



SCHOOL OF ENGINEERING AND TECHNOLOGY Master of Science (Computer Science)

Programme Code: SET0127 Duration- 2 Years Full Time

PROGRAM STRUCTURE AND CURRICULUM & SCHEME OF EXAMINATION 2020



1.1 Vision, Mission and Core Values of the University

Vision of the University

To serve the society by being a global University of higher learning in pursuit of academic excellence, innovation and nurturing entrepreneurship.

Mission of the University

- 1. Transformative educational experience
- 2. Enrichment by educational initiatives that encourage global outlook
- **3.** Develop research, support disruptive innovations and accelerate entrepreneurship
- 4. Seeking beyond boundaries

Core Values

- Integrity
- Leadership
- Diversity
- Community

Note: Detailed Mission Statements of University can be used for developing Mission Statements of Schools/ Departments.



Vision of the School

To become a globally acclaimed institution of higher learning in engineering and technology promoting excellence in research, innovation and entrepreneurship

Mission of the School

- 1. To impart quality education with strong industry & academic connectivity in the expanding fields of Engineering and Technology in a conductive and enriching learning environment.
- 2. To product technocrats equipped with technical & soft skills and experiential learning required to stay current with the modern tools in emerging technologies to fulfill professional responsibilities and uphold ethical values.
- **3.** To inculcate a culture of interdisciplinary research, innovation and entrepreneurship to provide sustainable solutions to meet the growing challenges and societal needs.
- 4. To foster collaborative learning and to play adaptive leadership role in professional career and pursuit of higher education through effective mentoring and counseling.

Core Values

- Industry & Academic Connectivity
- Experiential learning
- Interdisciplinary research
- Global



1.2 Vision and Mission of the Department

Vision of the Department

To be recognized as the fountainhead of excellence in technical knowledge and research in computer science and engineering to attract students and scholars across the globe

Mission of the Department

- 1. To strengthen core competency of students to be successful, ethical, effective problem solver in Computer Science & Engineering through analytical learning.
- 2. To promote interdisciplinary research & innovation-based activities in emerging areas of technology globally
- **3.** To facilitate and foster the industry-academia collaboration to enhance entrepreneurship skills and acquaintance with corporate culture.
- 4. To inculcate in them a higher degree of social consciousness and moral values towards solving interdisciplinary societal problems using industry-academia collaboration

Core Values

- Competency
- Global
- Entrepreneurship Skills
- Interdisciplinary research



1.3 Programme Educational Objectives (PEO)

1.3.1 Writing Programme Educational Objectives (PEO)

Program educational objectives are broad statements that describe the career and professional accomplishments that the program is preparing graduates to achieve.

The Program Educational Objectives (PEOs) of UG Program in Computer Science & Engineering are:

PEO-1 The graduates will establish themselves as professionals by solving real-life problems using exploratory and analytical skills acquired in the field of Computer Science and Engineering.

PEO-2 The graduates will provide sustainable solutions to ever changing interdisciplinary global problems through their Research & Innovation capabilities.

PEO-3 The graduates will become employable, successful entrepreneur as an outcome of Industry-Academia collaboration.

PEO-4 The graduates will embrace professional code of ethics while providing solution to multidisciplinary social problems in industrial, entrepreneurial and research environment to demonstrate leadership qualities

Methods of Forming PEO's

STEP 1 :	The needs of the Nation and society are identified through scientific
	publications, industry interaction and media.
STEP 2.	Taking the above into consideration, the PEOs are established by the

- Coordination Committee of the department.
- STEP 3. The PEOs are communicated to the alumni and their suggestions are obtained.
- STEP 4. The PEOs are communicated to all the faculty members of the department and their feedback is obtained.
- STEP 5. The PEOs are then put to the Board of Studies of the department for final approval.

[Note: Prepare a file for the same, how you arrive for PEO's]



1.3.2 Map PEOs with Mission Statements:

DEPARTMENT PEOs DEPT OF CSE MISSION STATEMENTS	1. The graduates will establish themselves as professionals by solving real-life problems using exploratory and analytical skills acquired in the field of Computer Science and Engineering.	2. The graduates will be able to provide sustainable solutions to ever changing interdisciplinary global problems through their Research & Innovation capabilities.	3. The graduates will become employable, successful entrepreneur and innovator as an outcome of Industry- Academia collaboration.	4. The graduates will be able to embrace professional code of ethics while providing solution to multidisciplinary social problems in industrial, entrepreneurial and research environment to demonstrate leadership qualities.	
1. To strengthen core competency of students to be successful, ethical, effective problem solver in Computer Science & Engineering through analytical learning.	3	3	2	2	10/12
2. To promote interdisciplinary research & innovation based activities in emerging areas of technology globally.	2	3	2	2	9/12
3. To facilitate and foster the industry- academia collaboration to enhance entrepreneurship skills and acquaintance with corporate culture.	2	2	3	3	10/12
4: To inculcate in them a higher degree of social consciousness and moral values towards solving interdisciplinary societal problems using industry-academia collaboration	2	2	2	3	9/12
	9/12	10/12	9/12	10/12	83%

Enter correlation levels 1, 2, or 3 as defined below:

1. Slight (Low) 2. Moderate (Medium) 3. Substantial (High)

If there is no correlation, put "-"



1.3.3 Program Outcomes (PO's)

PO1:	Computing Knowledge:	Ability to develop and implement optimal solutions to complex computing problems using industry-recognized best practices and standards.
PO2:	Problem Analysis:	Apply problem-solving and technical skills to analyze complex problems and propose feasible computing solutions using fundamental principles of mathematics and computing sciences.
PO3:	Design/Developmen t of Solutions:	Design and develop the solutions to practical and complex engineering problems for welfare of society.
PO4:	Research and Development:	Apply research-based knowledge and methodologies to analyze the problem, interpretation of data and synthesis of the information using technical tools.
PO5:	Modern Tool Usage:	Create, select, and apply appropriate techniques, resources, and modern IT tools including application and modeling to computer applications with an understanding of the limitations.
PO6:	Innovation and Entrepreneurship:	Use innovative approach to develop opportunities to create value and wealth for the betterment of the individual and society at large.
PO7:	Environment and Sustainability:	Understand the impact of the professional system solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8:	Personal and Professional Ethics:	Apply ethical decision making in the development, implementation, and management during professional life.
PO9:	Communication:	Ability to communicate effectively in both manner, verbally and written, to provide integrated solution to customers/users or peers.
PO10:	Life-Long Learning:	Continue the process of life-long learning through professional activities; adapt themselves with ease to new technologies,
PSO1:	Computer Science	Use and apply current technical concepts and practices in the core areas of computer science, i.e. networking, data management, software engineering, computer security and artificial intelligence.
PSO2:	Information Technology	To cater to the demands of the IT and IT-enabled sectors through strong theoretical foundation with high quality teaching complemented with extensive practical training.



1.3.4 Mapping of Program Outcome Vs Program Educational Objectives

Mapping	PEO1	PEO2	PEO3	PEO4
PO1:	3	3	2	1
PO2:	3	3	3	1
PO3:	2	2	3	3
PO4:	2	3	2	2
PO5:	1	2	2	3
PO6:	1	1	2	3
PO7:	1	1	2	3
PO8:	1	1	3	2
PO9:	3	2	3	1
PO10:	2	3	1	1
PSO1:	2	3	1	3
PSO2:	3	3	2	2

1. Slight (Low)

2. Moderate (Medium)

3. Substantial (High)



1.3.5 Program Outcome Vs Courses Mapping Table¹:

1. Slight (Low)

2. Moderate (Medium)

3. Substantial (High)

¹ Cel value will contain the correlation value of respective course with PO.



1.3.5.2 COURSE ARTICULATION MATRIX²

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

² Each course outcome (Based on Blooms Taxanomy-CO1, CO2, CO3, CO4, CO5, and CO6) of the course needs to map with PO. This table evolves once faculty has mapped each course outcomes of their respective course with PO's.



Course Outcome

- **Course Outcomes**–What is it?
 - Course outcomes (COs) are clear statements of what a student should be able to demonstrate on completion of a course.
 - COs should be assessable and measurable knowledge, skills, abilities and attitudes that student attains by the end of the course.
 - It is generally good idea to identify between 4 and 7 outcomes.
 - All courses in a particular programme shall have their own PO.
 - Each CO is mapped to relevant PO.
 - The teaching learning process and assessment process are to be designed in a way to achieve the COs.

Beginning words for Course Outcome:

Knowledge	Understand	Apply	Analyze	Evaluate	Create
define identify describe label list name state match recognize select examine locate memorize quote recall reproduce tabulate tell copy discover duplicate	explain describe interpret paraphrase summarize classify compare differentiate discuss distinguish extend predict associate contrast convert demonstrate estimate express Identify indicate Infer relate	solve apply illustrate modify use calculate change choose demonstrate discover experiment relate show sketch complete construct dramatize interpret Manipulate Paint Prepare produce	analyze compare classify contrast distinguish infer separate explain select categorize connect differentiate discriminate divide order point out prioritize subdivide survey advertise appraise	reframe criticize evaluate order appraise judge support compare decide discriminate recommend summarize assess choose convince defend estimate find errors grade measure predict raok	design compose create plan combine formulate invent hypothesize substitute write compile construct develop generalize integrate modify organize prepare produce rearrange rewrite

Active verbs developed based on Bloom's Taxonomy

(Reference: Retrieved from <u>http://www.teachthought.com/learning/249-blooms-taxonomy-verbs-for-critical-thinking/</u>)



	School of Engineering and Technology									
	Department Of Computer Science & Engineering									
	M.Sc in Computer Science/ Information Technology									
	Batch: 2020 Onwards TERM: I									
S No	Course Code	Courso	Teac	hing l	Load	Crodite	Pro-Roquisito/Co Roquisito			
5. 110.	Course Coue	Course	L	Т	Р	Creuits	Tre-Requisite/Co Requisite			
THEO	RY SUBJECTS	5								
1	MCT111	Database Management Systems	3	0	0	3	`			
2	MCT112	Object Oriented Programming with JAVA	3	0	0	3				
3	MCT113	Information Security and Cyber Laws	3	0	0	3				
4	MCT114	Operating Systems	3	0	0	3				
5	MCT115	Computer Networks	3	0	0	3				
Practic	al/Viva-Voce/J	ury								
6	ARP203	Aptitude Reasoning and Business Communication Skills - Basic	1	0	2	2				
7	MCL111	Database Management Systems Lab	0	0	2	1				
8	MCL112	Object Oriented Programming with JAVA Lab	0	0	2	1				
9	9 MCL114 Operating Systems sing Linux Lab		0	0	2	1				
9	9 MCL195 Project Based Learning-1		0	0	2	1				
10	MCL115	Computer Networks Lab	0	0	2	1				
TOTA	L CREDITS					22				

							SHARDA UNIVERSITY
		School of Engineering and Technol	logy				Beyond Boundaries
		Department Of Computer Science & Engi	iogy ieerin	σ			
		M Sc in Computer Science		5			
		Rotah: 2020 Onwords					τερω. Π
		Batch: 2020 Oliwarus	Too	hing	[ood		
S. No.	Course Code	Course	L		P	Credits	Pre-Requisite/Co Requisite
THEO	RY SUBJECTS	S		-			
1	MCT118	Data Structure and Analysis of Algorithm	3	1	0	4	
2	MCT119	Application Programming in Python	3	0	0	3	
		Open Elective -1					
2		Management Information Systems (MIS)					
3	HMM207	Management Concepts & Practices	3 0 0			0 3	
		Essentials of Digital Marketing					
		Program Elective -1					
1	MCT116	Artificial Intelligence	2	0	0	0 2	
4	MCA366	Big Data Analytics	3 0 0			0 3	
	MCT117	Android Application Development					
Practic	cal/Viva-Voce/J	ury					
8	CCU101	Community Connect	-	-	-	2	
5	ARP204	Aptitude Reasoning and Business Communication Skills- Intermediate	1	0	2	2	
6	MCL118	Data Structure and Analysis of Algorithm Lab	0	0	2	1	
7	MCL119	Application Programming in Python Lab	0	0	2	1	
		Program Elective-1					
3	MCL116	Artificial Intelligence Lab	0	0	2	1	
5	MCP366	Big Data Analytics Lab	Ŭ		~	1	
	MCL117	Android Application Development Lab					
9	MCL196	Project Based Learning-2	0	0	2	1	
TOTA	AL CREDITS					21	

_							SHARDA UNIVERSITY			
	School of Engineering and Technology									
	Department Of Computer Science & Engineering									
		M.Sc in Computer Scier	nce							
		Batch: 2020 Onwards					TERM: III			
C No	Course Code	Course	Teac	hing I	Load	Cradita	Due Deguigite/Ce Deguigite			
5. NO.	Course Code	Course	L	Т	Р	Creatts	Pre-Requisite/Co Requisite			
THEO	RY SUBJECTS	5								
1	MCT213	Computer Graphics and Animation	3	0	0	3				
2	MCT214	Web and its Applications	3	0	0	3				
		Program Elective-2								
2	MCT211	Data Mining & Knowledge discovery	2	3 0 0		2				
5	MCT212	Mobile Technologies	3			3				
	MCA271	Cloud Computing								
		Program elective-3								
4	MCT216	Theory of Computation	2	0	0	0 2				
4	MCT215	Cryptography and Network Security	5	0	0	3				
	MCA365	Software Project Management								
5	MCT216	Software Engineering & Testing	3	0	0	3				
Practic	Practical/Viva-Voce/Jury									
6	ARP301	Quantitative Aptitude Behavioral and Interpersonal Skills	1	0	2	2				
7	MCL213	Computer Graphics and Animation Lab	0	0	2	1				
8	MCL214	Web and its Applications Lab	0	0	2	1				
9	MCL295	Project-1	-	-	-	2				
TOTA	AL CREDITS					21				



School of Engineering and Technology									
Department Of Computer Science & Engineering									
	M.Sc in Computer Science								
	Batch: 2020 Onward	ds					TERM: IV		
S. No.	Course Code	Course	Teaching Load		ng	Credits	Pre-Requisite/Co Requisite		
			L	Т	T P				
THEORY S	SUBJECTS/ Practical/Viva	a-Voce/Jury							
1	MCL354	Seminar	-	-	-	4			
2	MCL296	Project-2	-	-	-	12			
TO	DTAL CREDITS					16			



C. Course Syllabuses



TERM-I



S	School: SET		Batch : 2020-19					
	Program:		Current Academic Year: 2020-19					
B	Branch: CSE		Semester: III					
1	Commo Conto	4 0 0 0 0 0	Course Name : Aptitude Reasoning and Business					
1	Course Code	ARP203	Communication Skills-Basic					
2	Course Title	: Ap	titude Reasoning and Business Communication Skills-Basic					
3	Credits		2					
4	Contact Hours (L-T-P)		0-0-4					
	Course Status							
5	Course Objective	To enhance To provide readiness pr positive self step up ski employabilit threshold of activity exer	'o enhance holistic development of students and improve their employability skills. 'o provide a 360 degree exposure to learning elements of Business English eadiness program, behavioural traits, achieve softer communication levels and a positive self-branding along with augmenting numerical and altitudinal abilities. To tep up skill and upgrade students' across varied industry needs to enhance mployability skills. By the end of this semester, a student will have entered the hreshold of his/her 1 st phase of employability enhancement and skill building etwikt outprise					
6	Course Outcomes	CO1: At the of which will lead an effective tra end of the sess & self-effective evolved in his/h CO3: At the ethics in studen CO4: At the competence in CO5: At the Reading Writim CO6: At the patterns for Qu This I	CO1: At the end of the session this activity will help to ascertain a student's skill and competency level which will lead to effective mapping of his skills and competencies and an an effective training need identification and training need analysis model can be drawn CO2: At the end of the session a student will have a heightened sense of self awareness, raised levels of self-esteem & self-effectiveness, will have developed a positive mental frame of mind helping a student become more evolved in his/her life. CO3: At the end of the session the program would have instilled positive thinking and professional ethics in students and reinforce positive attitude building CO4: At the end of the session a student would have learned how to build positive emotional competence in self and learn GOAL Setting and SMART Goals technique CO5: At the end of the session a student would have enhanced LSRWG and P (Listening Speaking Reading Writing Grammar and Pronunciation) / Verbal Abilities - 1 CO6: At the end of the session a student would have Understanding of AMCAT + ELITMUS Study patterns for Quantitative aptitude and Logical / Analytical Reasoning					
7	Course	employmen	t readiness and combines elements of soft skills and numerical abilities					
	Description	to achieve this purpose.						
8		Outline syllabus – ARP 203						
	Unit 1		BELLS (Building Essential Language and Life Skills)	CO Mapping				
	А	Know Yours an engag architect a	<i>self</i> : Core Competence. A very unique and interactive approach through ing questionnaire to ascertain a student's current skill level to design, nd expose a student to the right syllabus as also to identify the correct TNI/TNA levels of the student.	CO1				
	В	Technique	es of Self Awareness Self Esteem & Effectiveness Building Positive Attitude Building Emotional Competence	<i>CO</i> 2				
	С	Positive Milestone	Positive Thinking & Attitude Building Goal Setting and SMART Goals – Milestone Mapping Enhancing L S R W G and P (Listening Speaking Reading Writing Grammar and Pronunciation) Verbal Abilities - 1					
	Unit 2	Introduc	ction to APTITUDE TRAINING- Reasoning- Logical/ Analytical					
	А	Syllogisi	n Letter Series Coding, Decoding , Ranking & Their Comparison Level-1	<i>CO</i> 6				



		16.5	
В	Number Puzzles	СОб	
С	Selection Based On Given Conditions	СОб	
Unit 3	Quantitative Aptitude	<i>CO6</i>	
А	Number Systems Level 1 Vedic Maths Level-1	СОб	
В	Percentage ,Ratio & Proportion Mensuration - Area & Volume Algebra	СОб	
Weightage	Class Assignment/Free Speech Exercises / JAM – 60% Group Presentations/Mock		
Distribution	Interviews/GD/ Reasoning, Quant & Aptitude – 40%		
	Wiley's Quantitative Aptitude-P Anand Quantum CAT – Arihant Publications Quicker Maths- M.		
Text book/s*	Tyra Power of Positive Action (English, Paperback, Napoleon Hill) Streets of Attitude (English,		
TEXT DOOK/S	Paperback, Cary Fagan, Elizabeth Wilson) The 6 Pillars of self-esteem and awareness – Nathaniel		
	Brandon / Goal Setting (English, Paperback, Wilson Dobson		



Syllabus: MCL111 Database Management Systems Lab

Sch	ool: SET	Batch: 2020	
Pro	gram: M.Sc.	Current Academic Year: 2020-2020	
Bra	nch: CSE	Semester: 3	
1	Course Code	MCL 111	
2	Course Title	Database Management Systems Lab	
3	Credits	1	
4	Contact Hours	0-0-2	
	(L-T-P)		
	Course Status	Compulsory	
5	Course	To Develop efficient SQL programs to access Orac	le databases
	Objective	Build database using Data Definition Language Sta	tements
		Perform operations using Data Manipulation Lange	uage
		statements like Insert, Update and Delete	
6	Course	By the end of this course you will be able to:	
	Outcomes	CO1: Understand the concept of SQL commands in DBMS	
		CO2: Create & Perform operations using DDL, DML& G	rouping
		Clauses .	
		CO3: Manipulate your data using Sub- queries & Joins	
		CO4: Implementation of Trigger & Cursors	
		CO5: Solve problems using Procedures & Functions	
		CO6: Design & develop database for real life applications.	
7	Course	An introduction to the design and creation of relational dat	tabases.
	Description	Create database-level applications and tuning robust busine	ess
		applications. Lab sessions reinforce the learning objectives	and
		provide participants the opportunity to gain practical hands	-on
-		experience.	
8	Outline syllabus	3	CO
	T T 1 4 4		Mapping
	Unit 1	Practical based DDL, DML commands	
		Classification SQL, Data types of SQL/Oracle, Create	CO1, CO2
		table, Alter table and drop table, INSERT, SELECT,	
	TL ' ' '	UPDATE & DELETE command	
	Unit 2	Practical based on Grouping Clauses GROUP BY	
		Driefly avalain Group by order by having alauses with	CO1 CO2
		symples Aggregate functions: sum sug sount may	01,002
		min	
	Unit 3	Practical based on Sub- queries, JOINS &	
		Related example of Sub- queries. Joins and related	CO1, CO3
		examples.	



