit	Hours per week(L/T/P)
Part A	CC4 – Database Systems	4	6
	CC5 – RDBMS Lab	5	6
	CC6 - Open Source Technologies -Practical	4	6
	Elective III – Department Elective – a. Networks and Security b. Trends in Computing	3	4
	Elective-IV- Generic Elective- Cyber Security	3	4
Part B	NME - Skill Enhancement Course –SEC1- a. E-Commerce and Content Management Systems	2	3
	Total	22	30
	Second Year - Semester-III	Credit	Hours per week (L/T/P)
Part A	CC7 - Advanced Java	5	6
	CC8 - Advanced Java – Practical	5	6
	CC9 – Mobile Development Lab	5	6
	CC10- Digital Image Processing	4	6
	Elective V- Department Elective – a. Research Methodology b. Internet of Things	3	3
Part B	NME II- Skill Enhancement Course -SEC 3 a. Image Editing and Animation	2	3
	Internship / Industrial Activity	2	-

M.C. Information Technology

Mother Teresa Women's University, Kodaikanal

Core Project with viva voce

CC11–.NET with C# Programming

year – 30 hours)

Part A

(Carried out in Summer Vacation at the end of I

Semester-IV

CC12 - .NET with C# Programming –Practical

Hours

week (L/T/P)

6

6

10

30

per

26

Credit

5

5

7

Total

	Total	23	30
Part C	Extension Activity	1	-
	Technology (4 hours)		
	OR Advanced Research Studies on Information		
	 General Studies for UPSC / TNPSC / Other Competitive Examinations (2 hours) 		
	Examinations (2 hours)		
	• NET / UGC - CSIR/ SET / TRB Competitive		
	Training for Competitive Examinations		
Part B	Professional Competency Skill Enhancement Course	2	4
	a. Data Science		
	Elective VI – Department Elective-	3	4

TOTAL CREDITS: 91

		S	eme	ester - I				
Title of Cour	f the se		ΡΥ	THON PF	ROGRAM	MIN	G	
Paper N	umber			CC	DRE I			
Category	Core	Year I Credits 4 Course P23				P23ITT11		
		Semester	Ι				ue	
Instruct	ional	Lecture	Т	utorial	Lab			Total
Hours pe	r week			_	Pract	ice		
		4	L	1	-			5
Pre-req	uisite	Basic under	stand	ding on o cor	bject orie Icepts	ented	l prog	gramming
Objectiv	es of	To acquire	progr	amming	skills in	core	Pyth	on and to
	th	deve	lop c	latabase a	applicatio	ons ir	n Pytł	non
e Cou	rse							
	Jrse Outline UNIT-I : Core Python: Introduction -Python Basics: Comments - Statements and syntax - variable Assignment - Identifiers - Python objects : Built-in- types - Internal types - Standard Type operators - Standard type Built-in-functions. Numbers : Introduction to Numbers - Integers -Floating point numbers-Complex number Operators-Built- in and factory functions-Conditionals and Loops - Sequences: Strings, Lists and Tuples UNIT-II : Mapping and set types Functions and functional programming: Introduction- alling functions- Creating functions- passing functions-Formal arguments- Variable Length Arguments-Functional Programming – Variable					variable Built-in- erators - bers : ex numbers- Loops - tional Creating s- Variable- /ariable		
		namespaces – Importing Modules- Features- Built- in functions. Object Oriented Programming :						Built- in
	Introduction – Object Oriented Programming –							Erroro
		and Exceptions: Introduction - Exceptions in Python						
		UNIT-IV : CUI Programming: Introduction - Using						
		Widgets: Core widgets- Generic widget properties –						rties –
	Labels–Buttons–Radio Buttons– Check Buttons–Text– Entrv–List Boxes–Menus–Frame– Scroll Bars – Scale						– I ext– – Scale	
		UNIT-V:						
		Database Pro Mongo DB – Ci READ operatio	ograi reatir ons.	nming : (ng Tables	Connectir - INSER	ng to T- UF	a dat PDATE	abase using E - DELETE-

Extended Professional Component (is a part of internal component only, Not to be included in the Externa Examination question paper)	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)
Skills acquired	Knowledge, Problem Solving, Analytical ability,
from this course	Professional Competency, Professional
	Communication and Transferrable Skill
Recommended Text	 Wesley J. Chun, (2007), "Core Python Programming", Pearson Education, Second Edition -(UnitI, II, III). Charles Dierbach, (2015), "Introduction to Computer Science Using Python – A Computational Problem- Solving Focus", Wiley India Edition- (UnitIII- Object Oriented Programming) Martin C Brown, (2018), "The Complete Reference Python", McGraw Hill Education (India)Private Limited- (UnitIV)
Poforonco Books	1 Mark Lutz (2013) "Learning Python Powerful
	 Mark Edd2, (2013), "Learning Fython Powerful Object Oriented Programming", Oreilly Media, 5 th Edition. Timothy A.Budd, (2011), "ExploringPython", Tata McGrawHill Education Private Limited, First Edition. AllenDowney, Jeffrey Elkner, ChrisMeyers, (2012), "How to think like a computer scientist: learning with Python"
Website and	1. http://interactivepython.org/courselib/static/pythond
e-Learning	S
Source	2. http://www.ibiblio.org/g2swap/byteofpython/read/
	3. http://www.diveintopython3.net/
	4. http://docs.python.org/3/tutorial/index.html

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Explain the basic concepts in python language.
CLO2	Apply the various data types and identify the usage of control statements, loops, functions and modules in python for processing the data
CLO3	Analyze and solve problems using basic constructs and techniques of python.

CLO4	Assess the approaches used in the development of interactive
	application.
CLO5	To build real time programs using python

CO/PSO	PSO	PSO 2	PSO3	PSO4	PSO5	PSO6
	1					
CLO1	3	3	3	3	2	2
CLO2	3	3	3	3	3	2
CLO3	3	2	3	3	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	3	3	3	3
Weightage of						
course	15	13	15	15	13	15
contribute to						
each PSO						

Title of th	e Course	PYTHON PROGRAMMING – PRACTICAL							
Paper N	lumber	CORE II							
Category	Core	Year	Ι	Credits	4	C οι	urs	P23ITP11	
		Semester	Ι			Co	e de		
Instructi Hours	onal Der	Lecture	T	utorial	Lab Practi	ce		Total	
weel	(-		1	4			5	
Pre-ree	quisite	Basic un	derst	anding of	f C, C++ Ianguage	and i s	Java	programming	
Objective Cou	es of the rse	This cour Object Orie GU	se gi nted II Ap	ves pract program Po plications	ical expending ming like lymorphis and Data	rience Class sm, abase	e in l ses, e cor	Python basics, Inheritance, and nnection.	
Course	Outline	 Python Basic programs Control Structures Lists Functions and Recursions Modules String Processing Dictionaries and Sets Classes and Objects Polymorphism Inheritance GUI Application 							
Extended Professiona Componen part of component Not to be in the Examinatic question part	al t (is a internal c only, included External on aper) ured from	Competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)							
this co	ourse	Competency, Professional Communication and Transferrable Skill							
Recomm Te	nended xt	Wesley	J. Ch Pear	un, (2007 rson Educ	7), "Core ation, Se	Pytho cond	on Pr Edit	rogramming", ion –	
		1							

Reference Books	 MarkLutz, (2013), "Learning Python Powerful
	Object Oriented Programming", Oreilly Media, 5
	th Edition.
	Timothy A.Budd, (2011), "Exploring
	Python", Tata MCGraw Hill Education Private
	Limited, First Edition.
	3. Allen Downey, Jeffrey Elkner, Chris Meyers,
	(2012), "How to think like a computer scientist:
	learning with Python"

Title of Cour	f the se	PYTHON PROGRAMMIN G							
Paper N	umber	er CORE I							
Category	Core	Year I Credits 4 Course P231				P23ITT11			
		Semester	I				ue		
Instruct	lional	Lecture		utorial	Lab			lotal	
nours per	week	1		1	Pract	ice		5	
Dro-roa	uicito	Basic under	stan	ting on o	hiect orig	antod	nro	arammina	
Fielded	uisite		Stark	cor	ncents	Incu	pro	granning	
Obiectiv	es of	To acquire	proar	ammina	skills in	core	Pvth	on and to	
	th	deve	lop c	latabase a	applicatio	ons in	n Pytł	non	
e Cou	rse						,		
Course C	Outline	UNIT-I : Cor	e Py	thon: In	troductio	n -P	ythor	n Basics:	
		Comments -	Sta	tements	and sy	yntax	_	variable	
		Assignment -	Iden	tifiers - F	Python of	objec	cts:	Built-in-	
		types - Interi	nal t	ypes - S	Standard	Туре	e ope	erators -	
		Standard ty	ре	Built-in-	functions	5. ľ	Num	bers :	
		Introduction to	o Nur	nbers		0			
		- Integers -	Float	ing point	numbe	rs-Co	mple	ex numbers-	
		Operators-Buil	ال – سر م		Condition		ممط		
			ry Il String	unctions-	Condition	ais	anu	Loops -	
		Sequences: 3	string	IS, LISIS A	па таріе гт_тт.	S			
		Manning ar	nd co	t typos -	LI-II ; Eunction		d fu	nctional	
		nrogrammi	na se	ntroducti	on- alling	n s an 1 fund	rtions	s- Creating	
		functions- nag	ssina	functions	s-Formal	arain	ment	s- Variahle-	
		Length Arguments-Functional Programming – Variable							
				Scope -	Recursic	n	9		
		UNIT-I	II:N	1odules:	Modules	and	Files	5 -	
		namespaces	– Im	porting M	odules- I	Featu	res-	Built- in	
		functions. Object Oriented Programming:							
		Introduction – Object Oriented Programming –							
		Encapsulation – Inheritance – Polymorphism – Errors							
		and Exceptions: Introduction – Exceptions in Python.							
		UNIT-IV : GUI Programming: Introduction - Using							
		Widgets: Core widgets- Generic widget properties							
		Labels-Buttons-Radio Buttons- Check Buttons-Text						ons-Text-	
		Entry-List Boxes-Menus-Frame- Scroll Bars - Scale						– Scale	
				UN	IT-V:				
		Database Pro	ogra	mming: (Connecti	ng to	a da	tabase using	
		Mongo DB – C	reati	ng Tables	s - INSER	t- UF	PDAT	E - DELETE-	
				READ o	peration	s.			

Extended Professional Component (is a part of internal component only, Not to be included in the Externa Examination question paper)	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)
Skills acquired	Knowledge, Problem Solving, Analytical ability,
from this course	Professional Competency Professional
	Communication and Transferrable Skill
Becommended	4 Worlow 1 Chup (2007) "Coro Dython
Test	4. Wesley J. Chur, (2007), Core Fython
Text	Programming , Pearson Education, Second Edución
	5. Charles Dierbach, (2015), "Introduction to Computer
	Science Using Python – A Computational Problem-
	Solving Focus", Wiley India Edition- (UnitIII- Object
	Oriented Programming)
	6. Martin C Brown, (2018), "The Complete Reference
	Python", McGraw Hill Education (India)Private
	Limited- (UnitIV)
Reference Books	4. Mark Lutz, (2013), "Learning Python Powerful
	Object Oriented Programming", Oreilly Media, 5 th
	Edition.
	5 Timothy A.Budd.(2011) "ExploringPython" Tata
	McGrawHill Education Private Limited First Edition
	6 AllenDowney Jeffrey Fikner ChrisMeyers (2012)
	"How to think like a computer scientist: learning
	with Python"
Wohsite and	5 http://intoractivonython.org/courcelib/static/pythend
E-Ledining	5 6 http://www.ibiblio.org/g2owon/bytoofpython/read/
Source	o. http://www.ibibilo.org/g2swap/byteoipython/read/
	/. http://www.aiveintopython3.net/
	8. http://docs.python.org/3/tutorial/index.html

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Explain the basic concepts in python language.
CLO2	Apply the various data types and identify the usage of control statements, loops, functions and modules in python for processing the data
CLO3	Analyze and solve problems using basic constructs and

	techniques of python.
CLO4	Assess the approaches used in the development of interactive application.
CLO5	To build realtime programs using python

CO/PSO	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO6
CLO1	3	3	3	3	2	2
CLO2	3	3	3	3	3	2
CLO3	3	2	3	3	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	3	3	3	3
Weightage of						
course	15	13	15	15	13	15
contribute to						
each PSO						

Title of the Course				PYTHON	PROGR	AMM	ING	- PRACTICAL
Paper N	lumber				CORE I	[
Category	Core	Year	I	Credits	4	Cοι	Jrs	P23ITP11
		Semester	Ι			e Co	e de	
Instructi	ional per	Lecture	Т	utorial	Lab Practi			Total
weel	۶ <u>۲</u>	-		1	4			5
Pre-ree	quisite	Basic un	derst	tanding o	f C, C++ Ianguage	and i	Java	programming
Objective Cou	es of the Irse	This cour Object Orie GU	se gi nted I Ap	ves pract program Po plications	ical expe ming like lymorphis and Data	rience Clas sm, abase	e in F ses, e con	Python basics, Inheritance, and inection.
Course Extended Professiona Component part of component Not to be in the Examinatic question p	al t (is a internal t only, included External on aper)	Polymorphism, GUI Applications and Database connection. utline 13. Python Basic programs 14. Control Structures 15. Lists 15. Lists 16. Functions and Recursions 17. Modules 18. String Processing 19. Dictionaries and Sets 20. Classes and Objects 21. Polymorphism 22. Inheritance 23. GUI Application 24. Working with Database Questions related to the above topics, from varic competitive examinations UPSC / TRB / NET / UGC - CSII (is a internal only, included External (To be discussed during the Tutorial hour)				, from various / UGC – CSIR /		
Skills acqu this c	ured from ourse	Knowledge Competenc	, Pro y, Pr	blem Solv ofessiona	/ing, Ana l Commu Skill	iytica nicat	ii abi ion a	lity, Professional and Transferrable
Recomr Te	mended xt	Wesley .	Wesley J. Chun, (2007), "Core Python Programming", Pearson Education, Second Edition –					
L		1						

Reference Books	 MarkLutz, (2013), "Learning Python Powerful Object Oriented Programming", Oreilly Media, 5
	th Edition.
	Timothy A.Budd, (2011), "Exploring
	Python", Tata MCGraw Hill Education Private
	Limited, First Edition.
	Allen Downey, Jeffrey Elkner, Chris Meyers,
	(2012), "How to think like a computer scientist:
	learning with Python"

Website	and 1. http://interactivepython.org/courselib/static/pythonds
e-Learn Sourc	ing e 2. http://www.ibiblio.org/g2swap/byteofpython/read/ 3. http://www.diveintopython3 .net/ http://docs.python.org/3/tutorial/i ndex.html
-	

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Understand the significance of control statements, loops
	and functions in creating simple programs.
CLO2	Apply the core data structures available in python to store,
	process and sort the data
CLO3	Analyze the real time problem using suitable python concepts
CLO4	Assess the complex problems using appropriate concepts in
	python
CLO5	Develop the real time applications using python programming
	language.

CO/PSO	PS01	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	3	3	3	3	2	2
CLO2	3	3	3	3	3	2
CLO3	3	2	3	3	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	3	3	3	3
Weightag						
е	15	13	15	15	13	15
ofcourse						
contribut						
e to						
eachPSO						

Title of the Course		WEB DEVELOPMENT USING WORD PRESS - PRACTICAL						
Раре	er Number	CORE III						
Categor	Core	Year	Ι	Credit	4	Co	ur	P23ITP12
У		Semeste	Ι	S		s Co	e od	
		Г 				e	9	
Instru Ho	ictional ours per	Lecture		Tutorial	Lat Pract) ice		Total
	week	-		1	4			5
Pre	-requisite	E	Basic	understa	nding on	НТМ	L an	d CSS
Objectiv Cou	ves of the urse	The prima fundamen	ary co tals o	ourse obje of basic w	ective of t eb conce	this p pts, l	aper HTM	is to learn the L, DHTML, Java
Cour	se Outline			Script	UNIT-T	a Pres	SS	
		Introduc Docur	tion	to HTML 5- Tables-	Lists- Ac	dding Docui	Gra men	phics to HTML ts-Frames-
		Developing HIML Forms						
		Dynamic HTML - Cascading Style Sheets-Use of SPAN						
		Tag- External Style Sheets- Use of DIV Tag -Developing Websites						
				L L	JNIT-III	:		
		- Advar	itage ning	to Javas s - Writin Technique	g JavaSc 9 - Oper	avas ript ir ators	cript nto F	TIN WED Pages TML - Basic
		Javas	Script	Program	ming Cor	nstruc	ct: C	Conditional
		Chec	king,	Controlle	ed Loops,	Func	tion	s: Built-in
		T UTICUO	115, 0	Browse	er-Dialog	Boxe	S.	ng rext in a
				l	JNIT-IV	:		
		Java Sci Understa Java Script	nding . For	Oocumen Objects ms used ir	in HTML- by a Web o Objects	: Mod Hand site:	iei: dling Forr	Events using n Object-Built-
					UNIT-V:			
		Word Press: Installation - Stetting and administra Word press: Theming basics - Our First Word Pr Website - Theme Foundation					administration- Word Press n	
		-Menu an	d na	vigation- ar	Home pa nd Widgel	ge – ts-	Dyn	amic Side bars
		Page-	archi	ve Page r	esults-Te	esting	and	Launching

Extended	Questions related to the above topics, from various
Professional	competitive examinations UPSC / TRB / NET / UGC -
Component (is a	CSIR / GATE / TNPSC / others to be solved
part of internal	(To be discussed during the Tutorial hour)
component only,	
Not to be	
included in the	
External	
Examination	
question paper)	
Skills acquired	Knowledge, Problem Solving, Analytical ability,
from	Professional Competency, Professional Communication
This course	and Transferrable Skill

Recommen	1. Ivan N. Bayross, (2005), Web Enabled Commercial
ded	Applications Development Using HTML, DHTML,
Text	JavaScript, perl CGI, 3 rd Edition, BPB Publications.(
	Unit I, II, III and IV)
	2. Jesse Friedman, (2012), Web Designer's Guide to
	Word Press: Plan, Theme, Build, Launch (Voices
	That Matter), 1 st Édition
	, New Riders. (Unit V)
Reference	1. N.P.Gopalan, J.Akilandeswari, (2009), Web
Books	Technology: A Developer's Perspective, Eastern
	Economy Edition, PHI Learning Private Limited.
	2. Deitel & Deitel, (2000), Internet and World Wide
	Web How to program, Prentice Hall.
	3. Jon Duckett, (2004), Beginning Web
	Programming with HTML, XHTML, and CSS,
	Wiley Publishing, Inc.
Website and	1. http://www.sergey.com/web_course/content.html
e-Learning Source	2. http://www.pageresource.com/jscript/index.html
	3. http://www.peachpit.com/guides/content.aspx
	4. <u>https://www.tutorialspoint.com/wordpress/index.ht</u>
	<u>m</u>
Course	Learning Outcome (for

Course Learning Outcome (for Mapping with POs and PSOs)Students will be able to

CO's	Course
	Outco
	mes
CLO1	Identify the tools which will be suitable for the requirement of
	the webpage.
CLO2	Implement Javascript and Style Sheets effectively in the Web
	Pages
CLO3	Analyze the different tools and built-in functions available to
	be applied in the web page
CLO4	Rate the design and effectiveness of the Web Pages created.
CLO5	Design and publish a website using Wordpress

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	3	3	3	2	2	3
CLO2	3	3	3	2	2	3
CLO3	3	3	3	2	2	3
CLO4	3	3	3	2	2	3
CLO5	3	3	3	3	3	3

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					M.Sc. IT Sylla	bus - 2023	
Weightage of course contribute to each PSO	15	15	15	11	11	15	
 Mother Teresa	Women's Ui	niversity, Koc	laikanal		F	Page 21 of	

	Semester – 1 - Elective								
Title of t	the Course	DATA STRUCTURES							
Paper	Number	ELECTIVE I (EC1)							
Categor	Elective	Year	T	Credits	3 Cours P		P23ITE11		
y		Semeste r	I			Code			
Instruc	tional	Lecture	Τι	utorial	Lab		Total		
Hours pe	er week				Practi	се			
		4		1	-		5		
Pre-r	equisite	Basic und	dersta	nding of p	programm	ning and	foundational		
Objecti	was of the	To becom	no far	niliar with	the val	rious da	ta structuros		
Co	ourse			arian arian	nd their	lious ua	la structures		
		applicatio	ns and	to increa	ase the ur	nderstan	ding of basic		
		conc	epts o	f the desi	gn and us	se of alg	orithms		
Course	e Outline								
		UNIT	-I :						
	Introduction and Overview: Definitions Concept of Data Structures – Overview of Da Structures – Implementation of Data Structur – Arrays: Definition – One Dimensional Array Multidimensional Arrays: Two Dimensional Arr – Sparse Matrices – Three dimensional and dimensional Arrays – Stacks : Introduction Definition – Representation of Stack Operations on Stack – Applications of Stack Evaluation of Arithmetic Expressions Implementation of Recursion - Tower of Har Problem					nitions – w of Data Structures al Array – onal Array al and n- duction – Stack – of Stacks: ssions – of Hanoi			
UNIT-II : Queues: Introduction – Definition – Representation of Queues – Various Queue Structures : Circular Queue – Deque – Priority Queue – Applications of Queues : Simulation – CPU Scheduling in a Multiprogramming Environment – Round Robin Algorithm – Linked Lists: Single Linked List – Circular Double Linked List – Double Linked List – Circular Double Linked List – Priority – Circular						hition – s Queue – Priority Simulation gramming orithm – - Circular –Circular Linked			