		S > 8 e									
	Unit 4	Trigger & C	Cursers		CO4						
		Program rela	ted with Trigge	er & Cursors							
	Unit 5	Procedures	& Functions		CO5, CO6						
		Applying Pro	ocedures & Fur	nctions							
		Develop Rea	Develop Real life Applications								
Valı	lue Added Practicals: Applications such as Banking ,Library,Pay roll, Univer										
	Mode of	Jury/Practica	l/Viva								
	examination										
	Weightage	СА	MTE	ETE							
	Distribution	60%	0%	40%							
	Text book/s*	1. Korth , S	ilberschatz& Su	darshan, Data base Concepts, Tata							
		McGraw-I	Hill								
	Other	1. Elmas	ri, Navathe, Fur	ndamentals of Database Systems,							
	References	Pearso	on Education Inc.								
		2. Thoma	is Connolly, Car	olyn Begg, Database Systems: A							
		Practi	cal Approach	to design, Implementation and							
		Manag	gement, Pearson E	ducation, Latest Edition.							
		3. Jeffrey	3. Jeffrey D. Ullman, Jennifer Windon, A first course in								
		Databa	ase Systems, Pears	son Education.							
		4. <u>https:/</u>	//www.slideshar	e.net/stalinjothi/dbms-lab-							
		manua	al-126808730								

CO and PO Mapping:

S. No.	Course Outcome	Program Outcomes (PO) & Program Specific
		Outcomes (PSO)
1.	CO1: Understand the concept of SQL	PO2, PO10, PSO1,
	commands in DBMS.	
2.	CO2 Create & Perform operations	PO2, PO3, PO5, PO9,PO10, PSO1
	using DDL , DML& Grouping	
	Clauses .	
3.	CO3: Manipulate your data using Sub-	PO1, PO2, PO3, PO5, PO9,PO10, PSO1
	queries & Joins.	
4.	CO4: Implementation of Trigger &	PO1, PO5,PO10, PSO1
	Cursors	
5	CO5: Solve problems using	PO1, PO2, PSO2
	Procedures & Functions.	
6	CO6: Design & develop database for	PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10,
	real life problems.	PSO1, PSO2



PO and PSO mapping with level of strength for Course Name Data Base Management Systems Lab (Course Code MCL111)

	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
MCL 202		Computing Knowledge	Problem Analysis	Design/Development of Solutions:	Research and Development:	Modern Tool Usage	Innovation and Entrepreneurship	Environment and Sustainability	Personal and Professional Ethics	Communication	Life-Long Learning	Computer Science	Information Technology
203	CO1	-	-	-	2	-	-	-	-	-	2	2	-
	CO2	-	2	2	-	2	-	-	-	2	2	2	-
	CO3	3	2	2	-	2	-	-	-	2	2	2	-
	CO4	2	-	-	-	2	-	-	-	-	2	2	-
	CO5	2	2	-	-	-	-	-	-	-	1	-	2
	CO6	3	3	3	3	3	-	2	-	3	2	2	2

Average of non-zeros entry in following table (should be auto calculated).

Course Code/ Name	PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO10	PSO 1	PSO 2
MCL111 /DBMS	2.5	2.25	2.3	2.5	2.25	-	2	-	2.3	2	2	2

Strength of Correlation

- 1. Addressed to Slight (Low=1) extent
- 2. Addressed to Moderate (Medium=2) extent
- 3. Addressed to Substantial (High=3) extent



Sch	ool:	School of Engineering and technology						
Dep	artment	Department of Computer Science and Engineering						
Pro	gram:	Master of Science						
Bra	nch:							
1	Course Code	MCL112						
2	Course Title	Introduction to OOP using Java Lab						
3	Credits	1						
4	Contact Hours	0-0-2						
	(L-T-P)							
	Course Status	Compulsory/Elective						
5	Course	To implement Java language syntax and semantics and	concepts such as					
	Objective	classes, objects, inheritance, polymorphism,	packages and					
		multithreading.						
6	Course	CO1: Setting Java environment and executing Java Programs	8					
	Outcomes	CO2: Understand and formulate the problems in basic progra	amming constructs					
	<mark>(must be 6</mark>	CO3: Applying OOP concepts to solve real world problems						
	COs,	CO4: Implement inheritance and polymorphism features of J	ava					
	following	CO5: Implementing multithreading to enhance efficiency and	nd handle run time					
	verbs given in	errors						
	Bloom's	CO6: Develop Java programs for software development	CO6: Develop Java programs for software development					
	Taxonomy)							
7	Course	Apply features of OOPS and Java Programming includ	ling					
	Description	objects, classes, methods, parameter passing, information	ion hiding,					
		inheritance and polymorphism are discussed.						
8	Outline syllabus	8	CO Mapping					
	Unit 1	Jdk, IDE installation and program execution						
		Installing jdk, setting path,Installation and uses of	CO1					
		IDE, Writing Java programs, program						
		execution, JVM, JVM for other operating systems,						
		class files, running byte code in different platforms						
	Unit 2	Programming revisited						
		Programs on different datatypes, promotion rules in	CO2,CO3					
		expressions, narrowing & type casting, logical-bit						
		wise-arithmetic operators, Programs using if else,						
		switch case statements, for, while, do while loop						
		control structures, break and continue						
		Programs using command line arguments, taking						
		input from keyboard, Arrays in Java, nested control						
		structures						
	Unit 3	class, object and constructor						
		Programs to define classes, defining data members &	CO2,CO3					



				Beyond Boundaries					
	member fun	ction, create of	ojects, accessing members						
	of a class thr	ough objects,	Programs to define						
	constructors	, initializing in	stance variables, method						
	overloading,	constructor ov	verloading,Programs to						
	use static me	embers, access	ing static members, string						
	handling me								
Unit 4	Inheritance	Inheritance, package and Interface							
	Programs on	CO3,CO4,CO6							
	super, constr								
	overriding,P	overriding, Programs to use final variables, methods							
	and classes,	creat abstract o	classe, achieving multiple						
	inheritance t	hrough interfa	ces, inheritance in						
	interfaces, P	rograms to cre	ate packages, import						
	packages, ro	le of access me	odifiers in default, private,						
	protected and	d public mode							
Unit 5	I/O, Except	I/O, Exception and Multithreading							
	Programs to	use try catch	finally for exception	CO3,CO5,CO6					
	handling, th	ow user define	ed exceptions, uses of						
	throws, neste	ed try catch, re	throwing exceptions,						
	Programs to	use Stream cla	ass to read and write in a						
	File, Program	ns to define, ru	in and synchronize						
	multiple three	ads by extend	ing Thread class and						
	implementin	g Runnable in	terface.						
Mode of	Jury/Practica	al/Viva							
examination									
Weightage	CA								
Distribution	60%								
Text book/s*	1.Schildt H, "								
Other	1. Balaguru								
References	Professional	Java Program	nming: BrettSpell, WROX						
	Publication								

PO and PSO mapping with level of strength for Course Name Introduction to OOP using Java Lab (Course Code MCL112)

Course Code_	CO's	РО	РО	РО		РО	PSO									
Course Name	003	1	2	3	PO4	5	6	7	8	9	10	11	12	1	PSO2	PSO3
MCL112_	CO1	1			2	2					2			2	3	
Introducti	CO2	2			2	2					2			3	2	
on to	CO3	2	3	3	3	2					2			2	3	
OOP	CO4	3			3	2					2			2	3	
using	CO5	3			3	2					2			3	2	
Java Lab	CO6	3	3	3	3	2					2			3	3	



Average of non-zeros entry in following table (should be auto calculated).

Course Code	Course Name	PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	РО 10	PSO 1	PSO 2
	Introduction												
MCL112	to OOP using												
	Java Lab	2.3	3	3	2.5	3					2	2.5	2.5

Strength of Correlation

Addressed to Slight (Low=1) extent
 Addressed to Substantial (High=3) extent

List of Experiments

Unit No	S.No	Name of the Practical
	1.1	Write a Java program to print 'Hello' on screen and then print your
1		name on a separate line
	1.2	Write a Java program to print the sum (addition), multiply, subtract,
		divide and remainder of two numbers.
2	2.1	Write a Java program to accept a number and check the number is
		even or not. Prints 1 if the number is even or 0 if the number is odd.
	2.2	Write a Java program that accepts three integers from the user and
		return true if the second number is greater than first number and third
		number is greater than second number. If "abc" is true second number
		does not need to be greater than first number.
3	3.1	Write a Java program to find the maximum occurring character in a
		string
	3.2	Write a Java program to find first non repeating character in a string.
	3.3	Write a program in java to demonstrate method overloading
4	4.1	Write a program in java to demonstrate multilevel inheritance in java.
	4.2	Write a java program to create an abstract class named Shape that contains
		two integers and an empty method named print Area (). Provide three classes
		named Rectangle, Triangle and Circle such that each one of the classes
		extends the class Shape. Each one of the classes contains only the method
		print Area () that prints the area of the given shape.
5	5.1	Write a program that creates a user interface to perform integer division. The
		Num1 and Num2 is displayed in the Result field when the Divide button is
		clicked If Num1 and Num2 were not integers the program would throw a
		Number Format Exception. If Num2 were zero, the program would throw an
		Arithmetic Exception Display the exception in a message dialog box.
	5.2	Write a java program that implements a multi-thread application that
		has three threads. First hread generates random integer every 1 second
		and if the value is even, second thread computes the square of the
		number and prints. If the value is odd, the third thread will print the
		value of cube of the number
L	I	1



	Syllabus: N	ICL114, OPERATING SYSTEMS SING LINUX LAB	
Sch	ool: SET	Batch: 2020-2021	
Pro	gram: MSc	Current Academic Year: 2020-2020	
Bra	nch:	Semester:	
1	Course Code	MCL 114	
2	Course Title	Operating Systems sing Linux Lab	
3	Credits	1	
4	Contact Hours	0-0-2	
	(L-T-P)		
	Course Status	Compulsory	
5	Course	This course introduces the challenges for designin	g the operating
	Objective	systems.	
		 Includes different design principles and algorithm 	s.
		• Evaluation of algorithms proposed.	
		• Implementation of algorithms and utilities.	
6	Course	By the end of this course you will be able to:	
	Outcomes	CO1: Understanding the structure of different operating s	systems &
		System Calls.	
		CO2: Applying CPU Scheduling Algorithms & Various	Memory
		Management Schemes.	
		CO3: Applying Various Deadlock Detection & Avoidance	ce
		Techniques.	
		CO4: Implementing Various Classical Concurrency &	
		Synchronization techniques.	
		CO 5: Implement the memory based allocation	
		CO 6:-Apply page replacement algorithm	
7	Course	This course introduces the design principles of operating syste	ms, resource
	Description	management, identifying challenges and applying respective a	lgorithms.
8	Outline syllabus	3	CO
			Mapping
	Unit 1	Practical based operating systems.	CO1
		P1. Write programs using the following system calls of	
		LINUX operating system: fork, exec, getpid, exit, wait,	
		close, stat, opendir, readdir.	
		P2. Write programs using the I/O system calls of	
		LINUX operating system (open, read, write, etc)	
		P3. Write C programs to simulate LINUX commands	
		like ls, grep, etc.	
	Unit 2	Practical based on System Calls.	CO1
		P4. Write a program to create processes and threads.	
		P5. Write a program solving the Producer-Consumer	
		problem using semaphores.	



	P6. Write a p	rogram to impl	ement the solution for	,					
	dining philos	opher's probler	n.						
Unit 3	Practical bas	sed scheduling	•	CO2					
	P7. Write a	program to dev	velop an application using I						
	process comm	nunication usin	g						
	shared Memo	ory.							
	P8. Write a p	rogram to impl	ement process scheduling						
	mechanisms u								
	P9. Write a p	rogram to impl	ement process scheduling						
	mechanisms u	mechanisms using Priority & round-robin scheduling.							
Unit 4	Practical bas	CO2, CO3,							
		CO5							
	P10. Write a								
	algorithm.								
	P11. Write a								
	using first fit								
	P12. Write a	program to imp	plement memory allocation						
	using best fit	algorithm.							
	P13. Write a	program to imp	plement memory allocation						
	using worst fi	it algorithm.							
Unit 5	Practical bas	sed on Page re	placement.	CO4, CO6					
	P14. Write a	program to imp	plement the page						
	replacement a	algorithms.							
Mode of	Jury/Practical	/Viva							
examination									
Weightage	CA								
Distribution	60%								
Text book/s*	1. Silberschatz								
Other	1. W. Stal	ling, "Operating S	ystem", Maxwell Macmillan						
References	2. Tannen	baum A S, O	perating System Design and Hall India						

S.	Course Outcome	Program Outcomes (PO) & Program
No.		Specific Outcomes (PSO)
1.	CO1: Understand the concept of SQL commands in DBMS.	PO1,PO2,PO3,PO10
2.	CO2: Create SQL SELECT statements that retrieve any	PO1, PO2, PO3,
	required data.	PS5,PO9,PO10,PSO1,PSO2
3.	CO3: Perform operations using Data Manipulation Language	PO1,PO2,PO3,PO5,PO9,PO10,PSO1,PS
	statements like Insert, Update and Delete.	O2
4.	CO4: Manipulate your data to modify and summaries your	PO1, PO2,PO3,
	results for reporting.	PO4,PO5,PO9,PO10,PSO1,PSO2
5.	CO 5: Implement the memory based allocation	PO1, PO2,PO3,
		PO4,PO5,PO9,PO10,PSO1,PSO2
6.	CO 6:-Apply page replacement algorithm	PO1, PO2,PO3,
		PO4,PO5,PO9,PO10,PSO1,PSO2



PO and PSO mapping with level of strength for Course Name Operating Systems sing Linux Lab (Course Code MCL 114)

COs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	1	1	-	-	-	-	-	-	3	-	-
CO2	3	3	3		3	-	-	-	2	3	3	3
CO3	3	3	3	-	3	-	-	-	3	1	2	2
CO4	3	3	3	2	3	-	-	-	3	1	3	3
CO5	3	3	3	-	3	-	-	-	3	1	2	2
CO6	3	3	3	2	3	-	-	-	3	1	3	3

1-Slight (Low) 2-Moderate (Medium) 3-Substantial (High)

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Scho	pol:	School of Engineering and technology	
Dep	artment	Department of Computer Science and Engineering	
Prog	gram:	M.Sc.	
Brar	nch:		
1	Course Code	MCL115	
2	Course Title	Computer Networks Lab	
3	Credits	1	
4	Contact Hours	0-0-2	
	(L-T-P)		
	Course Status	Compulsory/Elective	
5	Course	To Provide students with an overview of networking and	Gain insight into
	Objective	the issues, challenges and work at all level of reference mod	lels
6	Course	Students will be able to:	
	Outcomes	CO1: Explain the basic concepts of computer network.	
		CO2: Illustrate and differentiate working of all layers of the	OSI Reference
		Model and TCP/IP model	1 1'
		CO3: Analyze fundamental issues driving network design in	ncluding error
		CO4: Compare working of various routing algorithms	Control
		CO5: Test various network security algorithms	
		CO6: Examine various cryptographic Algorithms	
7	Course	To familiarize with the basic taxonomy and terminology of	computer
	Description	networking area.	•
	Ĩ		
8	Outline syllabus	5	CO Mapping
	Unit 1	Introduction	
	А	Study of Data Communication and Networking.	CO1, CO2
		Identify five components of Data communication	
		system.	
	В	Study of computer network topology and OSI model	CO1, CO2
		layered architecture.	
	С	Study of basic networking commands: IPCONFIG	CO1, CO2
		PING / Tracer and Net stat utilities to debug the	
		network issues	
<u> </u>	Unit 2	Data Link Layer	
	A	To connect the computers in Local Area Network	CO1, CO2
L	l		,



В	Write a C p	CO1, CO2		
	and Destuffi			
С	Write a C pr	ogram to Erro	r Detection using Cyclic	CO1, CO2
	Redundancy			
Unit 3	Network Layer	ſ		
А	Write a C pr	ogram to deter	rmine if the IP address is in	CO1,CO3
	Class A, B,	C, D, or E.		
В	Write a C	program to tr	anslate dotted decimal IP	CO1,CO3
	address into	32-bit address		
Unit 4	Transport Laye	er		
А	Write a prog	gram for cong	estion control using Leaky	CO1,CO4
	bucket algor			
В	Write a prog	CO1,CO4,CO5		
	bucket algor	ithm.		
С	Creating a N	letwork topolo	gy using CISCO packet	CO1,CO4,CO5
	tracer softwa	are		
Unit 5	Application La	lyer		
A	Write a prog	gram to implen	nent DES for encryption.	CO1,CO5
В	Write a Prog	gram to implen	nent RSA	CO1,CO5,CO6
С	Open Ended	Project		CO1,CO5,CO6
Mode of	Jury/Practica	al/Viva		
examination				
Weightage	CA			
Distribution	60%			
Text book/s*	Tanenbaum, A			
Other	1. Forou			
References	TMH	l, Latest Edition		
	2. W.	Stallings,	"Data and Computer	
	Com	munication" Ma	acmillan Press	



CO and PO Mapping

S.	Course Outcome	Program Outcomes (PO) &
No.		Program Specific Outcomes (PSO)
1.	CO1: Explain the basic concepts of computer	PO1, PO2, PO3, PO10, PSO1,
	network.	PSO2
2.	CO2: Illustrate and differentiate working of all layers	PO1,PO2, PO4,PO6,PO10,PSO2
	of the OSI Reference Model and TCP/IP model	
3.	CO3: Analyze fundamental issues driving network	PO1,PO2,PO3,PO5,PO8,PO10,PS
	design including error control, IP addressing, access	O1,PSO2
	control, flow and congestion control	
4.	CO4: Compare working of various routing algorithms	PO1,PO2, PO4,
		PO7,PO9,PO10,PSO2
5.	CO5: Test various network security algorithms	PO1,PO2,PO3,PO5,PO6,PO8,PO1
		0, PSO1,PSO2
6.	CO6: Examine various cryptographic Algorithms	PO1,PO2, PO4,PO7,
		PO9,PO10,PSO1,PSO2

PO and PSO mapping with level of strength for Course Name Computer Networks Lab (Course Code MCL115)

Course Code_ Course Name	CO's	РО 1	PO 2	PO 3	PO4	РО 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO2
	CO1	2	2	2							3	3	3
	CO2	3	3		3		2				3		2
	CO3	2	3	3		3			3		3	2	3
	CO4	3	3		3			3		2	3		3
Computer Networks Lab (Course Code MCL115	CO5	3	2	2		3	3		3		3	2	2
)	CO6	3	3		3			3		3	3	3	2

Average of non-zeros entry in following table (should be auto calculated).