UNIT-III:
Trees: Basic Terminologies – Representation of
Binary Tree: Linear Representation – Linked
Representation – Operations: Traversals –
Types of Binary Trees:
Expression Tree – Binary Search Tree – Splay tree
UNIT-IV :
Sorting: Bubble Sort, Insertion Sort, Selection
Sort, Shell Sort – Quick Sort - Merge Sort -
Radix Sort - Heap Sort - Searching: Linear
Search – Binary Search

	UNIT-V:								
	Graphs: Introduction – Graph representation and its								
	operations – Path Matrix – Graph Traversal -								
	Application of DFS - Shortest Path Algorithm -								
	Minimum Spanning Tree : Prim"s Algorithm-								
	Kiuskai s Algonunn- Greeuy- Kilapsack- Back Tracking- 8 Queens								
Extended	Questions related to the above tonics from various								
Professional	competitive examinations UPSC / TRB / NFT / UGC -								
Component (is a	CSIR / GATE / TNPSC / others to be solved								
part of internal	(To be discussed during the Tutorial hour)								
component only, Not									
to be included in the									
External									
Examination									
question									
paper)	Knowladza Duchlanz Cabring Analytical ability								
Skills acquired from	Knowledge, Problem Solving, Analytical ability,								
this course	and Transforrable Skill								
Pecommended Text	1 Debasis Samantha (2013) Classic Data								
Recommended Text	Structures, Second Edition, PHI Learning								
	Private Limited.								
	2. P. Sudharsan, J. John Manoj Kumar, C & Data								
	Structures, Third Edition, RBA Publications.								
	Unit 4: Chapter 14, Unit5: Chapter13								
	3. Ellis Horowitz, Sartaj Sahni, Sanguthevar								
	Rajeshakaran, (2007), Fundamentals of								
	Computer Algorithms, Second Edition,								
Defense Desk-	Universities Press (P)Limited								
Keterence Books	1. Sara Baase, (1991), Computer Algorithms –								
	Addison- Wesley Publishing Company								
	2 Robert Kruse, C.I. Tondo, Brucel euro, Data								
	Structures and Program Design in C $_{-2}^{nd}$								
	Edition, PHI Publications.								
Website and	1. http://www.cs.sunysb.edu/~skiena/214/lectures/								
e-Learning Source	2. http://datastructures.itgo.com/graphs/dfsbfs.htm								
	3. http://oopweb.com/Algorithms/Documents/PL								
	DS210/Volu meFrames.html								
	4. http://discuss.codechef.com/questions/								
	488///data- structures-and-algorithms								
	5. nup://coue.utspius.com/tutorials/algorith								
	ms-anu-uala- structurescms-20437								

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Outline the basic data structures
CLO2	Identify the different operations and memory representations
CLO3	Interpret different techniques with their complexities
CLO4	Compare the applications of various data structures
CLO5	Choose an algorithm to solve simple problems suited for
	appropriate situations

CO/PSO	PS O	PS O	PSO3	PSO4	PSO5	PS O
	1	2				6
CLO1	3	1	2	2	1	2
CLO2	3	2	2	2	2	3
CLO3	3	2	3	3	3	2
CLO4	3	3	2	3	3	3
CLO5	3	3	3	3	3	2
Weighta ge of course	15	11	12	13	12	14
contribu						
te to						
Each PSO						

Title of the	e Course	OBJECT ORIENTED ANALYSIS AND DESIGN							
Paper Nun	nber	ELECTIVE IV(EC4)							
Category	Elective	Year		Credits	3	Cou			
			I			Cou	e		
		Semester	I						
Instruction	al Hours	Lecture	Tuto	rial	Lab Practi	се	Tota	I	
per week		4	1		-		5		
Pre-requis	ite	Basic unde	rstandir	ng of atleast	one of the	objeo	t-orie	ented programs	
Objectives	of the Course	The primary objective is to understand the principles & requirements and apply the UML (Unified Modeling Language) and tools for OOA and Design.							
Course Ou	tline								
		UNIT-I :							
		Object Object Informa Aggrega	Basics State, E ation H ation, O	: Object- o Behaviours a iding – Cla bject Conta	oriented Ph and Metho ass Hierarc inment, Me	niloso ds.Er chy – eta Cla	phy – ncapsu · Poly asses.	- Object – ulation and morphism,	
		UNIT-II	:						
		Object Oriented Methodologies: Rumbaugh Object Model, Booch Methodology- Jacobson Methodology, Patterns, Frameworks and Unified Approach.					ect Model, Patterns,		
		UNIT-III :							
		Object Oriented Analysis: Business Object Analysis– Use Case Driven Approach – Use Case Model. Object Analysis – Noun Phrase Approach – CRC – Identifying Object Relationships and Methods.						alysis– Use : Analysis – ng Object	

	Object Oriented Design: The Design Process – Design Axioms – Corollaries – Design Patterns – Designing Classes. Software Quality: Tests- Testing Strategies – Test Cases – Test Plan – Continuous Testing – Mier"s Debugging Principles.				
	UNIT-V:				
	UML and Programming: Introduction – State and Dynamic Models – UML Diagrams – Class Diagrams – Use Case Diagrams- UML Dynamic Modeling.				
Extended Professional Component (is a part of internal component	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved				
only, Not to be included in the External Examination question paper)	(To be discussed during the Tutorial hour)				
Skills acquired from this	Knowledge, Problem Solving, Analytical ability, Professional				
course	Competency, Professional Communication and Transferrable Skill				
Recommended Text	Ali Brahami, Object Oriented Systems Development, Tata-McGraw Hill, New Delhi.				
Reference Books	 Martin Fowler, Kendall Scott, UML Distilled- Applying the Standard Object Modeling Language, Addition Wesley. Grady Booch, (1994), Object-oriented Analysis and Design with applications, 2nd Edition, Addition Wesley. 				
Website and e-Learning Source	 http://www.slideshare.net/helghareeb/object-oriented- analysis-and-design-12164752 http://www.uml-diagrams.org/uml-object-oriented- concepts.html http://www.tutorialspoint.com/object_oriented_analysis_d esign/index.htm https://www.mppmu.mpg.de/english/kluth_oo_intro.pdf http://www.agilemodeling.com/artifacts/useCaseDiagram.h tm (Unit V: Use Case Diagrams) 				

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Recognize the concepts and principles of object-oriented analysis, design and Testing
CLO2	Demonstrate the importance of system development process using various approaches and choose the relevant technique for a system in each phases of SDLC
CLO3	Differentiate various object-oriented analysis, design and testing methods and models.
CLO4	Assess various analysis, design and testing strategies appropriate to build high-performance object-oriented system
CLO5	Design Object oriented systems using object modeling techniques and analyze them for correctness and quality

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	3	2	2	3	2	2
CLO2	3	2	2	3	2	3
CLO3	3	3	2	3	2	3
CLO4	3	2	2	3	2	3
CLO5	3	2	3	3	3	3
Weightage of course contribute to eachPSO	15	11	11	15	11	14

Semester - II

Title of t	the Course	DATA BASE SYSTEMS							
Paper	Number	CORE IV							
Categor	Core	Year	Ι	Credits	4	4 Cour P23I			
У		Semeste r	II			eC	ο		
						de	<u>e</u>		
Instruc Hours pe	tional er week	Lecture		ltorial	Lab Practi	ce		lotal	
		4		1	-			5	
Pre-r	equisite	Fundam	ental har	computer dware an	r knowled d memor	lge tl y sto	hat in brage	ncludes the	
Objecti	ves of the	To unde	rstand	d the basi	c DBMS n	node	els, a	rchitecture,	
Co	ourse			qı	uery and				
		to norr	nalize	the data	base. To	Lea	rn T	ransaction	
Course O	wtling		ssing,	<u>Recovery</u>	and Dist	ribu	ted L	latabase.	
Course U	utine	Application	INTRO		DalaDaSe Vətəbəco	t Dys Svet	SLEIN		
		of Data – Database Users and Administrators.							
		Relational Database : Structure of Relational							
		Databases	s-Data	bases Sc	hema- Ke	eys-S	Scher	na	
		Diagrams-	Form	al Relati	ional Qu	ery	Lang	juages:	
		Relational Algebra- Tuple Relational Calculus							
		UNIT-II :Database Design: Overview of Design							
		Process- The Entity Relationship Model – Constraints							
		Entity – Relationship Diagrams- Reduction to							
		Relational Schemas – Extended E-R features-							
		Alternative Notations for Modeling Data. Relational							
		Database	Desi	gn: Feati	ures of Go	l boc	Relat	ional	
		Design-Functional Dependency - Normalization:							
		1NF, 2NF, 3NF, BCNF, 4NF, 5NF- Functional							
		Dependen	cy Th	eory					
		UNIT-III : Transaction Management:							
		I ransactio	n Cor	icept- Sin	nple Iran	sacti		lodel-	
		Storage Structure-Transaction Atomicity and							
		Concurre		Control:	ock Base	d Pr	otoco	ols – Locks	
		- Granting of Locks-Two Phase Locking Protocol –							
		Time Stan	np Bas	sed Proto	col - Rec	over	ry Sy	vstem:	
		Failure Cla	assifica	ation - Re	covery a	nd /	Atom	nicity: Log	
		Records-D	ataba	se Modifi	cation- C	oncu	rren	cy Control	

	and Recovery-Recovery Algorithm
7	
Extended Professional Component (is a part of internal component only, Not to be included in the	UNIT-IV : Distributed Database: Homogeneous and Heterogeneous Databases-Distributed Data storage-Distributed Transactions – Commit Protocols-Concurrency Control in Distributed Databases-Distributed Query Processing. Case study: Mongo DB UNIT-V:SQL - Table Fundamentals - Viewing Data - Inserting -Deleting - Updating - Modifying - Constraints- Functions -Grouping-Subqueries-Joins- Views.PL/SQL: Introduction- PL/SQL Block- Data Types And Variables- Control Structure-Cursors- PL/SQL Security - Locks. PL/SQL Database Objects: Exception Handling-Packages - Procedures and Functions- Database Triggers Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)
External Examination	
question paper)	
Skills acquired from this course	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill
Recommended Text	 Abraham Silberchatz, Henry F.Korth, S.Sudarshan, Database Systems Concepts, Sixth Edition, Tata Mcgraw Hill. Ivan Bayross, SQL, PL/ SQL The Programming Language of OR ACL E, Fourth edition, BPB Publications. UnitIV& V
Reference Books	 AtulKahate, Introduction to Database Management systems, Pearson education. Carlo Zaniolo, Stefano Ceri, Christos Faloustsos, R.T.Snodgrass, V.S.Subrahmanian, (1997), Advanced Database Systems, Morgan Kaufman. George Koch, Kelvin Loney, (2002), Oracle9i: The Complete Reference, Oracle Press, Tata McGraw Hill Publication. Ramez Elmasri, Shamkant B.Navathe(2014),"Database Systems", Sixth edition, Pearson Education, NewDelhi

Website and	1.	http://awtrey.com/tutorials/dbeweb/database.php
e-Learning Source	2.	http://www.slideshare.net/SalamaAlbusaidi/emergin ginter-database-technology-multimedia- database.
	3.	http://www.tutorialspoint.com/dbms/index.htm
	4.	http://www.tutorialspoint.com/plsql/index.htm
	5.	https://opentextbc.ca/dbdesign/chapter/
		chapter-11- functional-
		dependencies/(FunctionalDependencies)

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Explain the relational databases and uses of PL/SQL
CLO2	Apply Schema, ER-Model, normalization, transaction, concurrency, and recovery on tables using SQL and PL/SQL.
CLO3	Analyze and manage relational & distributed, database, transaction, Concurrency control and query languages
CLO4	Assess databases based on models and Normal Forms.
CLO5	Design and construct tables and manipulate it effectively using PL/SQL database objects

CO/PSO	PSO 1	PSO 2	PSO3	PSO4	PSO5	PSO 6
CLO1	3	3	3	3	3	3
CLO2	3	3	3	3	3	2
CLO3	3	2	3	3	3	2
CLO4	3	3	3	3	3	2
CLO5	3	3	3	3	3	3
Weightage of course contribute to each PSO	15	13	15	15	15	12

Title of t	the Course	e Relational Database Management System LAB							
Paper	Number			C	ORE V				
Categor	Core	Year	I	Credits	4	Cou	ur	P23ITP23	
У		Semeste	II			S AC	•		
		r				de	9		
Instruc	tional	Lecture	Т	utorial	Lab			Total	
Hours pe	ег week	-		1	Ргассі 4	ice		5	
Pre-r	equisite		Basic	understa	nding of	SQL	quer	ies	
Objecti Co	ves of the ourse	The prim	The primary Course Objective of this paper is to learn and implement SQL & PL/SQL.			r is to learn			
Evtondod	eoutime	 DDL Commands DML Commands DCL Commands Usage of Sub Queries in DML and Create-SC Solving queries using built-in functions Simple programs in PL/SQL block Exception Handling in PL/SQL Programs using Implicit Cursors Programs using Explicit Cursors Procedures &User-defined functions Creation of Triggers 					es in DML and Create-SQL og built-in functions PL/SQL block in PL/SQL blicit Cursors licit Cursors efined functions		
Professior Componer part of componer to be incl External Examinati question	nal nt (is a internal nt only, Not uded in the ion aper)	competitive examinations UPSC / TRB / NET / UGC - CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)				IET / UGC -			
Skills acc this	quired from course	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill							
Recomm	ended Text	Ivan Bayı of (Ivan Bayross, SQL, PL/SQL The Programming Language of ORACLE, Fourth edition, BPB Publications						
Referei	nce Books	Ramez E Systems	lmasri, s″, Sixt	, Shamka h edition,	nt B.Nava Pearson	athe(Eduo	2014 catio	1),"Database n, NewDelhi	

Mother Teresa Women's University, Kodaikanal

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Website and	1. http://awtrey.com/tutorials/dbeweb/database.php
e-Learning Source	2. http://www.slideshare.net/SalamaAlbusaidi/emergin
	g
	-database-technology-multimedia- database.
	3. http://www.tutorialspoint.com/dbms/index.htm
	4. http://www.tutorialspoint.com/plsgl/index.htm

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Choose appropriate SQL queries and PL/SQL blocks for the database.
CLO2	Implement SQL and PL/SQL blocks for the given problem effectively.
CLO3	Analyse the problem and Exceptions using queries and PL/SQL blocks.
CLO4	Validate the database for normalization using SQL and PI/SQL blocks.
CLO5	Design Database tables, create Procedures, user-defined functions and Triggers.

CO/PSO	PS O 1	PS O 2	PSO3	PSO4	PSO5	PS O 6
CLO1	3	3	2	3	3	3
CLO2	3	3	3	3	3	3
CLO3	3	3	2	3	3	3
CLO4	3	3	2	3	3	2
CLO5	3	3	3	3	3	3
Weighta ge of course contribu te to each PSO	15	15	12	15	15	14

Title of t	he Course:	OPEN	SOUF	RCE TECH	INOLOG	IES - I	PRACTICAL	
Paper	Number	CORE VI						
Categor	Categor Core		I	Credits	4	Cour	P23ITP2	
У		Semeste	II	-		S	4	
		r				de		
Instruc Hours pe	tional er week	Lecture	Τι	utorial	Lab Pract	ice	Total	
•		-		1	4		5	
Pre-re	equisite	Basic ur	nderst Int	anding of ernet and	f comput HTML/X	er prog HTML	gramming,	
Course	urse	and to tra how to w utilizing a	in to rite s datab	have a go uccessful base using	ood prac PHP an PHP.	actical knowledge of and Ruby code and		
		Condit 2. Develo Switch 3. Write 4. Write 5. Write 6. Write 7. Create with re 8. Create page r 9. Create Sessio 10. Creat 11. Creat functio 12. Creat 13. Creat Mith M 14. Write	ional pp a P case a PHP g Sta a PHP a prog a PHP er usin e a PHP er usin e a PHP er usin e a PHP redirec e a PHP n var ute MY ons. ute MY ons. ute MY ons. ute A fill SQL e a Ru	statemen HP program program tements. program gram in P program ng Forms P Form for e option. Login for ction optio P Admin iables. SQL-DDL SQL com SQL com SQL com SQL com	its. am for st to creato to desig HP for Ar to find t or Person m in serv on. login & lo ., DML an mands fo mands fo and data	and Ruby code and sign a login form using string function using eate a Timetable using sign a Visiting card. Array using Function. d the Factorial of a conal information data erver side validation an & logout option using and DCL commands. s for Aggregate s for String, Numeric a atabase connectivity generate the		
the catalog using Ruby. 17. Calculate the Total Price of Purchase and Display								

the items in the Cart using Ruby.								
18. Write simple Ruby programs that uses arrays.								
19. Write Ruby program which uses Math module to								
Create a Ruby program that read numbers from a								
text file line by line.								

Students will be able to

CO's	Course Outcomes
CLO1	Demonstrate the set up and configuration of development
	environment to write PHP and Ruby Scripts
CLO2	Select the appropriate language fundamentals and techniques
	to write and compile PHP and Ruby programs
CLO3	Examine the bugs and analyze how to prevent and remove the
	bugs
CLO4	Test and debug the application with sample inputs to check
	the correctness and consistency of the scripts
CLO5	Create simple programs that make use of various PHP and Ruby
	features and Functions and solve web application and database
	tasks using PHP

CO/PSO	PS	PS	PSO3	PSO4	PSO5	PS
-	0	0				0
	1	2				6
CLO1	3	3	3	1	2	3
CLO2	3	3	3	2	2	2
CLO3	3	2	3	З	2	2
CLO4	3	2	3	2	З	3
CLO5	3	3	3	3	2	3
Weightag						
e of	15	13	15	11	11	13
course						
contribut						
е						
to each						
PSO						

Title of	the Course	NETWORKS AND SECURITY								
P	aper	ELECTIVE								
Categor v	Elective	Year	I	Credits	3	Cour se		Cour P23IT		P23ITE22
		Semest er	Ι			Coc	le			
Instructional		Lecture	Tutorial		Lab		Total			
Hours	s per				Practice					
we	ek	4		1	-			5		
Pre-r	equisite	Basic knowledge about computer networks								
Objecti Cc	ves of the ourse	To understand the importance of networking and the basic model followed in network design and to understand necessary approaches and techniques to build protection mechanisms in order								

M.Sc. IT Syllabus - 2023

Course Outline	
	UNIT-I:
	Uses of Computer Networks – Network Hardware – Line
	Configuration – Topology – Transmission Modes –
	Reference Models: OSI Reference Model – TCP/IP
	Reference Model – Physical Layer: Guided Transmission
	Media – Wireless Transmission – Communication Satellites
	- Public Switched Telephone Network: Local Loop
	– Multiplexing – Switching
	UNIT-II:
	Data Link Layer: Design Issues - Error Detection and
	Correction - Network Layer : Design Issues - Routing
	Algorithms : Shortest Path Routing – Distance Vector
	Routing – Link State Routing – Broadcast Routing – Multicast
	Routing – Congestion Control
	UNIT-III:
	Network Layer in the Internet: IP Addresses – Transport
	Layer: Elements of Transport Protocols: Addressing –
	Connection Establishment –Connection Release–
	Application Layer: Domain Name System – Email:
	Architecture and Services
	Network Security: Introduction to Cryptography -
	Symmetric Key Cryptography -Asymmetric- Key
	Cryptography – Security Services: Message Confidentiality –
	Signature Entity Authentication Security in the
	Internet: ID Security - SSI /TI S: SSI services - SSI
	Protocols - Firewalls
	UNIT-V:
	Security for Wireless Networks: Introduction –
	Protecting the wireless networks – Physical Security –
	Authentication and access control- Smartphone Security:
	Security Threats - Steps to smartphone security –
	Websites and Web application Security: Definition –
	Available Technologies - Threats - Strategies.
	Case Study: To study recent Wi -Fi and Smartphone technologies
Extended	Questions related to the above topics, from variou
Professional	competitive examinations UPSC / TRB / NET / UGC - CSIR
Component	GATE / TNPSC / others to be solved
is a part of	(To be discussed during the Tutorial hour)
nternal	
component	
nlv, Not to	

he included	
in the	
External	
Examination	
auestion	
paper)	
Skills	Knowledge, Problem Solving, Analytical ability,
acquired from	Professional Competency, Professional Communication and
this course	Transferrable Skill
Recommende	 I.Andrew S.Tanenbaum, David J. Wetherall (2010), Computer Networks, Prentice Hall of India, V Edition. (Unit I - Unit- III) Unit I - Chapter 1,2 Unit II - Chapter 3,5 Unit III - Chapter 5,6,7 Behrouz A. Forouzan, (2016), Data Communications and Networking, Tata McGraw-Hill Publishing Company Limited, IV Edition. (Unit IV) Unit IV - Chapter 30, 31,32
Reference B	 CharlesP. Pfleeger, Shari Lawrence Pfleeger(2002), Security in Computing, 3rd Edition, Pearson Education. James F. Kurose, Keith W.Ross (2005), Computer Networking, 3rd Edition, Addison Wesley,. William Stallings (2006), Cryptography and Network Security: Principles and Practice, 3rd Edition, PHI.
Website a e-Learning S	 nd http://wndw.net/pdf/wndw3-en/ch09-security-for-wireless-networks.pdf(Unit V-Wireless Networks Security) https://www.fcc.gov/sites/default/files/smartphon e_mast er_document.pdf(Unit V- Steps to smart phone security) https://www.csoonline.com/article/3241727/mobile-security/6-mobile-security-threats-you-should-take-seriously-in-2019.html (Unit V – Smart Phone Security Threats) https://kgk.uni-obuda.hu/sites/default/files/12_Kadena.pdf (Unit V – Smart Phone Security Threats) https://www.goodfirms.co/glossary/web-security/ (Unit V – Web Security)