Course	Course Name	PO				РО					PO		PSO
Code		1	PO2	PO 3	PO 4	5	PO 6	PO 7	PO 8	PO 9	10	PSO 1	2
MCL115	Computer Networks Lab	2.6	2.6	1.1	1.6	1	.8	1	1	.8	3	1.6	2.5

Strength of Correlation

- 1. Addressed toSlight (Low=1) extent
- 2. Addressed toModerate (Medium=2) extent
- 3. Addressed toSubstantial (High=3) extent



Syllabus: MCT111 Database Management Systems

Scho	ool: SET	Batch : 2020	
Prog	gram: M.Sc.	Current Academic Year: 2020-2020	
Brar	nch: CSE	Semester: 3	
1	Course Code	MCT 111 Course Name: Database Management Sys	tems
2	Course Title	Database Management Systems	
3	Credits	3	
4	Contact Hours	3-0-0	
	(L-T-P)		
	Course Status		
5	Course Objective	1.Develop the ability to design & implement and manipu	ulate databases.
		2.Understand the importance of Normalization	
		3.Introduce various Protocols & schemes used in DBMS	5
		4.Apply DBMS concepts to various examples and real li	fe applications.
6	Course	Students will be able to:	
	Outcomes	CO1. Extend the knowledge & concepts of Database mo	odels.
		CO2. Apply normalization techniques to reduce redundation	ancy from the
		database.	
		CO3. Appraise the basic issues of Transaction processing	g & deadlock.
		CO4 . Identify the importance of concurrency control &	Granularity
		CO5.Explain the concept of Recovery & Distributed Sy	stem.
		CO6. Design & develop database for real life problems.	
7	Course	This course introduces database design and creation	n using a DBMS
	Description	product. Emphasis is on, normalization, data integrity,	data modeling, and
		creation of simple tables, queries, reports, and forms.	Upon completion,
		students should be able to design and implement no	ormalized database
		structures by creating simple database tables, queries, re	ports, and forms.
8	Outline syllabus		CO Mapping
	Unit 1	Introduction to Databases &Data Models:	
	А	Concept & Overview of DBMS, Data Models,	
		Database languages, Database Administrator,	
		Database Users.	
	В	Architecture of DBMS, Data Models, Data Modeling	CO1
		using Entity Relationship Model.	
	С	Various Relational data model concepts, Unary	
		Relational Operations	
	Unit 2	Normalization in Design of Databases:	
	А	Functional Dependency, Different anomalies in	
		designing a Database, Normalization first	
	В	Second and Third normal forms, Boyce Codd normal	

			*	SHARDA UNIVERSITY
	form,			CO1, CO2
С	Multi value	d dependenc	y, Fourth normal forms,	
	Inclusion de	pendencies, l	loss less join decompositions	
Unit 3	Transaction	n Manageme	ent and Deadlock	
А	Transaction	processing s	ystem, schedule and	
	recoverabili	ty,		CO3
В	Testing of s	serializability	, Serializability of schedules	
	conflict & v	iew serializal	ble schedule	
С	DeadLock P	hases : Avoi	dence ,Detection ,	
Unit 4	Concurrence	cy Control:		
А	Concurrency	y Control: Lo	ocking Techniques for	
	concurrency	control,		
В	time stamp	ing protoco	ls for concurrency control,	
	multiversior	n schemes		CO3, CO4
С	Granularity	of Data Items	s and Multiple Granularity	
	Locking			
Unit 5	Recovery &	z Distributed	l System	
А	Failure Clas	sification, R	ecovery and Atomicity,	
	Buffer Mana	agement		
В	Failure with	Loss of Non	volatile Storage Recovery	CO5
	Algorithm			
С	Distributed	Database Con	ncepts database, Distributed	
	Databases 7	Гypes & Arcl	nitectures	
 Mode of	Theory			
examination				
Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	1. Korth	, Silbersch	atz&Sudarshan, Data base	
	Concept	s, Tata McGr	raw-Hill, Latest Edition	
Other References	1.Elmasri,	Navathe, 1	Fundamentals of Database	
	Systems, Pe	arson Educat	ion Inc.	
	2.Thomas C	onnolly, Car	olyn Begg, Database Systems:	
	A Practical	Approach to	b design, Implementation and	
	Managemen	it, Pearson Ec		
	3.Jeffrey D.	Ullman, Jer	nnifer Windon, A first course	
	in Database	Systems, Pea	arson Education.	
	4.Date C.J.	, An Introdu	uction to Database Systems,	
	Addison We	esley.	-	

CO and PO Mapping

S. No.		Cours	e Out	come		Program Outcomes (PO) & Program Specific					
						Outcomes (PSO)					
1.	CO1:	Extend	the	knowledge	&	PO1, PO4, PO10, PSO1					



	concepts of Database models.	
2.	CO2: Apply normalization techniques	PO1, PO2, PO10, PSO1
	to reduce redundancy from the	
	database.	
3.	CO3: To appraise the basic issues of	PO1, PO2, PO3, PO10, PSO1
	Transaction processing & deadlock.	
4.	CO4.Identify the importance of	PO1, PO2, PSO1
	concurrency control & Granularity	
	and quality for data analysis.	
5	CO5: Explain the concept of	PO1, PO10, PSO1
	Recovery & Distributed System.	
6	CO6: Design & develop database for	PO1, PO2, PO3, PO4, PO5, PO7, PO9, PO10,
	real life problems.	PSO1,

PO and PSO mapping with level of strength for Course Name Data Base Management Systems (Course Code MCT111)

	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
MCT111		Computing Knowledge	Problem Analysis	Design/Development of Solutions:	Research and Development:	Modern Tool Usage	Innovation and Entrepreneurship	Environment and Sustainability	Personal and Professional Ethics	Communication	Life-Long Learning	Computer Science	Information Technology
	CO1	3	-	-	2	-	-	-	-	-	2	2	-
	CO2	3	2	-	-	-	-	-	-	-	2	2	-
	CO3	3	2	2	-	-	-	-	-	-	2	2	-
	CO4	2	2	-	-	-	-	-	-	-	-	2	-
	CO5	2	-	-	-	-	-	-	-	-	1	2	-
	CO6	3	3	3	3	3	-	2	-	3	2	2	-

Average of non-zeros entry in following table (should be auto calculated).

Course Code/ Name	PO 1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	РО 10	PSO 1	PSO 2
MCT111 /DBMS	2.7	2.25	2.5	2.5	3	-	2	-	3	1.8	2	2

Strength of Correlation:

1. Addressed to Slight (Low=1) extent

2. Addressed to Moderate (Medium=2) extent

3. Addressed to Substantial (High=3) extent



School:SET		Batch : 2020					
Program:		Current Academic Year: 2020-20					
MSc							
Branch:		Semester: II					
1	Course	MCT112 Course Name: Object oriented programming with	h JAVA				
	Code						
2	Course	Object Oriented Programming with Java					
	Title						
3	Credits	3					
4	Contact	3-0-0					
	Hours						
	(L-T-P)						
	Course	PG					
	Status						
5	Course	To learn Java language syntax and semantics and concepts such as classes,					
	Objective	objects, inheritance, polymorphism, packages and multithreading.					
6	Course	CO1. Define Object oriented programming concepts by identifying classes, objects,					
	Outcomes	members of a class and relationships among them needed for a specific problem.					
		CO2: Illustrate different features of java.					
		CO3: Develop Java programs to solve problems of applications using OOP					
		principles such as abstraction, polymorphism and inheritance.					
		CO4:Categorize runtime errors thrown in the application software or generated					
		runtime by applying the methods of exception handling and File I/O					
		CO5. Explain the concept of multithreading.					
		CO6. Design real life application using Java.					
7	Course	Basic Object Oriented Programming (OOP) concepts including objects, classes,					
	Description	methods, parameter passing, information hiding, inheritance and polymorphism are					
		discussed.					
8	Outline syllab	bus	CO Mapping				
	Unit 1	Object Oriented Programming Concepts	<u> </u>				
	А	Introduction to OOP, Characteristics of OOP,	CO1, CO2				
		Difference between OOP and procedural languages,					
		Features of Java	<u> </u>				
	В	Platform independency of Java, Architecture of JDK,	CO1, CO2				
		JRE and JVM. memory allocation and garbage					
		collection to Java Programs.	<u></u>				
	C	Introduction to IDE for Java development, Writing first	CO1, CO2				
		program in Java and program execution steps. Features					
	T L ' 4 O	OI Java					
	Unit 2	Introduction to Java	001 002				
	А	Java Programming Fundamentals: declaring variables	CO1,CO2				



		and Constar	nts, Java data	Types and size of each type,		
		arithmetic, l	ogical and bi	twise Operators in java,		
В		Control stat	ements : ife	else, switch case, Loop control	CO1, CO2	
		: for loop, w	hile loop, do	while loop, break and		
		continue, ne	sting of decis	sion and loop control.		
С		Passing arg	uments from	commandline, Arrays in Java,	CO1, CO2	
		Type conve				
Uni	t 3	Class, obje				
Α		Defining Cl	asses, class r	nembers, declaration of	CO1,CO2	
		Objects, tak	ing Input from	m users		
В		Methods, M	lethod overloa	ading, Constructors,	CO1,CO2,CO3	
		Constructor	s overloading			
С		static keywo	ord, Static me	ethods, Static members. Reason	CO2	
		of making n	nain function	static, Strings, string handling		
Uni	t 4	Inheritance				
		Implementa	tion			
А		Inheritance	Implementati	on: Types of Inheritance,	CO2,CO3,CO6	
		Multilevel H				
		Polymorphi				
		in inheritand				
В		Abstract class and method, Final class, method and				
		variable, Im				
		inheritance				
C		Packages: U	CO2,CO3,CO6			
		(java.langpa				
Uni	t 5	I/O, Except				
А		Input/output:	CO4,CO6			
		Stream Class				
		writing in file	<u> </u>			
В		Introduction t	CO4,CO6			
		Finally, uno				
C		Introduction	CO5 CO6			
		issues. Creat	issues Creating thread using Runnable interface and Thread			
	class, Thread life cycle, Thread priorities, sleep method.					
Mod	Iode of Theory					
exar	mination	ination				
Wei	ghtage	CA	MTE	ETE		
Dist	ribution	30%	20%	50%		
Text	t book/s*	1.Schildt H, "	The Complete	Reference JAVA2", TMH		
Othe	er					
Refe	erences	3. Professional Java Programming: BrettSpell, WROX				
		Publicatio	on			


S.	Course Outcome	Program Outcomes (PO)
No.		& Program Specific
		Outcomes (PSO)
1.	CO1. Define Object oriented programming concepts by	PO1, PO2, PO3, PO5,
	identifying classes, objects, members of a class and	PO10, PSO1, PSO2
	relationships among them needed for a specific problem.	
2.	CO2: Illustrate different features of java.	PO1, PO2, PO4, PO10,
		PSO1, PSO2
3.	CO3: Develop Java programs to solve problems of	PO1, PO2, PO3, PO5,
	applications using OOP principles such as abstraction,	PO9, PO10, PSO1, PSO2
	polymorphism and inheritance.	
4.	CO4:Categorize runtime errors thrown in the application	PO1, PO2, PO3, PO5,
	software or generated runtime by applying the methods	PO10, PSO1, PSO2
	of exception handling and File I/O	
5.	CO5. Explain the concept of multithreading.	PO1, PO2, PO5, PO10,
		PSO1, PSO2
6.	CO6. Design real life application using Java.	PO1, PO2, PO3, PO5,
		PO9, PO10, PSO1, PSO2

PO and PSO mapping with level of strength for Course Name Object oriented programming with JAVA (Course Code MCT112)

COs	PO1	P02	PO3	P04	PO5	P06	PO7	P08	P09	PO10	PS01	PSO2
CO1	2	2	2		2					2	1	1
CO2	2	2								2	2	1
CO3	2	3	3		3				3	2	3	3
CO4	2				3					2	2	3
CO5	1	2			1					2	1	2
CO6	3	3	3		3				3	2	3	3

Average of non-zeros entry in following table (should be auto calculated).

Course	Course Name	РО									РО		
Code	Course runne	1	PO2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	10	PSO 1	PSO 2
	Object												
MCT112	Oriented												
MC1112	Programming												
	with Java	2	2	2		2.5				3	2	2	2

Strength of Correlation

1. Addressed to Slight (Low=1) extent 2. Addressed to Moderate (Medium=2) extent

3. AddSressed to Substantial (High=3) extent



Sch	ool:	School of Engineering and technology	
Dep	artment	Department of Computer Science and Engineer	ing
Pro	gram:		
Bra	nch:		
1	Course Code	MCT113	
2	Course Title	Information Security and Cyber Laws	
3	Credits	3	
4	Contact	3-0-0	
	Hours		
	(L-T-P)		
	Course	Elective	
	Status		
5	Course	Enable learner to understand, explore, and acquire	a critical
	Objective	understanding Cyber Law. Give learners in depth k	nowledge of
		Information Technology Act and legal frame work	of Right to Privacy,
		Data Security, Data Protection and tools	
6	Course	On successful completion of this module students	will be able to
	Outcomes	CO1: Develop competencies for dealing with f	rauds and deceptions
		(confidence tricks, scams) and other cybercrime	es for example, child
		pornography etc. that are taking place via the Inter-	net
		CO2: Explore the legal and policy developments	in various countries to
		regulate Cyberspace	
		CO3: Formulate various security measures for cyb	er-attacks.
		CO4: Apply the principles in real life situations.	
		CO5: Identify various Cybercrimes and take neces	sary actions.
	~	CO6: Assess the various online activities.	
7	Course	This course introduces aspects of cyber security, en	ncompassing the
	Description	principles, to analyze the data, identify the problem	is, and choose the
0		relevant countermeasures to apply.	CON
8	Outline syllab		CO Mapping
	Unit I	Introduction to Cyber Security	
	А	Understanding Computers, Internet and Cyber	CO1, CO2
	D	Laws, information security legal liabilities,	
	В	intellectual property, defamation, privacy	CO5, CO6, CO3
		concerns, censorship, cyber fraud, e – commerce	
	C	IdW,	
	C	linsurance law, the clash of laws, cyber law	000, 004, 002
	Unit 2	Intellectual rights	
		Interfectual rights	
	А	Protection of Intellectual Property Rights in	C01, C02, C03

2.1 Template A1: Syllabus for Theory Courses (SAMPLE)



	CyberSpace i	n India,		
В	Compensatio	n and Adjudi	cation of Violations of	CO4,CO5,CO6
	Provisions of	It Act and Ju	udicial Review, Some	
	important Of	feneces unde	r the CyberSpace Law	
	and the Interr	net in India,		
С	Other Offenc	es under the	Information	CO1,CO6, CO3,
	Technology A	Act in India		CO4
Unit 3	Role of Evide	ences and Ru	les	
А	The Role of I	Electronic Ev	vidence and the	CO1,CO2, CO4
	Miscellaneou	s Provisions	of the IT Act,	
В	Legal Aspect	s of Electron	ic Records/Digital	CO6, CO3,CO1
	Signatures,			
С	The Rules an	d Regulation	s of Certifying	CO3,CO4,CO6,CO5
	Authorities in	n India		
Unit 4	Cyber Space	Laws		
А	International	Efforts Relat	ted to CyberSpace	CO1,CO2, CO6
	Laws,			
В	Fundamental	Jurisdiction	Principles Under	CO2,CO4,CO6
	International	Law, Classic	U.S. Jurisdiction	
С	Principles, Co	ouncil of Eur	ope convention on	C01,C03,C05
	cyber crimes			
Unit 5	Tools			
А	Cyber Check	, TrueBack,		CO1,CO2, CO6
В	Hasher, Emai	ilTracer		C01.C02,C06,C05
С	Pasco, Nmap	, BinText		CO2,CO3,CO5
Mode of	Theory			
examination				
Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	1. Cyber	Law and IT		
	Harisl	h		
	Handbook of	Information		
	HosseinBidge	ol		
Other				
References				

S.	Course Outcome	Program Outcomes (PO) & Program
No.		Specific Outcomes (PSO)
1.	CO1: Develop competencies for dealing with	PO1,PO2,PO3,PO7,PO10,PSO1
	frauds and deceptions (confidence tricks,	
	scams) and other cybercrimes for example,	
	child pornography etc. that are taking place	



	via the Internet	
2.	CO2: Explore the legal and policy	PO1,PO2,PO6,PO7,PO8,PO10,
	developments in various countries to regulate	PSO1, PSO2
	Cyberspace	
3	CO3: Formulate various security measures	PO1, PO2, PO6, PO7, PO8, PO10,
	for cyber-attacks.	PSO1, PSO2
4	CO4: Apply the principles in real life	PO1, PO2, PO3, PO4, PO5, PO10,
	situations.	PSO1
5	CO5: Identify various Cybercrimes and take	PO1, PO2, PO3,PO4,
	necessary actions.	PO5,PO6,PO7, PO9,PO10, PSO1,
		PSO2
6	CO6: Assess the various online activities.	PO1,
		PO2,PO3,PO4,PO5,PO7,PO9,PO10,
		PSO1

PO and PSO mapping with level of strength for Course Name Information Security and Cyber Laws (**Course Code MCT113**)

Course Code_ Course Name	CO's	PO1	PO 2	РО 3	PO4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO2
	CO1	2	2	3				3			3	2	
	CO2	3	3				2	2	3		3	3	2
	CO3	2	2				2	2	2		2	3	3
Information	CO4	2	2	2	3	3					3	2	
Security and	CO5	2	2	2	2	2	2	2		2	2	2	3
Cyber Laws	CO6	3	2		2	2		3		3	2	2	

Average of non-zeros entry in following table (should be auto calculated).