Students will be able to

CO's	Course Outcomes
CLO1	Outline the concepts and fundamentals of data communication and
	computer
	networks
CLO2	Identify the usage and importance of layered model, network
	security and web security
CLO3	Classify the techniques based on required application
CLO4	Analyze the significant applications of protocols and layers used in data
	communication and networking
CLO5	Explain the functionality of various techniques and algorithms that works
	at different layers

CO/PSO	PSO	PSO	PSO3	PSO4	PSO5	PSO
	1	2				6
CLO1	3	2	3	3	2	3
CLO2	3	2	2	2	2	2
CLO3	3	2	3	2	2	3
CLO4	3	2	2	2	3	2
CLO5	3	3	3	3	3	3
Weightage of course contribute to each PSO	15	11	13	12	12	13

Title of the Course		TRENDS IN COMPUTING							
Paper		ELECTIVE V							
Category	Elective	Year			Credits	3	Course		
							Code	е	
		Semeste	er					1	
Instruction	al Hours	Lecture		Tuto	rial	Lab Practi	се	Tota	
per week		4		1		-		5	
Pre-requisi	te	Basic ui issues	nder	standi	ng of com	puter netv	vorks	and	environmental
Objectives	Dbjectives of the Course The primary objective of this course is to give students:a)To understand the concepts and infrastructure of a computing and its business applications.b)To understand the scope, design and model of computingc)Knowledge about the reduction of energy use, waste other environmental impacts of Information Technology.					nts: cture of cloud model of grid use, waste, and on Technology			
	Cloud Computing : Basics: Overview – Applications – Intranets and the Cloud – First Movers in the Cloud – Organization and Cloud Computing: Benefits – Limitations – Security Concerns- The Business Case for Going to the Cloud: Cloud Computing Services - Deleting Datacenter.								
		UNIT-II : Hardware and Infrastructure: Clients – Security – Network – Services- Accessing the Cloud: Platforms - Cloud Storage: Overview – Cloud Storage Providers.							
	UNIT-III : Developing Applications: Google – Microsoft - Local Cloud and Thin Clients: Virtualization – Server Solutions – Thin Clients – Migrating to the Cloud.								
	UNIT-IV : Grid Computing: Introduction - Benefits – Grid Terms and Concepts: Types of Resources – Jobs and Applications –Scheduling, Reservation and Scavenging – Grid Software Components – Grid user role: User Perspective – Administrator Perspective - Design: Building grid architecture - Models – Topologies – Phases and Activities.								

	UNIT-V:					
	Green Computing: Introduction - History of Green Computing -					
	Regulations and Industry Initiative - The Demons behind Green					
	Computing - Approaches to Green Computing - Role of IT vendors					
	Green Computing Tips - Future is Green.					
Extended Professional	Questions related to the above topics, from various competitive					
Component (is a part of	examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC /					
internal component	others to be solved					
only, Not to be included	(To be discussed during the Tutorial hour)					
in the External						
Examination question						
paper)						
Skills acquired from this	Knowledge, Problem Solving, Analytical ability, Professional					
course	Competency, Professional Communication and Transferrable					
	Skill					
Recommended Text	1. Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, "Cloud					
	Computing - A practical Approach", McGraw Hill, 2010.					
	2. Bart Jacob, Michael Brown, Kentaro Fukui, and NiharTrivedi,					
	"Introduction to Grid Computing", IBM Redbook, 2005.					
Reference Books	1. George Reese, "Cloud Application Architectures: Building					
	Applications and Infrastructures in the cloud", O"Reilly Media					
	Inc., 2009.					
	2. Halper Fern, Kaufman Marcia, Bloor Robin, Hurwit Judith,					
	"Cloud Computing for Dummies ", Wiley India Pvt Ltd ,2009.					
	3. J. Velete, Anthony T. Velete, Robert Elsenpeter, "Green IT –					
	Reduce Your Information System"s Environmental Impact While					
	Adding to the Bottom Line", McGraw-Hill ,2008.					
	4. Bud E. Smith ," Green Computing: Tools and Techniques for					
	Saving Energy, Money, and Resources", Auerbach Publications,					
	2013.					
Website and	1. http://www.siteground.com/tutorials/cloud/cloud_computing_					
e-Learning Source	infrastructure.htm					
	2. http://thecloudtutorial.com/					
	3. http://studymatia.org/wp-content/uploads/2015/11/CSE-					
	Green-Computing-Report.pdf					
	4. http://www.znu.ac.ir/data/members/dastjerdi_mohammad/Bo					
	ok11.pdf (Unit IV)					
	 http://www.cs.kent.edu/~farrell/grid06/lectures/grid01.pdf 					
	(Unit V)					

Students will be able to

CO's	Course Outcomes
CLO1	Outline the history, applications, benefits and limitations of Cloud, Grid and Green computing
CLO2	Describe the cloud infrastructure services, virtualization and determine how applications can be developed using cloud services
CLO3	Identify cloud storage providers, software components of grid, technologies applied in building a green system and various key sustainability in Green IT Trends
CLO4	Analyse the migrations and security concerns of cloud, different grid models, resources and also identify how the distributed computing environments can be built from lower level services
CLO5	Assess the business cases of cloud, and also various laws, approaches and protocols for regulating green IT

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	2	1	1	1	1	1
CLO2	2	2	1	1	1	2
CLO3	3	3	2	2	2	3
CLO4	3	2	2	2	3	2
CLO5	3	3	2	2	3	3
Weightage of						
course	13	11	8	8	10	11
contribute to						
eachPSO						

Title of the		ADVANCED JAVA							
Course									
Number		CORE VII							
Catego	Core	Year II Credit 4 Cours							
ry		Somostor	TTT	s		е			
		Semester				Coc	le		
Instruct Hours	ional	Lecture	Tut	orial	Lab Practice	e	Tot	al	
per wee	k	4	1		-	-	5		
Pre-req	uisite	Basic underst	andin	g on Java	concepts	5	L		
Objectiv the Cou	ves of rse	To understan the Java lar dynamic Wel	To understand the basic concepts of core principles of the Java language and gain knowledge to develop dynamic Web applications using applet, servlet, jsp						
Course Outline		UNIT-I : The Genesis of Java: Java"s Magic, The Java Buzzwords- An Overview of Java - Data types, Variables, Arrays- Operators-Control Statements- Introducing Classes – A Close Look at Methods and Classes-Inheritance							
		UNIT-II: String Handling Functions – Collections Framework: Collection Classes, StringTokenzier, Date, Calendar – Abstract Classes – Packages and Interfaces: Packages – Access Protection Importing Packages – Interfaces							
UNIT-III : Exception Handling: Exception types – Creating your of exceptions - Multithreaded Programming: Creating a Thread, Creating Multiple Threads, Using isAlive() and join(), Thread Priorities, Synchronization, Inter-thread Communication, Suspending, Resuming and Stopping					g your own ating a /e() and r-thread topping				
		UNIT-IV : The Applet Class-Event Handling – Introducing the AWT: Working with windows, graphics and Text, Using AWT Controls, Layout Managers and Controls - Developing JavaServer Pages							
		UNIT-V: Developing Servlets -Structuring Web application with the MVC pattern – Sessions and Cookies - Using JSP tags with JavaBeans							

Extended Professional Component (is a part of internal component only, Not to be included in the External Examination question paper)	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)
Skills acquired from this	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill
Recommende d Text	 Herbert Schildt, (2004), "Java 2: The Complete Reference", Fifth Edition,Tata McGraw Hill,New Delhi. Joel Murach, (2008), "Andrea Steelman,,Murach"s Java Servlets and JSP", Second Edition,Shroff Publishers
Reference Books	 Matthew Mac Donald, (2002), "ASP.NET : The Complete Reference", MC Graw Hill. VladaMatena, (2003), "Applying Enterprise JavaBeans", Second Edition, Addison Wesley. Cay S Horstmann& Gary Cornell, Core Java Vol II Advanced Features, Eighth Edition, Addison Wesley. Bruce W Perry (2004), Java Servlets & JSP Cook Book, Second edition, O"reilly Media.
Website and e-Learning Source	 http://netbeans.org/kb/docs/javaee/javaee- intro.html http://www.jsptube.com/ http://articles.sitepoint.com/article/java-servlets-1 http://www.java-tips.org/java- tutorials/tutorials/introduction-to-java- servlets-with- netbeans.html http://download.oracle.com/javase/tutorial/javabea ns/index.html http://www.javapoint.com/steps-to-connect-to-the- datadase-in-java/ (Unit III: JDBC)

Students will be able to

CO's Course Outcomes

CLO1	Understand and explain programming language
	constructs, Java mechanisms, OOP and Internet
	programming concepts
CLO2	Apply logical constructs as well as include Object oriented
	features, Packages, Interfaces, Exceptions and Threads,
	JDBC, Internet programming technologies
CLO3	Compare and contrast classical and advanced Java in
	terms of features, architecture, platform and technologies
CLO4	Choose an approach to solve real world problem from the
	acquired knowledge of Java
CLO5	Create programs that make strong use of classes and
	objects and develop JDBC, GUI, Web and Enterprise based
	applications

CO/PS	PSO	PSO2	PSO3	PSO4	PSO5	PSO6
0	1					
CLO1	3	3	2	2	2	2
CLO2	3	3	2	3	3	2
CLO3	3	2	3	2	3	3
CLO4	3	2	3	2	3	3
CLO5	3	3	3	3	3	3
Weightag	4.5	12	12	10		12
eor	15	13	13	12	14	13
contribut						
e to						
eachPSO						

Title	of	the	ADVANCED JAVA - PRACTICAL							
Paper Number			CORE VIII							
Catego	Core		Year	II	Credit	4	Cours			
ry			Semes ter	III	S		e Code			
Instruct Hours	ional		Lecture	Tut	orial	Lab Practice	To	tal		
per wee	k		-	1		4	5			
Pre-req	uisite		Basic understanding of core Java, JSP and HTI					d HTML		
Objectiv	ves of	the	This cou	rse giv	/es pract	ical traini	ing in b	asics and		
Course			advanced Javaprogramming like applet, Servlets, JSP							
			and Java Beans							
Course Outline			1. Classes and objects							
			2. Implementing classes							
			3. Strings							
			4. CO	lection		_				
			5. Da	te and	Calendar	-				
			6. Pac	ckages	hondling					
			/. EX(eption	i nandiing	J				
			וווו . וחו ה							
			9. JDI 10 Apr	olote						
			10. AP	nt hai	ndlina					
			Servlet							
			1. Sin	nple W	eb Applic	ations				
			2. Usi	ng Ses	ssions and	d Cookies	5			
			3. Forwarding requests and Redirecting response							
			4. Web Applications using Database							
			Bean			-				
			1. De	velopir	ng Simple	Beans				
			2. Use	e Bean	s with JS	P tags				