Course Code	Course Name	PO1	PO2	PO3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO1	PSO2
МСТ113	Information Security and Cyber Laws	2.3	2.1	2.3	2.3	2.3	2	2.4	2.5	2.5	2.4	2.3	2.6

Strength of Correlation

1. Addressed to Slight (Low=1)extent2. Addressed to Moderate (Medium=2) extent

3. Addressed to Substantial (High=3) extent



Sch	ool: SET	Batch : 2020								
Pro	gram: MSc	Current Academic Year: 2020-20								
Bra	nch:	Semester: III								
1	Course Code	MCT114 Course Name MSc								
2	Course Title	Operating System								
3	Credits	3								
4	Contact	3-0-0								
	Hours(L-T-									
	P)									
	Course	Non Elective								
	Status									
5	Course	1. This course introduces the challenges for desig	ning the operating							
	Objective	systems.								
		2. Includes different design principles and algorit	hms.							
		3. Evaluation of algorithms proposed.								
		4. Implementation of algorithms and utilities.								
6	Course	Students will be able :								
	Outcomes	CO1: To identify the challenges and apply suitable alg	orithms for them.							
		CO2: To assess the strengths and weaknesses of the alg	gorithms.							
		vtilization	urce allocation and							
		CO4: To integrate and interpret affectiveness officience	w of algorithms used for							
		resource management of operating systems	y of algorithms used for							
		CO5: Design and construct the following OS compone	nts: System calls							
		Schedulers. Memory management systems. Virtual Me	mory and Paging							
		systems								
		CO 6: Measure, evaluate, and compare OS components through								
		instrumentation for performance analysis								
7	Course	This course introduces the design principles of operating systems, resource								
	Description	management, identifying challenges and applying respective algorithms.								
8	Outline syllabi	lS	CO Mapping							
	Unit 1	Introduction								
	А	Operating System Concepts and functions, Comparison of	CO1, CO2							
		different Operating system								
	В	Types of Operating Systems (Batch, Multiprogramming	CO1, CO2							
		, Multi Tasking, Multiprocessing, Distributed and Real								
	С	Operating System Structure, Operating System Services CO1 CO2								
	Unit 2	Process Synchronization								
	A	Process Concepts (PCB. Process States . Process	CO1 CO2 CO3							
	- -	Operations, Inter process communication)								
	В	Critical Section problem & their solutions, Introduction to	CO1, CO2,CO3							
		Semaphores,								
	C	Classical Problems of Synchronization (Producer	CO1, CO2,CO3,CO4							
		Consumer Problem, Readers Writer Problem, Dining								



	philosophers p	roblem), Impl	ementation of synchronization	
 Unit 3	CPU Scheduli	ing		
A	Concept, Type Middle term),	es of schedule Dispatcher, Pe	rs(Short term, Long term, erformance Criteria	C01,C02
В	CPU Schedulin Robin, Multile	ng Algorithms evel Queue, M	(FCFS, SJF, Priority, Round ultilevel feedback Queue)	CO1,CO2,CO3,CO4, CO5, CO6
С	Deadlock con Prevention and	cepts & Handl l Detection &	ling Techniques(Avoidance, Recovery)	CO1,CO2,CO3,CO4, CO6
Unit 4	Memory Man	agement		
А	Memory Hiera	rchy, Memory	/ Management Unit	CO1,CO2,CO3
В	Paging, Segme	entation		CO1,CO2,CO3
С	Virtual memor replacement al Associative me	ry concept, der gorithms(FCF emory	C01,C02,C03	
Unit 5	Disk and File	Management		
А	File Concept ,I of Windows O	File operations perating Syste	s, File Directories, Case study em	CO1,CO2,CO3, CO5
В	Disk structure LOOK,C-SCA	, Disk schedu N, C-LOOK)	ling(FCFS,SSTF, SCAN,	CO1,CO2,CO3,CO4
С	Case study: UI Handling	NIX, Comman	ds related to Process and File	CO1,CO2,CO3, CO5, CO6
Mode of examination	Theory			
Weightage	CA	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	1. Silber Wiley	rschatz G, (Operating System Concepts,	
Other References	 W. S. Macm Tanne <i>Impler</i> Milen McGr 	Stalling, "Op iillan onbaum A S, <i>mentation</i> , Pre kovic M, C aw Hill		

S.	Course Outcome	Program Outcomes (PO) &
No.		Program Specific Outcomes
		(PSO)
1.	CO1: To identify the challenges and apply suitable algorithms for	PO1,PO2,PO3,PO4,PSO1
	them.	
2.	CO2: To assess the strengths and weaknesses of the algorithms.	PO1, PO3, PO4, PSO2
3.	CO3: To understand and implement algorithms in resource	PO1,PO2,PO3,PO4
	allocation and utilization.	
4.	CO4: To integrate and interpret effectiveness, efficiency of	PO9, PO10, PSO2
	algorithms used for resource management of operating systems.	



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5.	CO5: Design and construct the following OS components:	PO1,PO2,PO3,PO4, PO9,
	System calls, Schedulers, Memory management systems,	PO10, PSO2
	Virtual Memory and Paging systems	
6	CO 6: Massura avaluate and compare OS components	
0.	CO 0. Measure, evaluate, and compare OS components	101,102,103,104,109,
	through instrumentation for performance analysis	PO10, PSO2

PO and PSO mapping with level of strength for Course Name Operating System (Course Code MCT 114)

	COs	POI	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CSE	CO1	3	3	3	3				2	2	1	3	2
	CO2	3	2	3	3				2	2	2	2	3
	CO3	3	3	3	3				1	1	1	3	2
	CO4	2	2	2	2	1			2	3	3	2	2
	CO5	3	3	3	3				1	1	1	3	2
	CO 6	2	2	2	2	1			2	3	3	2	2



Sch	ool: SFT	Batch •2020 onwards								
Dro	arom: M Sc	Current Acadamic Vaar: 2020.21								
Bro	nch. CS & IT	Current Academic Tear. 2020-21								
1 1	Course Code	MCT115 Course Name: Computer Networks								
2	Course Title	Computer Networks								
2	Course Thie									
3	Credits	3								
4	Contact	3-0-0								
	Hours									
	(L-T-P)									
	Course	Compulsory								
	Status									
5	Course	Provide students with an overview of networking, insight	it into the issues,							
	Objective	challenges and working at all level of reference models. Also practice on								
	~	applying protocols in network design.								
6	Course	Students will be able to:								
	Outcomes	COI: Demonstrate and differentiate working of all layers of t	he OSI Reference							
		Model and TCP/IP model.	work dogion							
		202: Investigate and explore fundamental issues driving network design								
		Control Collign and huilding the skills of ID addressing submetting and								
		routing protocols	onetting and							
		CO4: Discuss the flow control, elements and protocols of tra	nsport laver							
		CO5: Describe the connection management and application 1	aver protocols.							
		CO6: Outline the basic knowledge of the use of cryptograph	y and network							
		security.	-							
7	Course	To familiarize with the basic taxonomy and terminological	ogy of computer							
	Description	networking area.								
8	Outline syllabu	15	CO Mapping							
	Unit 1	Introduction								
	А	Introduction to computer networks, applications and uses,	CO1, CO2							
		classification of Networks based on topologies, geographical	, ,							
		distribution and communication techniques								
	В	Reference models: OSI model, TCP/IP model, Overview of	CO1, CO2							
		Connecting devices (Hub, Repeaters, Switches, Bridges, Routers,								
	C	Transmission Media: wired wireless Multiplexing techniques-	CO1 CO2							
	C	FDM, TDM	001, 002							
	Unit 2	Data Link Layer								
	А	Functions, Framing, Error Control-Error correction	CO1, CO2							
		codes(Hamming code),Error Detection codes(Parity Bit, CRC)	, 							
	В	Flow Control- Stop and Wait Protocol, Sliding window –Goback	CO1, CO2							
		N and Selective repeat(ARQ)								
	C	MAC- Sub-layer Protocols: ALOHA, CSMA, CSMA/CD	CO1, CO2							

Computer Networks



	protocols, IEE	EE Standards 80	2.3, 802.4,802.5								
Unit 3	Network Laye	er									
А	Design issues sub-netting and	, IPV4addressir 1 sub-masking	g basics and Header format, CIDR,	C01,C03							
В	Routing, optim flooding, dista	nality Principle	Routing protocols-, Shortest path, ng , link state routing	C01,C03							
С	Congestion co	Congestion control-Leaky bucket, Token Bucket, jitter control									
Unit 4	Transport La	Transport Layer Need of transport layer with its services, Quality of service, connection oriented and connection less									
А	Need of trans connection original										
В	Transmission format, TCP C	Fransmission Control Protocol: Segment structure and header format, TCP Connection Management, Flow Control Image: Connection Management									
С	TCP congestion Overview of U	TCP congestion control, Internet Congestion Control Algorithm, Overview of User Datagram Protocol (UDP)									
Unit 5	Application L										
А	Domain Name	System (DNS)	, HTTP, FTP, SMTP	CO1,CO5							
В	Network Secu Asymmetric cr	urity services, yptographic alg	cryptography, Symmetric versus gorithms- DES, and RSA	C01,C05,C06							
С	Application of	Security in Net	works: Digital signature	CO1,CO5,CO6							
Mode of examination	Theory										
Weightage	CA	MTE	ETE								
Distribution	30%	20%	50%								
Text book/s*	1. Tane Editi	1. Tanenbaum, A.S." Computer Networks", 4 th Edition, PHI									
Other References	3. Foro Lates 4. W.	 Forouzan, B, "Communication Networks", TMH, Latest Edition W. Stallings, "Data and Computer Communication" Manually a Data 									
	4. W. Com	Stallings, munication" N	"Data and Computer Acmillan Press								

S.	Course Outcome	Program Outcomes (PO) & Program
No.		Specific Outcomes (PSO)
1.	CO1: Demonstrate and differentiate working of all	PO2,PO11,PO12,PSO2
	layers of the OSI Reference Model and TCP/IP	
	model.	
2.	CO2:Investigate and explore fundamental issues	PO1,PO3,PO4,PO5,PO11PO12,PSO
	driving network design including error control.	2
3.	CO3: Understand and building the skills of IP	PO1,PO2,PO4,PO6,PSO1
	addressing, subnetting and routing protocols.	
4.	CO4: Discuss the flow control, elements and	PO2,PO3,PSO2
	protocols of transport layer	
5.	CO5: Describe the connection management and	PO1, PO2,PO3, PO4, PSO2
	application layer protocols.	
6.	CO6: Outline the basic knowledge of the use of	PO1, PO2, PO4,PO8, PSO2
	cryptography and network security.	



COs	PO1	P02	£O4	P04	504	P06	707	PO8	60d	PO10	10Sd	2OS4
CO1		2	-	-	-	-	-	-	-	-	2	2
CO2	2	-	2	2	3	-	-	-	-	-	2	2
CO3	3	2	-	2	-	2	-	-	-	-	2	2
CO4	-	2	2	-	-	-	-	-	-	-	2	2
CO5	2	2	2	2	-	-	-	-	-	-	2	2
CO6	2	-	-	2	-	-	-	2	-	-	2	2
Avg.	1.5	1.33	1	1.33	0.5	0.33	-	0.33	-	-	2	2

PO and PSO mapping with level of strength for Course Name Computer Networks (Course Code MCT115)



TERM-II



Syllabus of Application Programming in Python Lab MCL119

Scho	ool:	School of Engineering and technology						
Dep	artment	Department of Computer Science and Engineering	5					
Prog	gram:	M.SC						
Bra	nch:							
1	Course Code	MCL119						
2	Course Title	Application Programming in Python Lab						
3	Credits	1						
4	Contact Hours	0.0.2						
	(L-T-P)	0-0-2						
	Course Status	Regular						
5	Course	Emphasis is placed on procedural programming, algor	rithm design, and					
	Objective	language constructs common to most high level lang	guages and Email					
	_	handling through Python Programming.						
6	Course	Upon successful completion of this course, the student will	be able to:					
	Outcomes	CO1. Apply decision and repetition structures in program of	design.					
		CO2. Demonstrate the use of Python lists, tuples and diction	onaries					
		CO3. Describe and apply object-oriented programming me	thodology.					
		CO5 Model bottom-up approach in programming in datal	anty of programs.					
		CO6 Build Python programs to illustrate concise and effic	ient algorithms					
7	Course	Python is a language with a simple syntax, and a powerfu	l set of libraries. It					
	Description	is widely used in many scientific areas for data exploration	n. This course is an					
	Ĩ	introduction to the Python programming language for students without prior						
		programming experience. We cover data types, control flow, object-oriented						
		programming and Email handling						
8	Outline syllabus		CO Mapping					
	Unit 1	Practical based on conditional statements and						
		control structures						
		• Program to implement all conditional statements	CO1					
		Program to implement different control structures						
	Unit 2	Practical related to List, Tuples and						
		Dictionaries						
		Program to implement operations on lists	CO1,CO2					
		Program to implement operations on Dictionary						
	Unit 2	Program to implement operations on Tuple Program to implement operations on Tuple						
	Unit 5	Programming						
		Programming	<u> </u>					
		overloading polymorphism etc.	0.05					
		Program for file handling						



Unit 4	Practical related to Functions and Exception
	Handling
	 Program to implement Exception CO4 Handling Program to use different functions
Unit 5	Practical related to Database
	 Program to make connections with different CO5,CO6 databases Program to access database
Mode of examination	Jury/Practical/Viva
Weightage	CA MTE ETE
Distribution	60% 0% 40%
Text book/s*	The Complete Reference Python, Martin C. Brown, McGrwHill
Other References	 Introduction to computing in problem solving using Python, E Balahurusamy, McGrwHill Introduction to programming using Python, Y. Daniel Liang, Pearson Mastering Python, Rick Van Hatten, Packet Publishing House Starting out with Python, Tony Gaddis, Pearson

PO and PSO mapping with level of strength for Course Name Application Programming in Python Lab (Course Code MCL119)

Course Code_ Course Name	CO's	P 0 1	P 0 2	P O 3	РО 4	P 0 5	P 0 6	P 0 7	P 0 8	P 0 9	P 0 10	PS 0 1	PSO 2
	CO1	2	1	1	1	1	-	2	-	-	1	2	2
	CO2	1	1	1	1	1	-	2	-	-	1	2	2
Application Programming in	CO3	2	2	2	1	1	-	2	-	-	1	2	2
Python Lab	CO4	2	2	2	2	1	-	2	-	-	1	2	2
	CO5	2	2	2	2	1	-	2	-	-	1	3	3
	CO6	3	3	3	2	2	-	2	-	-	1	3	3

Average of non-zeros entry in following table (should be auto calculated).

Course Code	Course Name	P 0 1	РО 2	P O 3	P 0 4	P 0 5	P 0 6	P 0 7	P 0 8	P O 9	P O 10	PS O 1	PS 0 2
MCL1	Application Programming in	2	18	1.	1.	1.	_	2	_	_	1	23	23
19	Python Lab	2	1.0	8	5	1	-	2	-	-	1	4.3	2.3

Strength of Correlation

1. Addressed to Slight (Low=1) extent 2. Addressed to Moderate (Medium=2) extent



3. Addressed to Substantial (High=3) extent

Sch	ool: SET	Batch :2020 onwards									
Pro	gram: M.Sc.	Current Academic Year: 2020-21									
Bra	nch: CS & IT	Semester:3									
1	Course Code	MCT115 Course Name: Computer Networks									
2	Course Title	Computer Networks									
3	Credits	3									
4	Contact	3-0-0									
	Hours										
	(L-T-P)										
	Course	Compulsory									
	Status										
5	Course	Provide students with an overview of networking, insight	t into the issues,								
	Objective	challenges and working at all level of reference models.	Also practice on								
		applying protocols in network design.									
6	Course	Students will be able to:									
	Outcomes	CO1: Demonstrate and differentiate working of all layers of t	he OSI Reference								
		Model and TCP/IP model.									
		including error control									
		CO3: Understand and building the skills of IP addressing su	bnetting and								
		routing protocols.	onothing and								
		CO4: Discuss the flow control, elements and protocols of tra	nsport layer								
		CO5: Describe the connection management and application 1	ayer protocols.								
		CO6: Outline the basic knowledge of the use of cryptograph	y and network								
		security.									
7	Course	To familiarize with the basic taxonomy and terminolo	ogy of computer								
	Description	networking area.									
8	Outline syllabu	18	CO Mapping								
	Unit 1	Introduction									
	А	Introduction to computer networks, applications and uses,	CO1, CO2								
		classification of Networks based on topologies, geographical									
	D	distribution and communication techniques Beference model: OSI model TCP/IP model Overview of	CO1 CO2								
	D	Connecting devices (Hub, Repeaters, Switches, Bridges, Routers,	01,002								
		Gateways)									
	С	Transmission Media: wired , wireless, Multiplexing techniques- CO1, CO2									
		FDM, TDM									
	Unit 2	Data Link Layer									
	A	Functions, Framing, Error Control-Error correction	CO1, CO2								
	D	codes(Hamming code),Error Detection codes(Parity Bit, CRC)	001 000								
	В	Flow Control- Stop and Walt Protocol, Sliding window –Goback N and Selective repeat(ARO)	CO1, CO2								
		is and selective repeat(rive)									

Computer Networks

				SHARDA UNIVERSITY						
С	MAC- Sub-lay	er Protocols: A	LOHA, CSMA, CSMA/CD	CO1, CO2						
	protocols, IEE	EE Standards 80								
Unit 3	Network Laye	er								
Α	Design issues sub-netting and	IPV4addressin 1 sub-masking	g basics and Header format, CIDR,	C01,C03						
В	Routing, optim	Routing, optimality Principle Routing protocols-, Shortest path, flooding, distance vector routing , link state routing								
	flooding, dista									
С	Congestion co	ntrol-Leaky buc	eket, Token Bucket, jitter control	CO1,CO3,CO4						
Unit 4	Transport La	yer								
А	Need of trans	port layer wit	h its services, Quality of service,	CO1,CO4						
	connection ori	ented and conne	ection less							
В	Transmission	Transmission Control Protocol: Segment structure and header								
	format, TCP C	onnection Man	agement, Flow Control							
С	TCP congestio	n control, Inter	net Congestion Control Algorithm,	CO1,CO4,CO5						
	Overview of U	ser Datagram F	Protocol (UDP)							
Unit 5	Application L	ayer								
А	Domain Name	System (DNS)	, HTTP, FTP, SMTP	CO1,CO5						
В	Network Secu	urity services,	cryptography, Symmetric versus	CO1,CO5,CO6						
	Asymmetric cr	yptographic alg	gorithms- DES, and RSA							
С	Application of	Security in Net	works: Digital signature	CO1,CO5,CO6						
Mode of	Theory									
examination										
Weightage	CA	MTE	ETE							
Distribution	30%	20%	50%							
Text book/s*	2. Tane	nbaum, A.S.	" Computer Networks", 4 th							
	Editi	on, PHI								
Other	5. Foro	uzan, B, "Co	ommunication Networks", TMH,							
References	Lates	t Edition								
	6. W.	6. W. Stallings, "Data and Computer								
	Com	munication" N	Aacmillan Press							

S.	Course Outcome	Program Outcomes (PO) &
No.		Program Specific Outcomes (PSO)
1.	CO1:Demonstrate and differentiate working of all	PO2,PO11,PO12,PSO2
	layers of the OSI Reference Model and TCP/IP	
	model.	
2.	CO2:Investigate and explore fundamental issues	PO1,PO3,PO4,PO5,PO11PO12,PS
	driving network design including error control.	O2
3.	CO3: Understand and building the skills of IP	PO1,PO2,PO4,PO6,PSO1
	addressing, subnetting and routing protocols.	
4.	CO4: Discuss the flow control, elements and	PO2,PO3,PSO2
	protocols of transport layer	
5.	CO5: Describe the connection management and	PO1, PO2,PO3, PO4, PSO2
	application layer protocols.	
6.	CO6: Outline the basic knowledge of the use of	PO1, PO2, PO4,PO8, PSO2



cryptography and network security.