Extended Professional Component (is a part of internal component only, Not to be included in the External Examination	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)
question paper)	Knowledge Dreblers Celving Analytical shility
this course	Rilowieuge, Problem Solving, Analytical ability, Professional Competency Professional
	Communication and Transferrable Skill
Recommended Text	 Herbert Schildt, (2004), "Java 2: The Complete Reference", Fifth Edition,Tata McGraw Hill,New Delhi. Joel Murach, (2008), "Andrea Steelman,,Murach"s Java Servlets and JSP", Second Edition,Shroff Publishers
Reference Books	Bruce W Perry (2004), Java Servlets & JSP Cook Book, Second edition, O"reilly Media.
Website and	1. http://netbeans.org/kb/docs/javaee/javaee-
e-Learning	intro.html
Source	 http://www.jsptube.com/ http://articles.sitepoint.com/article/iava-
	servlets-1
	 http://www.java-tips.org/java- tutorials/tutorials/introduction-to- java-servlets-with- netbeans.html http://download.oracle.com/javase/tutorial/java beans/index.html

Students will be able to

CO's	Course Outcomes					
CLO1	Demonstrate understanding and use of different Java					
	mechanisms for efficient application development					
CLO2	Use an appropriate development environment to write,					
	compile and run Java Programs					
CLO3	Analyze the problem and apply the appropriate problem					
	solving method with the required building blocks and					
	mechanisms of Core and Advanced Java					

CLO4	Test the correctness and consistency of the Java program with different inputs
CLO5	Create simple applications that make use of core java concepts and develop JDBC, GUI, Web and Enterprise based applications

CO/PS	PSO	PSO2	PSO3	PSO4	PSO5	PSO6
0	1					
CLO1	3	3	3	3	3	3
CLO2	3	3	3	3	2	2
CLO3	3	3	3	3	2	3
CLO4	3	3	3	2	3	3
CLO5	3	3	2	3	3	3
Weightag						
e of	15	15	14	14	13	14
course						
contribut						
e to						
eachPSO						

Title Course	of the	MOBILE DEVELOPMENT LAB						
Paper Number		CORE IX						
Catego	Core	Year	II	Credit	4	Cours		
ry		Semes ter	II	S		e Cod	le	
Instruct Hours	ional	Lecture	Tut	orial	Lab Practice	e	Tot	al
per wee	k	-	1		4	-	5	
Pre-rea	uisite		1 -		•		<u> </u>	
		Basic un	dersta	nding on	Java Proc	aram	mino	a
Objectiv Course	ves of the	To provide the students with the basics of Android Software Development tools, development of software on mobile platforms and deploying software to mobile devices.					f Android ment of deploying	
Course	Outline	 Develop an application that uses GUI components, Font and Colours Develop an application that uses Layout Managers ar event listeners. Write an application that draws basic graphical primitives on the screen. Develop an application that makes use of databases. Develop an application that makes use of Notification Manager. Implement an application that uses Multi-threading. Develop a native application that uses GPS location information Implement an application that writes data to the SD card. Implement an application that creates an alert upon receiving a message Write a mobile application to send an email. Develop a Mobile application for simple needs (M 					Managers and phical databases. Notification -threading. S location a to the SD alert upon se of RSS email. e needs (Mini	

Course Learning Outcome (for Mapping with POs and PSOs) Students will be able to

CO's	Course Outcomes						
CLO1	Demonstrate	the	setup	and	configuration	of	Android
	Development Environment.						
	I						

CLO2	Apply the necessary UI components with different styles,					
	themes, views, and layouts					
CLO3	Examine and implement the required services such as					
	messaging, mailing,					
	multimedia concepts for the given problem					
CLO4	Test and debug the Android applications with different inputs.					
CLO5	Create mobile applications that make use of various android					
	features, functions and database tasks					

CO/PS	PSO	PSO2	PSO3	PSO4	PSO5	PSO6
Ο	1					
CLO1	3	3	2	3	3	3
CLO2	3	3	3	2	3	3
CLO3	3	3	2	2	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	2	2	3	3
Weightag e of course contribut e to	15	15	12	12	15	15
eachPSO						

Course code		DIGITALIMAGEPROCESSING	L	Т	Р	С			
Core/Elective/S	Supportive	Core	4			4			
Pre-req	luisite	Digital Image Processing							
		Course Objectives:							
The main objectives of this course are to:									
 Learn basic image processing techniques for solving real problems. Gain knowledge in image transformation and Image enhancement techniques. Learn Image compression and Segmentation procedures. 									
		Course Outcomes:							
	On the s	uccessful completion of the course, student will be	able to):					
1 Underst	and the fun	damentals of Digital Image Processing			K	.K2			
2 Underst acquisit	and the mation, image t	thematical foundations for digital image representation, and image enhancement	ation, i	mage	K2	2,K3			
3 Apply, problem	3 Apply, Design and Implement and get solutions for digital image processing problems								
4 Apply t	4 Apply the concepts of filtering and segmentation for digital image retrieval								
5 Explore the concepts of Multi-resolution process and recognize the objects in an efficient manner						5,K6			
K1-	Remember;	K2-Understand;K3-Apply;K4-Analyze;K5-Evalu	ate; K	6-Cre	eate				
Unit:1		INTRODUCTION			12ho	ours			
Introduction: What is Digital image processing – the origin of DIP – Examples of fields that use DIP – Fundamentals steps in DIP – Components of an image processing system. Digital Image Fundamentals: Elements of Visual perception – Light and the electromagnetic spectrum – Image sensing and acquisition – Image sampling and Quantization – Some Basic relationship between Pixels – Linear & Nonlinear operations.									
Unit.?		IMACEENHANCEMENT			12h	MIRC			
Unit:2 INAGEENHANCEMENT I2hours Image Enhancement in the spatial domain:- Background – some basic Gray levelTransformations – - Histogram Processing – Enhancement using Arithmetic / Logic operations – Basics of spatial filtering – Smoothing spatial filters – Sharpening spatial filters – Combining spatial enhancement methods.									
Unit:3		IMAGERESTORATION			12ho	ours			
Unit:3IMAGERESTORATION12hoursImage Restoration: A model of the Image Degradation / Restoration Process – Noise models – Restoration is the process of noise only – Spatial Filtering – Periodic Noise reduction by frequency domain filtering – Linear, Portion – Invariant Degradations – Estimating the degradation function – Inverse filtering – Minimum mean square Error Filtering – Constrained least squares filtering – Geometric mean filter – Geometric Transformations.									

M.Sc., Information Technology - 2023 Unit:4 **IMAGECOMPRESSION** 11hours Image Compression: Fundamentals- Image compression models - Elements of Information Theory - Error Free compression - Lossy compression - Image compression standards. Unit:5 **IMAGESEGMENTATION** 11hours Image Segmentation: Detection and Discontinuities - Edge Linking and Boundary deduction -Thresholding – Region-Based segmentation – Segmentation by Morphological watersheds – The use of motion in segmentation. **Text Books** RafaelC.Gonzalez,RichardE.Woods,"DigitalImageProcessing",SecondEdition,PHI/Pearson 1 Education. 2 B.Chanda, D.DuttaMajumder, "DigitalImageProcessingandAnalysis", PHI, 2003. **ReferenceBooks** NickEfford, "DigitalImageProcessingapracticalintroducingusingJava", Pearson Education, 1 2004. Related Online Contents [MOOC, SWAYAM, NPTEL, Websitesetc.] https://nptel.ac.in/courses/117/105/117105135/ 1 2 https://www.tutorialspoint.com/dip/index.htm 3 https://www.javatpoint.com/digital-image-processing-tutorial **MappingwithProgrammingOutcomes PO1 PO2 PO3 PO4 PO5 PO6 PO8 PO9 PO10** Cos **PO7** S

CO1 S Μ S S S Μ S Μ Μ **CO2** S S S S S Μ S Μ S S S S S S S S **CO3** S Μ **CO4** S S S S S S S S Μ **CO5** S S S S S S S Μ S

*S-Strong;M-Medium;L-Low

S

S

S

S

Title Course	of the	RESEARCH METHODOLOGY						
Paper Number		ELECTIV	ELECTIVE V(EC5)					
Catego	Elective	Year		Credit	3	Со	urs	
ry			I	S		е		
		Semes	Ι			Co	de	
		ter						
Instruct	tional	Lecture	Tut	torial Lab Tota		Total		
Hours				Practice				
per wee	ek	4	1	1 - 5		5		
Pre-req	uisite	Basic critical and writing skills						
Objectiv Course	ves of the	To impart knowledge and skills required for research problem formulation, analysis, solutions, technical paper writing and drafting and filing patents.					for research technical paper	

Course Outline

UNIT-I :

Research Methodology: Objectives and motivation of research - Types of research - Research approaches - Significance of research - Research methods verses methodology - Research and scientific method - Importance of research methodology - Research process - Approaches of investigation of solutions for research problem, data collection, analysis, interpretation, necessary instrumentations- Criteria of good research. Defining the research problem: Definition of research problem - Problem formulation - Necessity of defining the problem - Technique involved in defining a problem.

UNIT-II :

Literature Survey and Data Collection: Importance of literature survey -Sources of information - Assessment of quality of journals and articles -Information through internet. Effective literature studies approaches, analysis, plagiarism, and research ethics. Data - Preparing, Exploring, examining and displaying.

UNIT-III :

Research Analysis and Design: Meaning of research design - Need of research design - Different research designs - Basic principles of experimental design - Developing a research plan - Design of experimental set-up - Use of standards and codes. Overview of Multivariate analysis, Hypotheses testing and Measures of Association. Presenting Insights and findings using written reports and oral presentation.

UNIT-IV :

Intellectual Property Rights: Nature of Intellectual Property: Patents, Designs, Trade and Copyright- Process of Patenting and Development: technological research, innovation, patenting, development- Role of WIPO and WTO in IPR establishments, Right of Property, Common rules of IPR practices, Types and Features of IPR Agreement, Trademark, Functions of UNESCO in IPR maintenance.

UNIT-V:

Patent Rights: Scope of Patent Rights- Licensing and transfer of technology-Patent information and databases- Geographical Indications -New Developments in IPR: Administration of Patent System, IPR of Biological Systems, Computer Software etc. Traditional knowledge Case Studies, IPR and IITs -Licenses, Licensing of related patents, patent agents, Registration of patent agents.

Extended Professional Component (is a part of internal component only, Not to be included in the External Examination	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)
Skills acquired from	Knowledge, Problem Solving, Analytical ability,
this course	Professional Competency, Professional Communication and Transferrable Skill
Recommended Text	 R. Ganesan, "Research Methodology for Engineers", MIP Publishers, Chennai, 2011. Catherine J. Holland, "Intellectual property: Patents, Trademarks, Copyrights, Trade Secrets", Entrepreneur Press, 2007.