PO and PSO mapping with level of st	ength for Course Na	me Computer Networks
(Course Code MCT115)		

COs	P01	P02	PO3	P04	P05	P06	707	PO8	60d	PO10	PSO1	PSO2
CO1		2	-	-	-	-	-	-	-	-	2	2
CO2	2	-	2	2	3	-	-	-	-	-	2	2
CO3	3	2	-	2	-	2	-	-	-	-	2	2
CO4	-	2	2	-	-	-	-	-	-	-	2	2
CO5	2	2	2	2	-	-	-	-	-	-	2	2
CO6	2	-	-	2	-	-	-	2	-	-	2	2
Avg.	1.5	1.33	1	1.33	0.5	0.33	-	0.33	-	-	2	2



Sc	hool: SET	Batch : 2020							
Pr	ogram: MSc	Current Academic Year: 2020-20							
Br	anch: CS	Semester:							
1	Course Code	MCT116 Course Name							
2	Course Title	Artificial Intelligence							
3	Credits	3							
4	Contact	3-0-0							
	Hours								
	(L-T-P)								
	Course Status	Core							
5	Course	The objective of the course is to introduce by	asic fundamental concepts in						
	Objective	Artificial Intelligence (AI), with a practical appro	ach in understanding them. To						
		visualize the scope of AI and its role in futuristic	development.						
6	Course	Students will be able to:							
	Outcomes	CO1: Compare AI and non-AI solutions.							
		CO2: Apply AI techniques in problem solving.							
		CO3: Analyze the best search technique and imp	lement it in real-life						
		applications.							
		CO4: Classify supervised and unsupervised learn	ling and knowledge						
		CO5: To explore the scope of AL in various appli	action domains						
7	Course	This course introduces basic aspects of Artificial	intelligence comparing the AI						
/	Description	and conventional solutions to real world problem	and conventional solutions to real world problems, utilizing and analyze AI						
	Description	techniques for identifying optimal solutions to search strategies.							
8	Outline syllabus		CO Mapping						
-	Unit 1	INTRODUCTION TO AI							
		Foundation of AL Goals of AL History and AL	CO1 CO5						
	11	course line,	001,005						
	В	Introduction to Intelligent Agents; Environment;	CO1, CO5						
		Structure of Agent,							
	С	AI Solutions Vs Conventional Solutions; a	CO1, CO5						
		philosophical approach; a practical approach.							
	TI '' A	DDODI EM COLVINCIA CENTS							
	Unit 2	PROBLEM SOLVING AGEN IS							
	A	Problem solving using Search Techniques; Problems: Solutions: Optimality	CO1, CO2, CO3						
	B	Informed Search Strategies: Greedy Best-First: A*	CO1 CO2 CO3						
	D	Search; Heuristic Functions,	C01, C02, C03						
	C Uninformed Search Strategies; BFS; DFS; DLS: CO1 CO2 CO3								
		UCS; IDFS; BDS. Local Search algorithms: Hill							
		Climbing, genetic Algorithms.							
	Unit 3	KNOWLEDGE & REASONING							
	А	Knowledge-Based Agents; clause form, First-Order	CO1,CO4						
		Logic; Syntax-Semantics in FOL;							
	В	Representation revisited, ; Simple usage; Inference	CO1, CO4						



	Procedure; Inference in	FOL;		
С	Forward Chaining; Bac	kward Chaining	; Resolution	CO4
Unit 4	LEARNING			
А	Common Sense V Representations; Forr Learning Types: Super	s Learning; ns of learning vised; Unsupervi	CO4	
В	Reinforcement Learnin	gs, Decision tree	es,	CO4
С	Artificial Neural Netwo networks; Single Layer	orks: Introduction and Multi-Laye	n, types of r n/w.	CO4
Unit 5	APPLICATIONS			
А	case studies on NLP, In	nage Processing	·,	CO1,CO5
В	Robotics – Hardware; V studies,	vision; Navigatio	C01,C05	
С	Water jug problem	and similar ca	ase studies	C01,C05
Mode of examination	Theory			
Weightage	СА	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*	1. Russell S Intelligence: A Hall.	& Norvig I A Modern Appro		
Other References	 Rich E& Knig Tata McGraw Dan W. Patter Expert Syster Prentice Hall I 	ght K, <i>Artificial</i> Hill, Edition 3. rson, Artificial I ns, Pearson Ed India. Indian Edi	Intelligence, ntelligence & lucation with tion.	

S.	Course Outcome	Program Outcomes (PO) & Program
No.		Specific Outcomes (PSO)
1.	CO1: Compare between AI and non-AI solutions.	PO1,PO2,PO7,PO9,PO10, ,PSO1
2.	CO2: Apply AI techniques in problem solving.	PO2, PO3, PO4, PO5, PSO2
3.	CO3: Analyze the best search technique and	PO1,PO2,PO3,PO4, PO6, PO9, PO11,
	implement it in real-life applications.	PO12
4.	CO4: Classify supervised and unsupervised	PO6,PO11, PSO5
	learning and knowledge representation.	
5.	CO5: To explore the scope of AI in various application domains.	PO9, PO11,PO12, PSO5

PO and PSO mapping with level of strength for Course Name Artificial Intelligence



2.1 Template A1: Syllabus for Theory Courses (SAMPLE)

Department Department of Computer Science and Engineering Program:	Sch	ool:	School of Engineering and technology									
Program: Image: status Image: status <thimage: status<="" th=""> Image: status Image: status</thimage:>	Dep	artment	Department of Computer Science and Engineering									
Branch: Image: Course Code MCT117 1 Course Title Android Application Development 3 Credits 3 4 Contact 3-0-0 Hours (L-T-P)	Prog	gram:										
1 Course Code MCT117 2 Course Title Android Application Development 3 Credits 3 4 Contact 3-0-0 Hours	Bra	nch:										
2 Course Title Android Application Development 3 Credits 3 4 Contact 3-0-0 Hours	1 Course Code MCT117											
3 Credits 3 4 Contact 3-0-0 Hours (L-T-P)	2	Course Title	Android Application Development									
4 Contact Hours (L-T-P) 3-0-0 7 Course Description Android application development course will help students to android platform and understand application Lifecycle. 7 Course Description This android development course will help students to understand the basis of Android application. 8 Outline syllabus CO6 8 Outline syllabus CO Mapping 4 Introduction of Android Android Platform and understand applications and company of an android application. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Android Platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Android, Comparing Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform 8 Android Directory Structure, Android Development Tools, Architecture of Android CO1 CO1	3	Credits	3									
Hours (L-T-P) Course Status Core /Elective/Open Elective 5 Course Objective android application development course is designed to help students to implement application for android devices. The student will learn the basics of android platform and understand application Lifecycle. 6 Course Outcomes CO1: Demonstrate and understand applications related to layouts and rich uses interactive interfaces. CO3: Apply essential android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. CO6: Develop Basic and advance android app development for android devices. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Mapping 4 Introduction of Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform 8 Android Directory Structure, Android Development Android, Comparing Android with other platform CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform 8 Android Directory Structure, Android Development Tools, Architecture of Android. CO1 CO1	4	Contact	3-0-0									
(L-T-P) Course Status Core /Elective/Open Elective 5 Course Objective Android application development course is designed to help students to implement application for android devices. The student will learn the basics of android platform and understand application Lifecycle. 6 Course Outcomes CO1: Demonstrate and understand applications related to layouts and rich uses interactive interfaces. CO2: Develop various android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform B Android Directory Structure, Android Development CO1		Hours										
Course Status Core /Elective/Open Elective 5 Course Objective Android application development course is designed to help students to implement application for android devices. The student will learn the basics of android platform and understand application Lifecycle. 6 Course CO1: Demonstrate and understand applications related to layouts and rich uses interactive interfaces. CO2: Develop various android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Android, Congaring Android, Features of Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 8 Android Directory Structure, Android Development Android, Comparing Android with other platform CO1		(L-T-P)										
5 Course Objective Android application development course is designed to help students to implement application for android devices. The student will learn the basics of android platform and understand application Lifecycle. 6 Course CO1: Demonstrate and understand applications related to layouts and rich uses interactive interfaces. CO2: Develop various android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Android, Conparing Android, Features of Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 8 Android Directory Structure, Android Development Android, Comparing Android with other platform CO1 8 Android Directory Structure of Android Development Android, Comparing Android With other platform CO1		Course Status	Core /Elective/Open Elective									
Objective implement application for android devices. The student will learn the basics of android platform and understand application Lifecycle. 6 Course CO1: Demonstrate and understanding anatomy of an android application. CO2: Develop various android applications related to layouts and rich uses interactive interfaces. CO3: Apply essential android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Mapping 4 History of Android, Features of Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 8 Android Directory Structure, Android Development CO1	5	Course	Android application development course is designed to help stu	idents to								
6 Course CO1: Demonstrate and understanding anatomy of an android application. 6 Outcomes application. CO2: Develop various android applications related to layouts and rich uses interactive interfaces. CO3: Apply essential android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. CO6: Develop Basic and advance android app development for android devices. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Mapping 4 History of Android, Features of Android, Android CO1 CO1 A History of Android, Features of Android, Android CO1 B Android Directory Structure, Android Development CO1		Objective	implement application for android devices. The student will lea	rn the basics of								
6 Course CO1: Demonstrate and understanding anatomy of an android application. Outcomes application. CO2: Develop various android applications related to layouts and rich uses interactive interfaces. CO3: Apply essential android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. CO6: Develop Basic and advance android app development for android devices. 7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO 8 Outline syllabus CO A History of Android, Features of Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development Tools, Architecture of Android. CO1		~	android platform and understand application Lifecycle.									
Outcomes application. CO2: Develop various android applications related to layouts and rich uses interactive interfaces. CO3:Apply essential android programming concept CO4: Distinguish and compare different components of Android CO5: Access and work with databases under an android operating system. CO6: Develop Basic and advance android app development for android devices. 7 Course This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO 4 History of Android, Features of Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1	6	Course	CO1: Demonstrate and understanding anatomy of an andre	oid								
8 Outline syllabus CO 9 Android, Comparing Android, Features of Android, Android 9 Outline syllabus CO 10 Introduction of Android, Features of Android, Android, Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 10 Android Directory Structure, Android Development CO1		Outcomes	application.									
8 Outline syllabus CO Android 8 Outline syllabus CO Android 1 Introduction of Android 2 CO Mapping 1 Introduction of Android 2 CO Mapping 3 Outline syllabus 4 Introduction of Android 5 Outline syllabus 6 Outline syllabus 6 Android Directory Structure, Android Development 7 B 7 Course Description 8 Outline syllabus CO Mapping 1 Introduction of Android Devices, Open Handset Alliance (OHA) , Advantages of Android, Comparing Android with other platform 1 B 1 Android Directory Structure, Android Development 1 Tools, Architecture of Android.			CO2: Develop various android applications related to layo	outs and rich								
8 Outline syllabus CO 8 Outline syllabus CO 1 Introduction of Android CO 1 Mapping CO 1 Mapping CO 1 Mapping CO 2 Course Course 3 Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO 8 Outline syllabus CO 9 A History of Android, Features of Android, Android 9 Android, Comparing Android with other platform CO1 9 Android Directory Structure, Android Development CO1			uses interactive interfaces.									
8 Outline syllabus CO 8 Outline syllabus CO A History of Android, Features of Android, Android CO A History of Android, Features of Android, Android CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1			CO3: Apply essential android programming concept	1 • 1								
8 Outline syllabus CO Main 1 Introduction of Android CO Mapping Unit 1 Introduction of Android, Features of Android, Android CO1 A History of Android, Features of Android, Android CO1 B Android Directory Structure, Android Development CO1 CO1 CO2 CO2 CO3 CO3 CO3 CO4: Description CO3 Course CO3 CO3 Co3 CO3 CO3 Co4 CO3 CO3 Co5 CO3 CO3 Co4 CO3			CO4: Distinguish and compare different components of A	ndroid								
8 Outline syllabus CO mapping 4 Introduction of Android, Features of Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android Directory Structure, Android Development CO cO CO CO CO Mapping 8 Outline syllabus CO mapping 8 Outline syllabus CO mapping 9 Outline syllabus CO mapping 10 Introduction of Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform 10 Android Directory Structure, Android Development Tools, Architecture of Android.			COS. Access and work with databases under an android of	perating								
8 Outline syllabus CO Mapping Unit 1 Introduction of Android A History of Android, Features of Android, Android CO Mapping B Android Directory Structure, Android with other platform CO1 Course CO CO CO Mapping CO CO CO CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, CO1 CO1 CO3 CO CO1 CO1			System.	nt for android								
7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Mapping Image: Market All ince (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development Tools, Architecture of Android. CO1			devices									
7 Course Description This android development course will help students to understand the basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. 8 Outline syllabus CO Mapping 9 Unit 1 Introduction of Android Devices, Open Handset Alliance (OHA) , Advantages of Android, Comparing Android with other platform CO1 8 Android Directory Structure, Android Development Tools, Architecture of Android. CO1			uevices.									
7 Course Finis and/ord development course with help students to understand the Description basis of Android platform and its lifecycle. This will help them to implement simple GUI applications, use built-in components and work with database to store the data. Mapping 8 Outline syllabus CO Mapping Introduction of Android CO A History of Android, Features of Android, Android CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1	7	Course	This android development course will help students to und	lerstand the								
8 Outline syllabus CO 8 Outline syllabus CO Mapping Introduction of Android Mapping Image: Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1 B Android Directory Structure of Android. CO1	,	Description	has a f Android platform and its lifecycle. This will helt	them to								
8 Outline syllabus CO Mapping Unit 1 Introduction of Android A History of Android, Features of Android, Android CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1 Tools, Architecture of Android. CO1		Description	implement simple GUI applications, use built-in compone	ents and work								
8 Outline syllabus CO 8 Outline syllabus CO Mapping Introduction of Android Mapping A History of Android, Features of Android, Android CO1 A History of Android, Features of Android, Android CO1 B Android Directory Structure, Android Development CO1 Tools, Architecture of Android. CO1 CO1			with database to store the data.									
8 Outline syllabus CO Mapping 8 Unit 1 Introduction of Android CO Mapping A History of Android, Features of Android, Android Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development Tools, Architecture of Android. CO1												
8 Outline syllabus CO 8 Outline syllabus CO 9 Introduction of Android Mapping 1 Introduction of Android CO1 1 A History of Android, Features of Android, Android CO1 1 Devices, Open Handset Alliance (OHA) , Advantages of Android, Comparing Android with other platform CO1 1 B Android Directory Structure, Android Development CO1 1 Tools, Architecture of Android. CO1 CO1												
8 Outline syllabus CO 8 Unit 1 Introduction of Android Mapping A History of Android, Features of Android, Android CO1 A History of Android, Features of Android, Android CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1 Tools, Architecture of Android. CO1												
Unit 1 Introduction of Android Mapping A History of Android, Features of Android, Android CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1 Tools, Architecture of Android. CO1	8	Outline syllabu	15	СО								
Unit 1 Introduction of Android A History of Android, Features of Android, Android CO1 Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platform CO1 B Android Directory Structure, Android Development CO1 Tools, Architecture of Android. CO1		-		Mapping								
AHistory of Android, Features of Android, AndroidCO1Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platformCO1BAndroid Directory Structure, Android Development Tools, Architecture of Android.CO1		Unit 1	Introduction of Android									
Devices, Open Handset Alliance (OHA), Advantages of Android, Comparing Android with other platformBAndroid Directory Structure, Android Development Tools, Architecture of Android.CO1		А	History of Android, Features of Android, Android	CO1								
Android, Comparing Android with other platformBAndroid Directory Structure, Android Development Tools, Architecture of Android.CO1			Devices, Open Handset Alliance (OHA), Advantages of									
BAndroid Directory Structure, Android DevelopmentCO1Tools, Architecture of Android.			Android, Comparing Android with other platform									
Tools, Architecture of Android.		В	Android Directory Structure, Android Development	CO1								
			Tools, Architecture of Android.									



				eyond Boundaries						
С	Structure of M	Ianifest files, A	Activities, Activity life cycle	CO1						
Unit 2	Android Use	r Interfaces								
А	Layouts-Linea	tive layout, Constraint	CO1,CO2							
	layout									
В	Input Controls	s – Text input,	Checkboxes, Radio buttons,	CO1,CO2						
	Spinner, Togg	Spinner, Toggle buttons and switches								
С	Event delegation	ion model, Typ	pe of Event Listeners,	CO1,CO2						
	Onclick, OnL	ongClick, OnF	FocusChanged, OnKeyUp,							
	OnKeyDown									
Unit 3	Components	of Android								
А	Intents, types	of intents, Inte	ent Filter, Sending and	CO3						
	Receiving of a	lata,								
В	Services, serv	vice life cycle,	Broadcast receivers,	CO3						
С	Notifications .	Type of notif	ication, Toast notification	CO3						
Unit 4	Working with	h SQL Lite								
А	Introduction to	o SQLite datab	base, Steps for connecting	CO4,CO5						
	application wi	th database.								
В	Fetch and upd	ate data in dat	abase from application,	CO4,CO5						
С	Cursor and co	ntent value, op	bening and closing database	CO4,CO5						
Unit 5	Sensors and A	Animation								
А	Sensor Manag	ger, Sensor Fra	mework, Detect availability	CO6						
	of sensor, Fet	ch data from s	ensors on frequent basis							
В	Types of Sens	ors Acceleron	neter, Gyroscope, Proximity	CO6						
	Sensor, Orient	tation, Light S	ensor							
С	Graphics and	Animation		CO6						
Mode of	Theory/Jury/P	ractical/Viva								
examination										
Weightage	CA	MTE	ETE							
Distribution	30%									
Text book/s*	1. W.M Lee, "B	1. W.M Lee, "Begning Android 4 Application								
	Development	",Wiley Android 4 Appli	pation Development" Wiley							
Other	1. Lauren Darcy	Android 4 Applie A Shane Conder.	Sams Teach Yourself Android							
References	Application I	Development in 2	4 Hrs, 1st ed.							
References	2. Jeff Mcwhert	er, Scott Gowell,	Professional Mobile Application							
	Development	Development, Wrox Publisher(2012), 1st ed.								

S.	Course Outcome	Program Outcomes (PO) &
No.		Program Specific Outcomes (PSO)
1.	CO1: Demonstrate and understanding anatomy of	PO1,PO4,PO5,PO10
	an android application.	
2.	CO2: Develop various android applications related	PO2,PO3,PO4,PO5,PO9,PO10,PSO
	to layouts and rich uses interactive interfaces.	1,PSO2



		🥿 🥓 Beyond Boundaries
3.	CO3:Apply essential android programming	PO1,PO4,PO5,PO10,PSO1
	concept	
4.	CO4: Distinguish and compare different	PO4,PO5,PO10
	components of Android	
5.	CO5: Access and work with databases under an	PO1,PO2,PO4,PO5,PO7,PO9,PO10
	android operating system.	,PSO1
6.	CO6: Develop Basic and advance android app	PO1,PO2,PO3,PO4,PO5,PO7,PO8,
	development for android devices	PO9,PO10,PSO1,PSO2

PO and PSO mapping with level of strength for Course Name Android Application Development (**Course Code** MCT117)

Course Code_ Course Name	CO' s	P 0 1	P 0 2	P O 3	РО 4	P 0 5	P 0 6	P O 7	P 0 8	P O 9	P O 10	PS 0 1	PSO 2
	CO 1	1			2	2					2		
	CO 2		2	2	2	2				2	2	1	1
	CO 3	1			2	2					2	1	
	CO 4				2	2					2		
MCT117_ Android Application	CO 5	1	1		2	2		1		2	2	1	
Development	CO 6	1	2	3	2	2		1	1	2	2	2	2

Average of non-zeros entry in following table (should be auto calculated).

Course Code	Course Name	PO 1	PO2	PO 3	РО 4	РО 5	PO 6	РО 7	РО 8	PO 9	PO 10	PSO 1	PSO 2
MCT117	Android Application Development	1	1.67	2.5	2	2	0	1	1	2	2	1.25	1.5

Strength of Correlation

1. Addressed to Slight (Low=1) extent2. Addressed to Moderate (Medium=2) extent3. Addressed to Substantial (High=3) extent



TERM-III



S	School: SET	Batch : 2020-19								
	Program:		Current Academic Year: 2020-19							
B	Franch: CSE		Semester: Vth QAB							
1	Course Code	ARP 301	Course Name : Quantitative Aptitude Behavioural and							
-			Interpersonal Skills							
2	Course Title	Q	uantitative Aptitude Behavioural and Interpersonal Skills							
3	Credits		2							
4	Contact Hours (L-T-P)		0-0-4							
	Course Status									
5	Course Objective	To enhance i Provide a 36 program, be self-branding and upgrade By the end o employabilit	To enhance holistic development of students and improve their employability skills. Provide a 360 degree exposure to learning elements of Business English readiness rogram, behavioural traits, achieve softer communication levels and a positive elf-branding along with augmenting numerical and altitudinal abilities. To up skill nd upgrade students' across varied industry needs to enhance employability skills. By the end of this semester, a will have entered the threshold of his/her 3 rd phase of mployability enhancement and skill building activity exercise.							
6	Course Outcomes	CO1: A stua management. to meet the p meaningful pe CO2: At the a student asse for building p CO3: At the learn to build conversation Assertiveness the same end CO4: At th criticize for p that deter hold CO5: At the students basic effective leade CO6: At the will help stude	 CO1: A student will understand & apply Personality and its traits / The art of impression anagement. A Student will learn Personality development which will help a student groom o meet the needed social strata for establishing himself/herself in the society, make a eaningful personality and find employment CO2: At the end of the program Behavioural and Interpersonal Skills curriculum will help student assert a positive behavioural attitude and attributes developing interpersonal skills or building positive and meaningful social and professional relationships CO3: At the end of the program a student will learn the art of avoiding Arguments and earn to build meaningful conversations that will help them become effective speakers and ponversation makers helping them succeed in social and professional life/ The Art of sertiveness will help them to become assertive communicators and not aggressive ones for the same end result CO4: At the end of the program the Constructive Criticism syllabus will let a student riticize for positive emphasis for improvement, growth and eliminating wasteful synergies that deter holistic development CO5: At the end of the program The 4M Model / Verbal Abilities-3 syllabi will teach the fudents basics of leadership in coaching and mentoring models that will help them become ffective leaders and coaches 							
		This bundles	s Training approach attempts to explore the personality, character, and							
7	Course Description	the natural style of the student. This helps to develop character, personality, confidence and interpersonal abilities within the student along with level 3 readiness in quant, aptitude and reasoning skills								
8	Outline syllabus – ARP301									
	Unit 1		Impress to Impact	CO MAPPING						
	A	What is Pe	ersonality? Creating a positive impression – The 3 V's of Impression Individual Differences and Personalities	CO1						
	В	Persona	ality Development and Transformation Building Self Confidence	CO2						



		Behavioural and Interpersonal Skills					
		Avoiding Arguments The Art of Assertiveness Constructive Criticism The	CO5, CO4,				
	С	Personal Effectiveness Grid Assessing our Strengths & Limitations and Creating	CO3				
		an Action Plan for Learning with the 4M Model Verbal Abilities-3					
	Unit 2	Introduction to APTITUDE TRAINING- Reasoning- Logical/ Analytical					
	А	Numbers & Digits, Mathematical Operations Analytical Reasoning					
	В	Cubes & Cuboids Statement & Assumptions	CO6				
	С	Strong & Weak Argument	CO6				
	Unit 3	Quantitative Aptitude					
	А	Work & Time ,Pipes & Cistern					
	В	Time ,Speed & Distance, Quadratic & Linear Equations, Logs & Inequalities	CO6				
	С	Sequence & Series, Logarithms, Data Interpretation Data sufficiency - Level 1	CO6				
	Weightage	(CA)Class Assignment/Free Speech Exercises / JAM – 60% (ETE) Group					
	Distribution	Presentations/Mock Interviews/GD/ Reasoning, Quant & Aptitude – 40%					
		Wiley's Quantitative Aptitude-P Anand / Quantum CAT – Arihant Publications / Quicker Maths- M.					
	Text book/s*	Tyra Power of Positive Action (English, Paperback, Napoleon Hill) Streets of Attitude (English,					
	Text book/s*	Paperback, Cary Fagan, Elizabeth Wilson) The 6 Pillars of self-esteem and awareness – Nathaniel					
		Brandon / Goal Setting (English, Paperback, Wilson Dobson					



Sche	ool: SET	Batch : 2020												
Prog	gram: MCA	Current Academic Year: 2020-20												
Bra	nch:	Semester: IV												
1	Course Code	MCA271 Course Name: MCA												
2	Course Title	Cloud Computing												
3	Credits	3												
4	Contact Hours	3-0-0												
	(L-T-P)													
	Course Status	Elective												
5	Course	1. Provide students with an overview of the fundamental concepts of	f Cloud Computing.											
	Objective	2. Gain insight into the challenges and limitations Models of cloud c	computing.											
		3. To learn the various technologies of the cloud computing parad	3. To learn the various technologies of the cloud computing paradigm and learn about											
		recent advances in Cloud Computing and enabling technologies.	recent advances in Cloud Computing and enabling technologies.											
		4. Prepare students for research in the area of cloud Computing risk	s and cloud security											
		challenges.												
	~	5. Enhance students communication and problem solving skills												
6	Course	At the end of the course, students will have achieved the following learn	ning objectives.											
	Outcomes	CO I. Define the basics of cloud and recall the computer Science	concepts which are											
		helpful in understanding on demand service architecture.	allal and distributed											
		CO 2. Classify and describe the architecture and taxonomy of para	O 2. Classify and describe the architecture and taxonomy of parallel and distributed											
		computing, including shared and distributed memory, and da	computing, including shared and distributed memory, and data and task parallel											
		computing.												
		and applications	foud in the systems											
		CO 4 Categorize and Characterize between Infrastructure services	deployment models											
		and governance in cloud computing. Examine the design of ta	ask and data parallel											
		distributed algorithms for Clouds and use them to construct Clo	oud applications.											
		CO 5. Evaluate the importance of cloud using monitoring and mana	gement of services											
		for performance improvement of HPC and to follow the	e Governance and											
		Compliances.												
		CO 6. Elaborate the design concept and formulate to build the so	olution using cloud											
		service providers as AWS, MS Azure and Google Cloud. Det	monstrate the use of											
		Map-Reduce, Vertex-Centric and Continuous Dataflow program	mming models.											
7	Course	This course introduces advanced aspects of Cloud Computing, encompa	ssing the principles,											
	Description	to analyze the cloud, identify the problems, and choose the relevant mod	lels and algorithms											
		to apply.												
8	Outline syllabus		CO Mapping											
	Unit 1	Cloud Computing Fundamentals												
		A. Types of Computing, Grid computing, distributed	CO1, CO2, CO3											
		computing, Client-server computing, Introduction to												
		distributed systems,												
		B. Cloud Computing definition, Roots of Cloud Computing,												
		Layers and Types of Clouds, Desired Features of a Cloud,												
		Cloud Infrastructure Management, Understanding Services:												
		Saas, Paas, Iaas C. Infractructure es a Service Droviders, Dietform es a Service												
		C. Initiastructure as a Service Flowiders, Flatforni as a Service Providers Challenges and Ricks Broad Approaches to												
		Migrating into the Cloud The Seven-Sten Model of												
		Migration into a Cloud												
	Unit 2	Understanding Abstraction and Virtualization												
		A. Introduction to Virtual Machines. The Anatomy of Cloud	CO1, CO2.CO3											
		inconceron to virtual fracimes, the rindomy of Cloud	,,,											

		HARDA
	Infrastructures, VM Provisioning and Manageability, Virtual	
	Machine Migration Services, VMware, vSphere	
	B. Management of Virtual Machines for Cloud	
	Infrastructures Understanding Machine Imaging Distributed	
	Management of Virtual Infrastructures Scheduling	
	Tachniques	
	C. The Logical Design Genuer Distributed Date Storage in	
	C. The Logical Design, Secure Distributed Data Storage in	
	Cloud Computing, Cloud Storage, Google file system,	
	Technologies for Data Security in Cloud Storage	
Unit 3	Cloud Computing Services and Applications	
A	A. Introduction of CometCloud, Aneka and CloudSim,	CO2,CO3,CO4
	Integration of Private and Public Clouds, Technologies and	
	Tools for Cloud Computing,	
	B. Introduction of Enterprises Demand and Cloud Computing,	
	Dynamic ICT Services, Workflow Engine for Clouds,	
	Workflow Management Systems, Architecture of Workflow	
	Management Systems	
	C. Scientific Application for Cloud Environments,	
	Classification of Scientific Applications and Services in the	
	Cloud, MapReduce Programming Model, MapReduce	
	Impacts and Research Directions.	
Unit 4	Cloud Computing Risk and Performance Issues	
A	A. Model for Federated Cloud Computing Security	CO3. CO4.CO5
	Considerations SLA Management in Cloud Computing: A	000,001,000
	Service Provider's Perspective Types of SLA Life Cycle of	
	SI A	
	D LIDC in the Cloud: Derformance related Issues Game	
	B. HFC in the Cloud. Fertormance-ferated issues, Game	
	Hosting on Cloud Resources, Building Content Derivery	
	Networks Using Clouds, Resource Cloud Masnups	
	C. Legal Issues in Cloud Computing(PCI DSS), Data Privacy	
	and Security Issues, The CIA Triad: Confidentiality,	
	Integrity, And Availability, Common Threats and	
	Vulnerability in cloud, Cloud Service Provider (CSP) Risks	
Unit 5	AWS, MS Azure and Google Cloud Services	
А	A. AWS Services:Elastic Compute Cloud, Identity and Access	CO4,CO5, CO6
	Management, Simple Storage Service, Content Delivery	
	Network, CloudWatch	
	B. MS Azure Services: Azure Virtual Machine, SQL Server on	
	Virtual Machines, Azure SQL Database, Azure Active	
	Directory	
	C. Google Cloud: Compute Engine, Migrate for Compute	
	Engine, Cloud Functions,,Cloud Lab Balancing,	
Mode of	Theory	
examination		
Weightage	CA	MTE
Distribution		
	30%	20%
Text book/s*	1. CLOUD COMPUTING Principles and Paradigms. Edited by	
Other	Raikumar Buyva. Jam	
References	2. Cloud Computing: A Practical Approach Anthony T Velte	
	Toby J. Velte, Robert Elsenpeter	
	3. Barrie Sosinsky "Cloud Computing (Rible)" Wiley	
	5. Burre Sosmoky Cloud Comparing (Blote), Whey.	<u> </u>



	4.	Ronald L. Krutz and Russell Dean Vines, "Cloud Security: A comprehensive Guide to Secure Cloud Computing", WILEY.	

S.	Course Outcome	Program Outcomes (PO) & Program
No.		Specific Outcomes (PSO)
1.	Define the basics of cloud and recall the computer Science	PO1, PO2,PO3,PSO3
	concepts which are helpful in understanding on demand service	
	architecture.	
2.	Classify and describe the architecture and taxonomy of parallel	PO1, PO2, PO3, PSO1, PSO3
	and distributed computing, including shared and distributed	
	memory, and data and task parallel computing.	
3.	Apply and Manage Virtualization and Workflow to use the cloud	PO1,PO2,PO3,PSO1,PSO2
	in file systems and applications.	
4.	Categorize and Characterize between Infrastructure services,	PO1,PO2,PO4,PSO1,PSO2
	deployment models, and governance in cloud computing.	
	Examine the design of task and data parallel distributed	
	algorithms for Clouds and use them to construct Cloud	
	applications.	
5.	Evaluate the importance of cloud using monitoring and	PO1,PO2,PO4,PSO1,PSO3
	management of services for performance improvement of HPC	
	and to follow the Governance and Compliances.	
6	Elaborate the design concept and formulate to build the solution	PO1,PO2,PO3,PSO1,PSO2,PSO3
	using cloud service providers as AWS, MS Azure and Google	
	Cloud. Demonstrate the use of Map-Reduce, Vertex-Centric and	
	Continuous Dataflow programming models.	