Reference Books	 Peter S. Menell ,Mark A. Lemley, Robert P. Merges, "Intellectual Property in the New Technological "Vol. I Perspectives, 2021. Laura R. Ford,"The Intellectual Property of Nations: Sociological and Historical Perspectives on a RatanKhananabis and SuvasisSaha, "Research Methodology", Universities Press, Hyderabad, 2015. David Hunt, Long Nguyen, Matthew Rodgers, "Patent searching: tools & techniques", Wiley, 2007. Ranjit Kumar, 2nd Edition, "Research Methodology: A Step by Step Guide for beginners" 2010
Website and e-Learning Source	 https://www.coursera.org/courses?query=resea rch%20methodology https://www.researchgate.net/topic/Research- Methodology https://www.wto.org/english/tratop_e/trips_e/i ntel1_e.htm https://www.isical.ac.in/~palash/research- methodology/RM-lec9.pdf https://mrcet.com/downloads/digital_notes/CSE /Mtech/I%20Year/RESEARCH%20METHODLOGY .pdf

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes						
CLO1	Understanding of research, IPR and patent fundamentals						
CLO2	Identify the issues involved in research, IPR and patent filing						
CLO3	Apply suitable instrumentation and sampling techniques for the research studies and recognize the framework for protecting IPR and process for obtaining patents						
CLO4	Analyze data, and interpret research findings using appropriate methods and importance of IPR and patent protection in promoting research and development						
CLO5	Design and develop research reports, research proposals, academic papers and patents						

CO/P	PSO	PSO	PSO3	PSO4	PSO5	PSO
SO	1	2				6

CLO1	3	1	2	3	2	2
CLO2	3	2	2	3	3	2
CLO3	3	2	2	2	3	3
CLO4	3	3	2	3	3	3
CLO5	3	3	3	2	3	3
Weighta ge of	15	11	11	13	14	13
course contribu						
te to eachPSO						

Title of the Course		INTERNET OF THINGS						
Paper Num	ıber	ELECTIVE V (EC5)						
Category	Elective	Year	1	Credits	3	Cou	rse e	
		Semester	<u> </u>			cou	C	
Instruction	al Hours	Lecture	Tuto	rial	Lab Practi	се	Tota	l
per week		4	1		-		5	
Pre-requisi	te	Basic unden networking	erstandi g concep	ing of cor ots	nputer hai	rdwar	e coi	mponents and
Objectives	of the Course	The primar	y objec	tive of this	course is to	impa	art the	knowledge on
		IoT Archite	cture, P	rotocol, vai	rious techno	ologie	s and	the application
Course Out	lino	areas relati	ng to lo	i implemei	ntations.			
course Ou	line							
		Introdu	ction t	o loT - li	ntroduction	to	Interr	net of Things:
		Introdu	ction- P	hysical Des	sign of IoT-	Logic	al De	sign of IoT- IoT
		Enablin	Enabling Technologies - IoT Levels & Deployment Templates					
		UNIT-II	:					
		Domain Specific IoT: Introduction-Home Automation-Cities-						
		Environment-Energy-Retail- Logistics-Agriculture-Industry-						
		Differer	a Lite	veen loT an	anu iviziv d M2M - SP	n: In)N an	d NEV	for IoT
		UNIT-III	:					
		M2M	to loT	- An Arc	chitectural	Ove	rview:	Building an
		Archited	cture-M	ain design	principles a	nd ne	eeded	capabilities-An
		IoT Architecture Outline- Standard Considerations. M2M and						
		IoT Technology Fundamentals: Devices and Gateways-Local and						
		wide area Networking-Data Management.						
		UNII-IV:						
		Referen	ice Mo	del and Arc	chitecture-	IoT R	eferer	nce Model: IoT
		Domain	Mo	del-Informa	ation Mo	odel-F	unctio	onal Model-
		Communication Model-Safety, Privacy, Trust, Security Model						
		IoT.						
		UNIT-V:						
		Implem Motorin	entatio	n Examples	Strine Smar	τ Gri	a-Intro	Souction-Smart
		Comme	ercial Bu	ilding autor	mation toda	iv and	l in th	e future.
		Commercial Building automation today and in the future.						

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Extended Professional	Questions related to the above topics, from various competitive
Component (is a part of	examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC /
internal component	others to be solved
only, Not to be included	(To be discussed during the Tutorial hour)
in the External	
Examination question	
paper)	
Skills acquired from this	Knowledge, Problem Solving, Analytical ability, Professional
course	Competency, Professional Communication and Transferrable Skill
Recommended Text	1. ArshdeepBahga, Vijay Madisetti, —Internet of Things – A
	hands-on approach, Universities Press, 2015 (Unit I and II)
	2. Jan Holler, Vlasios siatsis, Catherine Mulligan. Stamatis.
	Karnouskos, Stefan Avesand, David Boyle, "From Machine-
	to-Machine to the Internet of Things – Introduction to a
	New Age of Intelligence" Flsevier 2014(Unit III IV and V)
Reference Books	1 David Hanes Gonzalo Salgueiro Patrick Grossetete Rob
	Barton and Jerome Henry — JoT Fundamentals: Networking
	Technologies Protocols and Use Cases for Internet of
	Things Cisco Press 2017
	2 Olivier Hersent David Boswarthick Omar Elloumi — The
	2. Olivier Hersent, David Boswartnick, Onlar Ellouth, — The
	and Protocols, whey,
	2012 1 Distor Habelmann, Mark Harrison, Mishahallas, Flavian
	1. Dieter Uckelmann, Mark Harrison, Michanelles, Florian
	(Eas), —Architecting the internet of Things, Springer, 2011.
Website and	1 https://www.tutorialspoint.com/interpot_of_things/
	2 https://www.iuionaispoint.com/internet_or_inings/
C-Leanning Source	2. mtps.//www.geeksioigeeks.org/introduction-to-internet-
	UI-UIIIIgs-IUI-SEL-1/
	 a. https://www.slidesnare.net/khusuma/domain-specific- iot(Unit-II)
	4. https://www.slideshare.net/PascalBodin/an-introduction-
	to-m2m-iot-technologies(Unit -III)
	5. https://www.smartgrid.gov/the_smart_grid/smart_grid.ht
	ml

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Outline the fundamental concepts and Terminologies of IoT
CLO2	Determine the IoT enabling technologies, M2M and IoT, fundamentals and technological challenges faced by IoT in terms of Safety, privacy and trust
CLO3	Identify the different levels, models and standards of IoT and application areas in domain specific IoT
CLO4	Analyze the physical design, logical design, architecture Overview of M2M and IoT and reference models of IoT Architecture
CLO5	Assess the application areas and illustrate the implementation of IoT

CO/PSO	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6
CLO1	3	2	2	2	2	3
CLO2	3	2	2	2	3	3
CLO3	3	3	2	2	3	3
CLO4	3	3	2	3	2	2
CLO5	3	3	3	3	3	3
Weightage						
of course	15	13	12	12	13	14
contribute						
to eachPSO						

Title Course	of the	NME – In	nage	Editing a	nd Anim	natio	on		
Paper N	umber	CORE IX							
Catego	NME	Year	II	Credit		Cours e			
ry		Semes	III	S					
		ter				Co	je		
Instructional Hours		Lecture	Tut	orial	Lab Tota Practice		al		
per wee	k	-							
Pre-req	uisite								
		Basic und	dersta	nding on	Java Proc	<u>jram</u>	mino	<u>j</u>	
Objectiv	es of the	To provid	de the	students	s with the	e ba	sics	of image	
Course	0	editing a	na De	velopmen		ار م ح	-اربر ام	ite in	
Course	outline		ert a (color phot	to to blac	к ап	a wh	iite in	
			ushop.	Daconor	t cizo Dha	to o	יבח	max cizo	
		2. TO ut	r r	a rasspor			nai		
		3. To cr	reate a	Blur effe	ect usina a	anvi	imad	ie in	
		photoshop.							
		4. Create the Text Effects with Blending options.							
		5. Create the image with coloured Pencil Effect in							
		Photoshop.							
		6. Create the image with Sketch Effect in Photoshop.							
		7. Creat	te the	image wi	th Light E	Effec	t in p	photoshop.	
		8. Create a animation program for Moving a ball.							
		9. Create a animation program for Growing a moon.							
		10. Create a animation program for Bouncing a ball.							
		11. Create a animation program for Shape tween.							
		12. Create a animation program for Text tween.							
		animation							
		14. Cre	eate a	animatio	n proaran	n for	Wat	terfall	
		animation.							
		15. Cre	eate a	animatio	n progran	n for	Side	ewalk	
		anim	ation.		·				
		16. Cre	eate a	animatio	n progran	n for	Raiı	n animation.	
		17. Cre	eate a	animatio	n progran	n for	· Mov	/ing a car.	
		18. Cre	eate a	animatio	n progran	n for	Sea	Wave	
		anim	ation.	o pine e ti -		~ £	C	w fall	
		19. Cre	ation	animatio	n progran	II TOP	500	owiali	
		animation.							
		animation							
L		umm	acioni						

Course Learning Outcome (for Mapping with POs and PSOs) Students will be able to

CO's	Course Outcomes
CLO1	Demonstrate the setup and configuration of image editing environment.
CLO2	Apply the necessary UI components with different styles, themes, views, and layouts
CLO3	Examine and implement the required services for image animation techniques
CLO4	Test with various types of images
CLO5	Create different varieties of images with many attractive animation effects

CO/PS	PSO	PSO2	PSO3	PSO4	PSO5	PSO6
0	1					
CLO1	3	3	2	3	3	3
CLO2	3	3	3	2	3	3
CLO3	3	3	2	2	3	3
CLO4	3	3	3	3	3	3
CLO5	3	3	2	2	3	3
Weightage of course contribute to each PSO	15	15	12	12	15	15

Title Course	of the	.NET WITH C# PROGRAMMING							
Paper Number		CORE XI							
Catego Core		Year	II	Credit	4	Co ι	ırs		
гy		Semes ter	IV	5		e Coo	le		
Instructional Hours		Lecture	Tutorial		Lab Practice		Total		
per wee	k	4	1		- !		5		
Pre-requisite		Basic understanding on object oriented programming with IDEs							
Objectiv Course	ves of the	To unders programm Pages whi with SQL	stand ning ich pr Serve	the bas and the ovide suf er using M	sics strue compone ficient kn 1icrosoft	cture ents d iowle ADO.	e of C# of Active Server edge to work NET		

Course Outline

UNIT-I:

The C# Language : Basics- Variables and Data Types - Variable Operations - Object Based Manipulation - Conditional logic - Loops -Methods - Types, Objects and Namespaces- Delegates.