PO and PSO mapping with level of strength for Course Name Cloud Computing (Course Code MCA 271)

	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р	Р
	0	0	0	0	0	0	0	0	0	0	0	0	S	S	S
Cos	1	2	3	4	5	6	7	8	9	1	1	1	0	0	0
										0	1	2	1	2	3
CO1	1	3	3												2
CO2	3	2	2										1		2
CO3	3	2		3									2	3	
CO4	3	3		2									2	3	
CO5	2	2		2									3		2
CO6	3	2	1										3	2	2



														~~	🧈 Веу	ond Bo
Со	Cour										Р	Р	Р			
urs	se			Р	Р	Р	Р	Р	Р	Р	0	0	0	Р	Р	Р
e	Nam	Р	Р	0	0	0	0	0	0	0				S	S	S
Co	e	0	0								1	1	1	0	0	0
de		1	2	3	4	5	6	7	8	9	0	1	2	1	2	3
		2.	2.	1	1									1.8	1.	1.
		5	3											3	3	3
					1											
					6											



Syllabus: MCA 365 SOFTWARE PROJECT MANAGEMENT

Sch	ool:	School of Engineering and technology												
Dep	artment	Department of Computer Science and Engineering												
Pro	gram:	MCA												
Bra	nch:	NA												
1	Course Code	MCA 365 Semester-V												
2	Course Title	Software Project Management												
3	Credits	3												
4	Contact	3-0-0												
	Hours													
	(L-T-P)													
	Course	NON Elective												
	Status													
5	Course	To provide fundamental skills of software Project manage	o provide fundamental skills of software Project management emphasizing											
	Objective	on issues & hurdles associated with delivering successful	al projects. Apply											
	5	project management concepts through working in a group	as team leader or											
		ctive team member on an IT project.												
6	Course	fter successful completion of this course students should be able to:												
	Outcomes	O1: Define the principles of project management for developing software.												
		CO2: Explain various project management scheduling techni	202: Explain various project management scheduling techniques.											
		CO3: Apply different techniques of project monitoring, control and review.												
		CO4: Classify various project management tools and estimate the risks												
		CO5: Assass issues related to project quality and staffing												
		CO6: Discuss the effect of project management practices in z	an organization											
7	Course	This course is aimed at introducing the primary important of	concepts of project											
	Description	management related to managing software development proj	ects. Students will											
	Description	also get familiar with the different activities involved in	Software Project											
		Management. Further, they will also come to know how to	successfully plan											
		and implement a software project management activity, a	and to complete a											
		specific project in time with the available budget.												
8	Outline syllabu	18	CO Mapping											
	Unit 1	Introduction to Software Project Planning												
	А	Fundamentals of Software Project Management (SPM),	CO1											
		Need Identification, Vision and Scope Document, Project												
		Management Cycle, SPM Objectives												
	В	SPM Framework, Software Project Planning, Planning	CO1											
		Objectives, Project Plan, Types of Project Plan, Structure												
		of a Software Project Management Plan	CO1											
	C	Software Project Estimation, Estimation Methods,	COI											
	Ilm:+ 2	Estimation Models, Decision Process												
		Work Prookdown Structure (WDS), Types of WDS	C02											
	A	WORK DIEAKUOWII SHUCLUFE (WBS), 1 ypes OI WBS, Functions Activities and Tasks Project Life Cycle and	02											
		Product Life Cycle												



В	Ways to Organ	nize Personnel,	Project Schedule, Scheduling	CO2							
	Objectives, Bu	ilding the Proje	ct Schedule, Scheduling								
	Terminology a	nd Techniques									
С	Network Diag	rams: PERT, CI	PM, Bar Charts: Milestone	CO2							
	Charts, Gantt G	Charts									
Unit 3	Project Monit	toring and Con	trol								
А	Dimensions of	Project Monito	ring & Control, Earned	CO3, CO6							
	Value Analysis	s									
В	Earned Value	Indicators: Bud	geted Cost for Work	CO3							
	Scheduled (BC	CWS), Cost Var	iance (CV), Schedule								
	Variance (SV)	, Cost Performa	nce Index (CPI), Schedule								
	Performance In	ndex (SPI)									
С	Software Revie	ews, Types of F	Review: Inspections,	CO3							
	Deskchecks, W	Valkthroughs, C	ode Reviews								
Unit 4	Software Con	Software Configuration and Risk Management									
А	Software Conf	iguration Items	and Tasks, Baselines, Plan	CO4							
	for Change, Ch	for Change, Change Control, Change Requests									
	Management,	Version Control	l								
В	Risk Managem	nent: Risks and	Risk Types, Risk Breakdown	CO4, CO6							
	Structure (RBS	S), Risk Manage	ement Process: Risk								
	Identification,										
	Monitoring										
С	Cost Benefit A	Cost Benefit Analysis, Software Project Management									
	Tools: CASE	Fools, MS-Proje	ect								
Unit 5	Software Qua	lity Assurance									
A	Concept of Sol	ftware Quality,	Software Quality Attributes,	CO5, CO6							
	Software Qual	ity Metrics and	Indicators, The SEI								
	Capability Mat	turity Model (C	MM)								
В	SQA Activiti	es, Formal S	QA Approaches: Proof of	CO5							
	Correctness, S	tatistical Qualit	ty Assurance, Product versus								
	process quality	management,		~~~~							
С	Introduction, t	ypes of contract	, stages in contract,	CO5, CO6							
	placement, typ	ical terms of a c	contract, contract								
	management, a	acceptance									
Mode of	Theory/Jury/I	Practical/Viva									
examination	~ .										
Weightage	CA	MTE	ETE								
Distribution	30%	20%	50%								
Text book/s*	1. Software Pro	oject Managem	ent, Bob Hughes and Mike								
	Cotterell, McC										
Other	1. Software	ement A Unified Framework,									
References	Walker Ro	Wesley									
	2. A practitio	oner's Guide to	Software Engineering, Roger								
	Pressman,	Tata McGraw	Hill 2014 8 th edition.								
	3. Basics of	f Software P	Project Management, NIIT,								
	Prentice-H	Iall India, Lates	t Edition.								



S.	Course Outcome	Program Outcomes (PO) & Program
No.		Specific Outcomes (PSO)
1.	CO1: Define the principles of project	PO1,PO2,PO3, PO7,PO8,PO9,PO10
	management for developing software.	
2.	CO2: Explain various project management	PO1,PO2,PO3,PO4,
	scheduling techniques.	PO7,PO8,PO9,PO10
3.	CO3: Apply different techniques of project	PO1,PO2,PO3,PO4,
	monitoring, control and review.	PO7,PO8,PO9,PO10
4.	CO4: Classify various project management	PO1,PO2,PO3,PO4,
	tools and estimate the risks involved in project	PO7,PO8,PO9,PO10
	activities.	
5.	CO5: Assess issues related to project quality	PO1,PO2,PO3, PO7,PO8,PO9,PO10
	and staffing.	
6.	CO6: Discuss the effect of project management	PO1,PO2,PO3,PO5,PO6,PO7,PO8,PO9,
	practices in an organization	PO10,PSO1

PO and PSO mapping with level of strength for Course Name Software project management(Course Code MCA 365)

Course Code_ Course Name	CO's	PO 1	PO 2	РО 3	РО 4	РО 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
	CO1	3	1	1	-	-	-	1	3	3	2	-	-
MCA	CO2	3	3	3	3	-	-	2	3	3	2	-	-
365_Softw	СОЗ	3	3	3	3	-	-	2	3	3	2	-	-
are	CO4	3	3	3	3	-	-	2	3	3	2	-	-
project managem	CO5	3	1	3	-	-	-	2	3	3	2	-	-
ent	CO6	3	2	3	-	2	2	2	3	3	3	2	-

Average of non-zeros entry in following table (should be auto calculated).

Course Code	Course Name	РО 1	PO 2	PO 3	РО 4	P O 5	PO 6	PO 7	PO 8	PO 9	PO 10	PSO 1	PSO 2
MCA 365	Software project managem ent	3	2.1	2.6	3	2	2	1.8	3	3	3	2	-

Strength of Correlation

1. Addressed to Slight (Low=1) extent 2. Addressed to Moderate (Medium=2) extent

3. Addressed to Substantial (High=3) extent



Computer Graphics and Animation Lab

Sc	hool: SET	Batch : 2020 onwards								
Program: MCA		Current Academic Year:								
Br	anch: CSE	Semester:								
1	Course Code	MCP270								
2	Course Title	Computer Graphics and Animation Lab								
3	Credits	1								
4	Contact Hours	0-0-2								
	(L-T-P)									
	Course Status	core								
5	Course	The main objective of this course is to acquaint students	with the practical							
	Objective	applicability of computer graphics and animation. They should	l be able to perform							
		2D -3D graphics with lines, curves and can implement algor	ithms to rasterizing							
		simple shapes, fill and clip polygons and have a basic grasp	p of transformation							
		techniques. It also include problems to develop storyboards	and 2-dimentional							
		animation including creating, importing and sequencing media	elements.							
6	Course	Students will be able to have thorough Understanding of:								
	Outcomes	CO1. Examine the need of developing graphics application								
		CO2: <i>Puild</i> algorithmic development of graphics primitive	a lika lina airala							
		co2: Butta algorithmic development of graphics primitive	s like. lille, clicle,							
		CO3: Davalan programs for representation and transform	ation of graphical							
		images and nictures	auton of graphical							
		CO4 : Annly basic transformations on objects								
		CO5: <i>Demonstrate</i> progress in basic drawing and animation sl	kills							
		CO6: <i>Create</i> accurate and aesthically appealing basic animation	on							
7	Course	This course introduces practical applicability of interactive cor	nputer graphics and							
	Description	drawing algorithms. Along with fundamental skills to produ	ice traditional style							
	-	animation as well as knowledge of the principles of animation.	-							
8	Outline syllabus		CO Mapping							
	1	Write a program to draw a line using DDA algorithm	CO1, CO2							
	2	Write a program to draw a line using Bresenham's	CO1, CO2							
		algorithm.								
	3	Write a program to draw a circle using midpoint	CO1, CO2,							
		algorithm.	CO3							
	4	Write a program to draw a circle using Bresenham's	CO1. CO2.							
		algorithm.	CO3							
	5	Write a program to draw a rectangle using line drawing	CO1 CO2							
	U	algorithm	CO3							
	6	Write a program to perform 2D Transformation on a CO2 CC								
	0	line	005,004							
	7	Write a program to perform shear transformation on a								
	1	write a program to perform snear transformation on a	005,004							
	0									
	δ	write a program to rotate a circle (alternatively inside	003, 004							
		and outside) around the circumference of another circle.								

			*	SHARDA UNIVERSITY
9	Write a program to draw	a car usin	g in build graphics	CO3, CO4
	function and translate it	from botto	m left corner to right	
	bottom corner of screen.			
10	Write a program to draw	/ balloons	using in build	CO3, CO4
	graphics function and tra	anslate it fi	om bottom left	
	corner to right top corne	r of screen		
11	Write a program to impl	ement line	clipping (Cohen	CO3, CO4,
	Sutherland algorithm).	CO5		
12	Write a program for mal	CO3, CO4,		
				CO5
13	Write a program to study	CO5, CO6		
	2D drawing in MAYA s	oftware.		
14	Write a program to show	v animation	n of a ball moving in	CO5, CO6
	a helical path			
15	Write a program to show	v animation	n of solar system.	CO5, CO6
Weightage	СА	MTE	ETE	
Distribution	30%	20%	50%	
Text book/s*				
Reference	1. Interactive Compu	uter Grap	hics A Top-Down	
Books	Approach with Ope	nGL, Edw	ard Angel, Pearson,	
	2. Malay K. Pakhira,	Computer	Graphics, Multimedia	
	and Animation, PH	I		

S.	Course Outcome	Program Outcomes (PO) &
No.		Program Specific Outcomes
		(PSO)
1.	CO1: Examine the need of developing graphics application.	PO1, PO2, PO3, PO4, PO7, PO9,
		PO10, PSO1, PSO2
2.	CO2: Build algorithmic development of graphics primitives	PO1, PO2, PO3, PO4, PO10,
	like: line, circle, polygon etc.	PSO1, PSO2
3.	CO3: Develop programs for representation and	PO1, PO2, PO3, PO4, PO5, PO8,
	transformation of graphical images and pictures.	PO10, PSO1, PSO2
4.	CO4: Apply basic transformations on objects	PO1, PO2, PO3, PO4, PO6,
		PO10, PSO1, PSO2
5	CO5: Demonstrate progress in basic drawing and animation	PO1, PO2, PO3, PO4, PO5, PO6,
	skills	PO10, PSO1, PSO2
6	CO6: Create accurate and aesthically appealing basic	PO1, PO2, PO3, PO4, PO5, PO6,
	animation	PO8,PO9, PO10, PSO1, PSO2



Course Objectives	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	2	1	1	-	-	2	-	1	1	3	2
CO2	1	3	3	2	-	-		-	-	3	2	1
CO3	2	1	2	1	1	-	-	1	-	2	2	1
CO4	1	2	1	3	-	1	-	-	-	1	2	3
CO5	2	2	2	2	-	2	-	-	-	1	1	2
CO6	2	3	2	3	2	2	-	2	2	2	1	1
	1.7	2.2	1.8	2.0	1.5	1.7	2.0	1.5	1.5	1.7	1.8	1.7

PO and PSO mapping with level of strength



Sc	hool: SET		Batch : 2020 - 2021					
Pr	ogram: MCA		Current Academic Year: 2020-2020					
Br	anch: MCA		Semester: VIth Sem					
1	Course Code		MCP301 Course Name: Mini Project (MCA)					
2	Course Title		Mini Project (MCA)					
3	Credits		1					
4	Contact Hour	S	0-0-2					
-	(L-T-P)							
	Course Status	S	Compulsory					
5	Course Object	ctive	The objective of this course is to let the stude	ents apply the				
C			programming knowledge into a real- world	ine approvine				
			situation/problem					
0	Course Outco	omes	CO1: Analyze a given problem: define ite	aquiraments and				
			specifications appropriate to its solution	equitements and				
			CO2: Apply prior knowledge to designing at	nd implementing				
			solutions to problems using advanced programmi	ng techniques.				
			CO3: Analyze and make use of modern tools	and packages in				
			efficient manner./ reuse- or integrate with- existin	ng components				
			CO4: Apply techniques of software verification	and validation of				
			project successfully.					
			CO5: Deduce and conclude effective time and project					
			management techniques.					
			CO6: Effectively elaborate and communicate the project work in					
			written and oral forms using appropriate different visualization					
-		• .•	tools and evaluation metrics.					
1	Course Descr	ription	This course will consist of the work on the topic selected for					
			the minor project .The project must be done in a group not					
			exceeding four students. The candidate is expected to select					
			the project, do the requirements analysis, and carry out the					
			necessary design procedure.	ſ				
8	Outline syllab	ous		CO Mapping				
	Unit 1	Problem De	Einstein the problem statement	CO1,CO6				
		Assignment.	Finalizing the problem statement, resource					
	Unit 2	Develop a wo	ork flow or block diagram for the proposed system /	CO2				
	~	software, Des	ign algorithms for the proposed problem.					
	Unit 3	Implementation	on of work under the guidance of a faculty member	CO3,CO6,				
		and obtain the	e appropriate results.					
	Unit 4	Demonstrate	and execute Project with the team. Test the project	CO4,CO6				
	Ilmit E	Report should	l include Abstract Hardware / Software Requirement	CO5 CO6				
	Unit 5	Problem Stat	ement, Design/Algorithm. Implementation Detail &	05,000				
		Test Reports.	,,					
		References if	any.					



				🎾 Beyond Boundarie
	The presentation, report, work	done durin	g the term supported by	
	the documentation, forms the b	asis of asses	sment.	
Mode of	Practical/Viva			
examination				
Weightage	CA	MTE	ETE	
Distribution	60%	NA	40%	
Text				
book/s*				
Other				
References				

C Ma	Course Outcome	Dreaman Outcomes (DO)
5. INO.	Course Outcome	Program Outcomes (PO)
1.	CO1: Analyze a given problem; define its requirements	
	and specifications appropriate to its solution.	101,102,103,1501,1502
2.	CO2: Apply prior knowledge to designing and	
	implementing solutions to problems using advanced	P01,P02,P03,P04,P05,P01
	programming techniques.	0,PSO1,PSO2
3.	CO3: Analyze and make use of modern tools and	
0.	nackages in efficient manner / reuse- or integrate with-	PO1,PO2,PO3,PO4,
	puckages in efficient manner. Teuse of integrate with	,PSO1,PSO2
	existing components	
4.	CO4: Apply techniques of software verification and	PO1,PO2,PO3,PO4,PO5,PO1
	validation of project successfully.	2,PSO1,PSO2
5.	CO5: Deduce and conclude effective time and project	PO1,PO4,PO5,PO9,PO10,
	management techniques.	PSO1,PSO2
6.	CO6: Effectively elaborate and communicate the	PO4 PO5 PO8 PO10 PS01 PS
	project work in written and oral forms using appropriate	
	different visualization tools and evaluation metrics.	02

PO and PSO mapping with level of strength for Course Name: Mini Project (MCA)-MCP301

COs	PO1	PO	РО	PO	PO	РО	PO	РО	PO9	PO	PSO	PSO2
		2	3	4	5	6	7	8		10	1	
CO1	3	2	3	-	-	-	-	-	-	-	1	2
CO2	2	2	3	2	-	-	-	-	-	2	1	2
CO3	1	2	2	3	-	-	-	-	-	-	1	2
CO4	1	2	1	1	1	-	-	-	-	-	1	2
CO5	2	-	-	1	1	-	-	-	3	2	1	2
CO6	-	-	-	2	1	-	-	3	-	2	2	3
Avy PO attain												
ed	2	1.3	1.5	1.5	0.5	0	0	0.5	1	1	1	2


Syllabus: MCT211 Data Mining and Knowledge Discovery

Scho	ool: SET	Batch : 2020							
Prog	gram: MCA	Current Academic Year: 2020-20							
Brai	nch: CSE	Semester:							
1	Course Code	MCT211 Course Name: Data Mining and Knowledge D	iscovery						
2	Course Title	Data Mining and Knowledge Discovery							
3	Credits	3							
4	Contact Hours	3-0-0							
	(L-T-P)								
	Course Status	Elective							
5	Course	1. Provide students with an overview of the me	ethodologies and						
	Objective	approaches to data mining							
		2. Gain insight into the challenges and limitations	of different data						
		mining techniques							
		3. Provide the students with practice on applying data n	nining solutions						
		4. Prepare students for research in the area of data m	nining and related						
		applications	1						
	~	5. Enhance students communication and problem solvin	ng skills						
6	Course	Students will be able to:							
	Outcomes	CO1: To understand the basic concept of datamining	T 1 ¹						
		CO2: Demonstrate the Data Pre processing & transformation	O2: Demonstrate the Data Pre processing & transformation Techniques						
		CO3: Explain Various Pattern Mining Methodology	O3: Explain Various Pattern Mining Methodology						
		CO4: Compare & Contrast Classification& Prediction Mecha	anism						
		COS: Experiment with Clustering Algorithms	D.						
7	0	CO6: Apply Data mining Techniques in real world Knowled	ge Discovery						
/	Course	I his course introduces advanced aspects of data warehousing	g and data mining,						
	Description	choose the relevant models and algorithms to apply	problems, and						
0	Outline gullebus	choose the relevant models and algorithms to apply.	CO Monning						
8	Uutine synabus	Tratus duration	CO Mapping						
		Introduction	CO1						
	A	Evolution of Data mining and introductory concepts,	COI						
	D	Nilowiedge Discovery Process,	-						
		Introduction to outlier.							
		Data Fre processing	CO1 CO2 CO6						
	A	Integration and Transformation	01, 02,000						
	B	Integration and Transformation,							
		Generation							
	Unit 2	Frequent Bottom Mining							
		Frequent Fattern Mining	CO3 CO6						
		A prori	005,000						
	P	EDGrowth ECLATS	4						
	В	rporowin, ECLAIS							



С	correlation A	nalysis.							
Unit 4	Classification	n& Prediction	n						
А	What is classi	fication, requ	irements of classification,	CO4, CO6					
	Decision Tree	e-ID3Algorith	m, ,						
В	Naive Bayes	Classifier, Ru	le Based classification,						
	Backpropoga	Backpropogation							
С	Support Vector	Support Vector Machine for linearly separable data.							
	Prediction: - I								
Unit 5	Clustering	lustering							
А	What is cluste	/hat is cluster analysis, requirements of cluster analysis,							
В	Partitioning n	Partitioning methods-k-means and k-mediods,							
С	Hierarchical I	Methods-Aggl	lomerative and divisive, Density						
	based method	ls- DBSCAN							
Mode of	Theory								
examination									
Weightage	CA	MTE	ETE						
Distribution	30%	20%	50%						
Text book/s*	1. J.Har	,M. Kamber,	J. Pei "Data Mining Concepts						
	and T	<i>echniques"</i> ,E	dition:3, Morgan Kaufmann						
Other	1. M.H.	Dunham, L	Data Mining Introductory and						
References	Adva	nced Topics, I	Pearson Education.						
	2. Adria	ans, Data Mi	ning, Pearson Education						
	3. Vikra	ımPudi& P. 1	Radhakrishnan, "Data Mining",						
	Oxfor	rd University	Press						