UNIT-II:

ASP.Net 4.5 Essentials: Introduction to .NET : Benefits of .NET Framework - **Overview of**

.NET Framework 4.5 : Common Language Runtime - Common Type System - Metadata and Assemblies- Introduction to visual studio 2012 IDE: Exploring Visual Studio 2012 IDE - **ASP.NET 4.5 Overview:** ASP.NET Life cycle: Life cycle of an ASP.Net web page- **Developing a Web Application:** File Types in ASP.NET 4.5- Exploring ASP.NET web pages - Understanding ASP.NET 4.5 Directives-**Application structure and State:** The Global.asax Application File- Using states: Application State- Session State-View State-Cookies- Postback and Cross-page posting.

UNIT-III:

Web Forms: Standard controls: Label control-Button Control-TextBox Control-Literal Control- PlaceHolder Control- HiddenField Control -Navigation controls: TreeView, Menu and SiteMapPath - Validation controls -**Rich controls**: Calendar Controls- AdRotator control.

UNIT-IV :

LINQ Queries : Standard Query operators: Filtering operators- Projection operators-Sorting operators-Grouping operators-set operators-Aggregate operators -Lambda Expressions - **Working with Login controls:** Login control- Password Recovery control - Create User Wizard control-Change Password control

UNIT-V:

ADO.NET Fundamentals: Configuring your Database - ADO.NET Basics-Direct Data Access - Disconnected Data Access -**Data Binding :** Data Binding with ADO.NET- Data Source Controls - **The Data Controls :** The GridView - Formatting the GridView - Selecting a GridView Row- Editing, Sorting and Paging the GridView- Crystal Report

Extended Professional Component (is a part of internal component only, Not to be included in the External Examination question paper)	Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)
Skills acquired from this course	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill
Recommended Text	 Kogent (2013), ASP.NET 4.5 Black Book – DreamtechPress,New Delhi (Unit 2,3,4) Matthew MacDonald (2010), Beginning ASP.NET 4 in C#, Apress.(Unit 1,5)
Reference Books	 Greg Buczek(2002), ASP.NET Developer"s guide, Tata McGraw Hill Publications. Jesse Liberty, (2002), Programming C#, 3.0, O"Reilly Press. J.Sharp, (2009), Microsoft Visual C# 2008 Step by Step, PHI Learning Private Ltd. Christian Nagel et al., (2007), Professional C# 2005 with .NET 3.0, Wiley India. Herbert Schildt,(2010), C# 4.0 The Complete Reference, Tata McGraw Hill Publications

Website and	1. www.homeandlearn.co.uk/csharp/csharp.html
e-Learning Source	 http://msdn.microsoft.com/en- us/library//aa645596.aspx http://www.csharpkey.com/csharp/ http://www.w3schools.com/aspnet/default.asp http://www.maconstateit.net/tutorials/ASPNET20/ default.htm http://csharp- station.com/Tutorial/AdoDotNet/Lesson01 (Unit V : ADO.NET Fundamentals) http://www.c- sharpcorner.com/UploadFile/009464/use- crystal-report-in-Asp-Net-using-C- Sharp/

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes									
CLO1	Outline the features of C# and ASP.NET concepts to understand the real time applications									
CLO2	Identify the salient properties of C# programming concepts and ASP .NET Application									
CLO3	List the various stages involved in creating a web form									
CLO4	Select the appropriate web controls to develop the web forms									
CLO5	Construct a database driven web applications with the facilitated web services.									

CO/P	PSO	PSO	PSO3	PSO4	PSO5	PSO
SO	1	2				6
CLO1	3	3	3	3	3	3
CLO2	3	3	3	3	3	2
CLO3	3	3	2	3	3	2
CLO4	3	3	2	3	3	3
CLO5	3	3	3	3	3	3
Weighta						
ge of	15	15	13	15	15	13
course						
contribu						

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te to eachPSO						
other Teresa Wo	men's University, Ko	odaikanal.		71 P a g e		

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			NET WITH C# PROGRAMMING - PRACTICAL							
Title Course	of	the								
Paper N	umber	•	CORE XI	I						
Catego	Core		Year	II	Credit	4	C οι	ırs		
ry			Semes ter	IV	S		e Coc	le		
Instruct Hours	ional		Lecture	Tut	orial	Lab Practice		Total		
per wee	k		-	1		4		5		
Pre-req	Pre-requisite		Basic und ASP	dersta	nding on	the conco	ept li	ike (C, C++, C#,	
Objectiv Course	ves of	the	To provide sufficient knowledge in developing web applications and tomanipulate data from SQL Server using Microsoft ADO.NET							
Course Outline		1. C# 2. Del 3. Lar 4. LIN 5. Usa 6. Usa 7. Wo 8. Me 9. Coo 10. Dev Gri 11. Cre	Basics legates nbda B IQ age of rking nu Cor okies, velopir d eating	s Expressio Web Sev AdRotato with Valio ntrol View stat ng Databa Crystal R	ns er Contro or, Calend lation cor e, Sessio ase Applic eport	ols lar Co ntrols n cation	ontro s	ols sing Data		
Extended Professional Component (is a part of internal component only, Not to be included in the External Examination question paper)			Questions related to the above topics, from various competitive examinations UPSC / TRB / NET / UGC – CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)							
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Skills acquired from this course	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill						
Recommended Text	Kogent (2013), ASP.NET 4.5 Black Book – DreamtechPress,New Delhi						
Reference Books	Herbert Schildt, (2010), C# 4.0 The Complete Reference, Tata McGraw Hill Publications.						
Website and	http://www.csharpkey.com/csharp/						
e-Learning Source	http://www.w3schools.com/aspnet/default.asp						

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes
CLO1	Demonstrate simple programs using C# programming concepts such as classes, objects, method overloading
CLO2	Solve complex programs using delegates, Lambda expression and LINQ
CLO3	Analyze the usage of web server controls, calendar controls, validation controls and menu controls in asp.net application
CLO4	Evaluate the role of Cookies, View state and Session state in creating an web Application
CLO5	Design a data driven web application by connecting to the data sources

CO/P	PSO	PSO	PSO3	PSO4	PSO5	PSO
SO	1	2				6
CLO1	3	3	3	2	3	3
CLO2	3	3	3	3	2	3
CLO3	3	3	3	3	3	2
CLO4	3	3	3	3	3	2
CLO5	3	3	3	3	3	3
Weighta	15	15	15	14	14	12
course contribu	15	13	15	14	14	13
te to eachPSO						

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Title Course	of the	DATA SCIENCE							
Paper Number		CORE XIII							
Catego	Core	Year	II	Credit	4	Cou	ırs		
ГУ		Semes ter		5		e Coo	le		
Instructional Hours		Lecture	Tutorial		Lab Practice		Total		
per week		4	1		-		5		
Pre-requisite Basic understanding on Mach					Machine	learr	ing concepts		
Objectives of the CourseTo Understand the basics of data science and per data analysis, Data mining tasks & techniques					nce and perform chniques				

Course Outline

UNIT-I:

Introduction: Data Mining – Kinds of Data and Patterns to be Mined – Technologies used – Kinds of Applications are Targeted - Major Issues – Data objects and Attribute types – Basic statistical Descriptions of Data – Data Visualization - **Data Preprocessing:** Data Cleaning – Data Integration - Data Reduction - Data Transformation

UNIT-II :

Classification: Basic concepts - Decision Tree Induction: Working of Decision Tree - Building Decision Tree - Methods for Expressing Attribute Test Conditions - Measures for Selecting the Best Split - Algorithm for Decision Tree Induction – Classification: Alternative Techniques: Rule - Based Classifier– Nearest Neighbour Classifier - Bayesian Classifiers.

UNIT-III:

Association Analysis: Basic Concepts - Frequent Itemset Generation -Rule Generation - Compact Representation of Frequent Item sets –FP Growth Algorithm

UNIT-IV :

Cluster Analysis: Introduction-Desired Features of Cluster Analysis -Types of Data- Computing Distance - Types of Cluster Analysis Methods -Partitioning Methods - Hierarchical Methods - Density - Based Methods -Cluster Analysis Software

UNIT-V: Web Data Mining: Introduction - Web terminology and characteristics - Locality and Hierarchy in the web- Web Content Mining - Web Usage Mining - Web Structure Mining – Web Mining- softwareExtended Professional Component (is a part of internal component only, Not to be included in the External Examination question paper)Questions related to the above topics, from variou competitive examinations UPSC / TRB / NET / UGC CSIR / GATE / TNPSC / others to be solved (To be discussed during the Tutorial hour)				
Skills acquired from this course	Knowledge, Problem Solving, Analytical ability, Professional Competency, Professional Communication and Transferrable Skill			
Recommended Text	 Vipin Kumar - Michael Steinbach - Pang - Ning Tan (2006) - Introduction to Data Mining - Pearson Education. (Unit II: Chapters 4 & 5; Unit III: Chapter 6) Jiawei Han and Micheline Kamber - (2012) - Data Mining Concepts and Techniques - Third Edition - Morgan Kaufmann. (Unit I : Chapters 1, 2 &3;) G.K. Gupta, "Introduction to Data mining with case studies", 2nd Edition, PHI Private limited, New Delhi, 2011. (Unit IV: Chapter 4, Unit V: Chapters 5) 			
Reference Books	 Bhavani M. Thuraisingham - Data Mining: Technologies - techniques - tools and trends - CRC Press Yanchang Zhao (2012 - 2013) - R and Data Mining: Examples and Case Studies - Elsevier. Robert I. Kabacoff (2011) - R in Action Data analysis and graphics with R - Manning Publications. Samir Madhavan, "Mastering Python for Data Science", Packet Publishing, 2015. 			

Website and	1.	
o-Loorning		http://www.thearling.com/text/dmwhite/dmwhite.
e-Leanning Source		<u>htm</u>
Source	2.	http://oai.dtic.mil/oai/oai?verb=getRecord&metad
		ataPrefix=html&identifier=AD0770256
	3.	https://www.datamentor.io/r -
		programming#tutorial
	4.	http://www.csis.pace.edu/~ctappert/cs816-
		15fall/books/2015DataScience&BigDataAnalytics.p
		df
	5.	http://www.rdatamining.com/
	6.	https://www.analyticsvidhya.com/blog/2016/02/co
		mplete - tutorial - learn - data - science - scratch/
	7.	https://www.tutorialspoint.com/data_mining/dm_c
		lassification prediction.htm (Classification)

Course Learning Outcome (for Mapping with POs and PSOs)

Students will be able to

CO's	Course Outcomes								
CLO1	Outline the basics in data science								
CLO2	Identify suitable technique for the given problem								
CLO3	Analyse and formulating data for the problem under consideration								
CLO4	Interpret and demonstrate the knowledge of data analysis techniques in decision making								
CLO5	Develop the model using data mining and computing techniques								

CO/P	PSO	PSO	PSO3	PSO4	PSO5	PSO
SO	1	2				6
CLO1	3	3	2	2	3	3
CLO2	3	2	3	2	3	3
CLO3	3	2	3	2	2	1
CLO4	3	3	3	3	3	3
CLO5	3	2	3	3	3	3
Weighta ge of course contribu te to eachPSO	15	12	14	12	14	13

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