S.	Course Outcome	Program Outcomes (PO) & Program		
No.		Specific Outcomes(PSO)		
1.	CO1: To understand the basic concept of	PO1,PO10		
	datamining			
2.	CO2: Demonstrate the Data Pre processing &	PO1, PO5, PO10		
	transformation techniques			
3.	CO3: Explain Various Pattern Mining	PO1 ,PO2, PO3,PO5		
	Methodology			
4.	CO4: Compare & Contrast Classification&	PO1, PO2 PO3, PO4, PSO1, PSO2		
	Prediction Mechanism			
5	CO5 :Experiment with Clustering Algorithms	PO1 ,PO2 PO3,PO4,PO5, PSO1, PSO2		
6	CO6: Apply Data mining Techniques in	PO2,		
	real world Knowledge Discovery	PO3,PO4,PO5,PO6,PO7,PO8,PO9,PO10.		
		PSO2		



PO and PSO mapping with level of strength for Course Name Data Mining & Knowledge discovery (Course Code MCT211)

	Cos	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
MCT211/		Domain Knowledge	Problem Analysis	Application Development	Modern Tool Usage	Innovation and Entrepreneurship	Environment and Sustainability	Personal and Professional Ethics	Communication	Project Management	Life-Long Learning		
DWIKD	CO1	3	-	-	-	-	-	-	-	-	3	-	-
	CO2	3	-	-	-	-	-	-	-	-	3	-	-
	CO3	2	2	2	-	2	-	-	-	-	-	-	-
	CO4	2	2	2	3	-	-	-	-	-	-	2	2
	CO5	2	3	3	3	3	-	-	-	-	-	2	2
	CO6	-	3	3	3	2	2	2	2	3	2	-	3
Average of non-zeros entry in following table (should be auto calculated).													
ourse													

Code/ Name	PO 1	PO2	PO 3	PO 4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO 2
MCT211/ DMKD	3	2.5	2.5	3	2.3	2	2	2	3	2.6	2	2.3

Strength of Correlation

1. Addressed to Slight (Low=1) extent

2. Addressed to Moderate (Medium=2) extent

3. Addressed to Substantial (High=3) extent



Sch	ool: SET	Batch : 2020							
Pro	gram: MCA	Current Academic Year: 2020-20							
Bra	nch:	Semester: 4							
1	Course Code	MCT212 Course Name: MCA							
2	Course Title	Mobile Technologies							
3	Credits	3							
4	Contact	3-0-0							
	Hours								
	(L-T-P)								
	Course	Elective							
	Status								
5	Course	The objective of the course is to impart knowledge of mobile and	wireless computing						
	Objective	systems and techniques.							
6	Course	On successful completion of this module students will be able	to						
	Outcomes	CO1: Synthesize the basic concepts and principles in mobile comp	uting.						
		CO2: Analyze the concept of wireless and their communication.							
		CO3: Synthesize the structure and components for mobile IP and n	nobility						
7	Course	Management.							
/		This course introduces advanced aspects of mobile generation	a cellular						
	Description	algorithms based on wireless network	& fournig						
8	Outline syllabi		CO Manning						
0	Unit 1	Introduction	eo mapping						
		muouucuon							
1	٨	Issues challenges and benefits Mobile radio communication	CO1						
	А	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and	CO1						
	A	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G	CO1						
	AB	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept,	CO1 CO1,CO2						
	A B	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation,	CO1 CO1,CO2						
	AB	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue	CO1 CO1,CO2						
	A B C	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA	CO1 CO1,CO2 CO1,CO2						
	A B C Unit 2	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System	CO1 CO1,CO2 CO1,CO2						
	A B C Unit 2 A	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering. Handoff	CO1,CO2 CO1,CO2 CO1,CO2						
	A B C Unit 2 A B	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System	CO1 CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2						
	A B C Unit 2 A B	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management,	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3						
	A B C Unit 2 A B	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management, localization and calling	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3						
	A B C Unit 2 A B C	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management, localization and calling General Packet Radio Service (GPRS): GPRS Architecture,	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3 CO1,CO2						
	A B C Unit 2 A B C	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management, localization and calling General Packet Radio Service (GPRS): GPRS Architecture, GPRS network nodes, EDGE, 3G and 4G, Cognitive Radio	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3 CO1,CO2						
	A B C Unit 2 A B C	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management, localization and calling General Packet Radio Service (GPRS): GPRS Architecture, GPRS network nodes, EDGE, 3G and 4G, Cognitive Radio Network (5G)	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3 CO1,CO2						
	A B C Unit 2 A B C Unit 3	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management, localization and calling General Packet Radio Service (GPRS): GPRS Architecture, GPRS network nodes, EDGE, 3G and 4G, Cognitive Radio Network (5G) Satellite & Broadcast System	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3 CO1,CO2						
	A B C Unit 2 A B C C Unit 3 A P	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management, localization and calling General Packet Radio Service (GPRS): GPRS Architecture, GPRS network nodes, EDGE, 3G and 4G, Cognitive Radio Network (5G) Satellite & Broadcast System Basics concepts of satellite and Applications, types of satellite	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3 CO1,CO2,CO3 CO1,CO2						
	A B C Unit 2 A B C Unit 3 A B	Issues, challenges, and benefits, Mobile radio communication fundamentals, overview of mobile generation 1G,2G,3G,4G and 5G Fundamental of wireless communication, bandwidth concept, type of signals, path loss, modulation: shift key modulation, Spread spectrum modulation, MAC issue Multiple Access: FDMA, TDMA, CSMA/CD, SDMA, CDMA Cellular System Cell concepts, frequency and channel allocation, frequency reuse concepts: sectorization and clustering, Handoff Global System for Mobile Communication (GSM) System Overview: GSM Architecture, channels, Mobility Management, localization and calling General Packet Radio Service (GPRS): GPRS Architecture, GPRS network nodes, EDGE, 3G and 4G, Cognitive Radio Network (5G) Satellite & Broadcast System Basics concepts of satellite and Applications, types of satellite Cyclical repetition of data, Digital audio/ video broadcasting, Broadcasting convergence and mobile communication	CO1,CO2 CO1,CO2 CO1,CO2 CO1,CO2,CO3 CO1,CO2,CO3 CO1,CO2						



				🚩 Beyond Boundaries					
Unit 4	Wireless netw	ork & Routing	Algorithm						
А	Mobile IP, DH	CP, Mobile Adł	noc Network, Hidden and exposed	CO2,CO3					
	terminal proble	ems							
В	Bluetooth, Wi-	Fi Standard, Wi	MAX Standard, Zigbee, Ultra-	CO2,CO3					
	wideband(UW)	B)							
С	Routing protoc	ols classification	n, challenges in MANET routing,	CO2,CO3					
	DSDV, DSR, A	4ODV							
Unit 5	Mobile Trans	port Layer							
А	Traditional TC	P, Indirect TCP	, Snooping TCP, Mobile TCP,	CO2,CO3					
	Transaction ori	Transaction oriented TCP CP over 2.5G/3G/4G wireless network, File System							
В	TCP over 2.5G								
С	World Wide W	eb, Wireless Ag	oplication Protocol: architecture,	CO2,CO3					
	protocol stack	rotocol stack							
Mode of	Theory	heory							
examination									
Weightage	CA	MTE	ETE						
Distribution	30%	20%	50%						
Text book/s*	1. Jo	ochenSchiller :	Mobile Communication, Pearson						
	E	ducation.							
	2. U	Hansman and	L. Merck : Principles of Mobile						
	C	omputing", 2nd	Ed., Springer						
Other	1.	D. Milojicic	, F. Douglis. : Mobility Processes,						
References	2	Computers a	nd Agents", Addison Wesley						
	2.	. willium C. Design and f	I. Lee, Mobile communication						
	3	D R K	amiloFehar "Wireless digital						
		communicati	ion"						
	4	. Haykin,S ar	nd Moher, M., "Modern wireless						
		communicati	ion", Pearson.						
	5.	. T.S. Rappa	port, "Wireless Communication-						
		Principles an	d practice", Pearson						

S.	Course Outcome	Program Outcomes (PO)
No.		& Program Specific
		Outcomes (PSO)
1.	CO1: Synthesize the basic concepts and principles in mobile	PO1,PSO4
	computing.	
2.	CO2: Analyze the concept of wireless and their communication.	PO1,PO2,PSO2
3.	CO3: Synthesize the structure and components for mobile IP and	PO1,PO3,PSO1,PSO2
	mobility Management.	

PO and PSO mapping with level of strength for Course Name Mobile Technologies (Course Code MCT212)



														5 🥟 В	eyond	Bound	aries
Cos	POI	PO2	PO3	PO4	PO5	P06	PO7	PO8	P09	PO10	P011	P012	PSO1	PSO2	PSO3	PSO4	PSO5
CO 1	3	2	1	1	1	2	2	2	1	1	1	2	2	2	2	3	1
CO 2	3	3	1	1	1	2	2	2	2	2	2	2	2	3	2	2	1
CO 3	3	1	3	1	1	1	1	2	1	1	1	1	3	3	2	1	2



Computer Graphics and Animation

Sch	ool: SET	Batch : 2020 onwards	
Pro	gram:	Current Academic Year: 2020	
MC	A/M.Sc		
Bra	nch: NA	Semester:	
1	Course Code	MCT213	
2	Course Title	Computer Graphics and Animation	
3	Credits	3	
4	Contact Hours	3-0-0	
	(L-T-P)		
	Course Status	core	
5	Course	This course is designed to provide a comprehensive	e introduction to
	Objective	computer graphics and animation. A thorough introdu	ction to graphics
		techniques, two dimensional system and mapping, in	nportant drawing
		algorithm, two-dimensional transformation; Clipping	g, filling and an
		introduction to 3-D graphics. This course also prov	vide students the
		imation and the	
		knowledge of principles of animation.	
6	Course	Students will be able to:	
	Outcomes	CO1: Analyse and classify the components and buildi	ng approaches of
		computer graphics systems.	
		CO2: <i>Illustrates</i> the technology requirement for a co	omputer graphics
		system.	
		CO3: <i>Design</i> interactive computer graphics API prog	rams.
		CO4: Apply in-depth knowledge of display systems,	image synthesis,
		shape, modelling, and interactive control of 3D co	omputer graphics
		applications.	C 11
		COS: Formulate an understanding of mapping	from a world
		COC : Diaguage the application of computer graphic	a and animation
		concerts in the development of computer graphic	s and animation
		visualization and business applications	ies, information
7	Course	Computer Graphics and animation is a study of the ha	rdware and
/	Description	software principles of interactive raster graphics and a	nimation
	Description	techniques. Topics include an introduction to the basic	concepts 2-D
		and 3-D modelling and transformations viewing trans	formations
		projections, rendering techniques, graphical software	nackages and
		graphics systems.	
8	Outline svllabus	0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	CO Mapping
-	Unit 1	Graphic System Primitives	
	A	Display devices. Input and Output Devices. Output	CO1. CO2
L	I		,



		Primitives: Points and Lines, Pixels, Pixel	
		addressing and Object Geometry, Planes, Frame	
		buffers, vector and character generation	
	В	Line-Drawing Algorithms-DDA and Brenham's	CO1, CO2
		algorithms. Circle-Generating algorithms	
	С	Scan-Line, Polygon Fill algorithms, Boundary Fill	CO1,
		and Flood-Fill Algorithms	CO2,CO3
	Unit 2	Transformations	
	A	Basic Transformations, Composite Transformations	CO1,
			CO2,CO3
	В	General Fixed-Point Scaling, Other Translations-	CO2, CO3
		Reflection, Shear	
	С	Transformations between Coordinate Systems,	CO1,
		Raster Methods for Transformations	CO2,CO3
	Unit 3	Windowing and Clipping And 3D	
		Transformation	
	A	Window, Viewport, Window-To-Viewport	CO2,CO3,CO4
		Coordinate transformation, zooming and panning,	
		Clipping Operations, Point Clipping, Line Clipping-	
		Cohen-Sutherland Line Clipping, Cohen-Sutherland	
		Line Clipping Algorithm, Midpoint Subdivision	
		Line Clipping Algorithm, Cyrus Beck clipping	
	В	3-D transformation: Translation, Rotation, Scaling,	CO2,CO3,CO4
		Shearing, Reflecting	
	С	Composite Transformations, Rotation about an	CO2,CO3,CO4
		arbitrary line, Reflection through an arbitrary plane.	
	Unit 4	Parallel Projections & Hidden surface Removal	
	A	Orthographic Projections, Oblique Projections,	CO4,CO5
		Parallel Projections	
	В	Perspective Projections, One Point, Two, Three	CO4,CO5
		Point vanishing points	
	С	Back Face Detection, Depth Buffer Method, Depth	CO3,CO4,CO5
		Sorting Method (Painter's algorithm)	
	Unit 5	Animation	
	A	Introduction to Animation, Principles of Animation,	CO2,CO5,CO6
		Types of Animation. Moving, Rotating, and Scaling,	
		Viewing Your Animation	
	В	The Graph Editor Window, Editing the Curve, Other	CO2,CO5,CO6
		Types of Curves, Modifying Curves, Automatic	
		Key Framing, Rotation Explained, Rotation Using	
		F Curves,	
	С	Animating Other, Features, Keying Sets, Vertex	CO3,CO6
		Animation, Animation Following Curves,	
L		· · · · · · · · · · · · · · · · · · ·	



	Displaceme	ent Sound Ar						
Mode of	Theory	Theory						
examination								
Weightage	CA	MTE	ETE					
Distribution	30%	20%	50%					
Text book/s*	1. J. Fol	. J. Foley, V. Dam, S. Feiner, J. Hughes,						
	"Computer	Computer Graphics Principles and Practice", 2nd						
	Edition, Pe	Edition, Pearson Education, Latest Edition.						
Other	1. D. Roger	. D. Rogers, J. Adams, "Mathematical Elements for						
References	Computer (Graphics", 2 ¹	nd Edition, Tata McGraw-Hill					
	Publication	, Latest Edit	ion.					
	2. Hearn,	M. Baker,	"Computer Graphics – C					
	Version", 2	nd Edition, l	Pearson Education, 2002.					
	3. D. Roge	ers, "Procedu	ural Elements for Computer					
	Graphics",	2nd Edi	ition, Tata McGraw-Hill					
	Publication	, Latest Edit	ion.					

-		
S.	Course Outcome	Program Outcomes (PO) &
No.		Program Specific Outcomes
		(PSO)
1.	CO1: Analyse and classify the components and building	PO1, PO2, PO3, PO4, PO5, PO7,
	approaches of computer graphics systems.	PO10, PSO1, PSO2
2.	CO2: Illustrates the technology requirement for a computer	PO1, PO2, PO3, PO4, PO10, PSO1,
	graphics system.	PSO2
3.	CO3: Design interactive computer graphics API programs.	PO1, PO2, PO3, PO4, PO5, PO6,
		PO7, PO10, PSO1, PSO2
4.	CO4: Apply in-depth knowledge of display systems, image	PO1, PO2, PO3, PO4, PO5, PO8,
	synthesis, shape, modelling, and interactive control of 3D	PO10, PSO1, PSO2
	computer graphics applications.	
5	CO5: Formulate an understanding of mapping from a	PO1, PO2, PO3, PO5, PO6, PO10,
	world coordinates to device coordinates, clipping, and	PSO1, PSO2
	projections.	
6	CO6: Discuss the application of computer graphics and	PO1, PO2, PO3, PO4, PO5, PO6,
	animation concepts in the development of computer	PO7, PO8, PO9, PO10, PSO1,
	games, information visualization, and business	PSO2
	applications.	

PO and PSO mapping with level of strength

Course Objectives	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	PSO2
CO1	2	1	3	1	2	-	1	-	-	2	3	2
CO2	1	3	3	2	-	-	-	-	-	3	1	2

*	SHARDA
	UNIVERSITY Beyond Boundaries

									<u> </u>	: 🥟 Веуо	nd Bound	aries
CO3	3	1	2	1	1	1	1	-	-	1	2	1
CO4	2	2	1	3	1	-	-	2	-	1	2	3
CO5	2	2	1	-	2	2	-	-	-	1	3	2
CO6	1	3	2	2	3	2	2	2	2	2	1	3
	1.8	2.0	2.0	1.8	1.8	1.7	1.3	2.0	2.0	1.7	2.0	2.2



Sch	ool: SET	Batch : 2020					
Pro	gram: MCA	Current Academic Year: 2020-20					
Bra	nch:	Semester: V					
1	Course Code	MCA362 Course Name: MCA					
2	Course Title	Web and its application					
3	Credits	3					
4	Contact	3-0-0					
	Hours						
	(L-T-P)						
	Course	Compulsory					
	Status						
5	Course	Provide the knowledge to design and develop web application	n with and without				
	Objective	database. Students will gain the skills and project-based experien	ce needed for entry				
		into web application and development careers.	The is seen in the				
6	Course	collection clientside validation	Use javascript for				
	Outcomes	CO2: Explain the concept of servlet and EJB					
		CO3: Use JSP for creating dynamic website					
		CO4: Analyse the requirement of Jquery and Ajax					
		CO5: Evaluate the use of RMI and netwroking.					
	CO6: Develop a website using Jsp, Jquery, Ajax, etc.						
7	Course	This course is an overview of the modern Web technologies	used for the Web				
	Description	development. The purpose of this course is to give students the	he basic				
		understanding of how things work in the Web world from the	e technology point				
0	Outline exilety	of view as well as to give the basic overview of the different	CO Monning				
0		IS	CO Mapping				
	Unit I	INTRODUCTION TO HTML & JAVA SCRIPT	CO1				
	A	table formatting, form design.	COI				
	В	Java Script: Introduction, syntax, comment, statement,	CO1				
		variable, operators, Conditional statements, loop statements					
	С	Functions, object, events, Accessing form elements, validating form elements	CO1				
	Unit 2	Servlets & ENTERPRISE JAVA BEANS					
	Α	Servlet, Creating Servlet, Managing request and response in Servlet,	CO2				
	В	Servlet Collaboration, Session Tracking	CO2				
	С	EJB - Introduction, Components of EJB, Architecture of	CO2				
		EJB					
	Unit 3	JAVA SERVER PAGES					
	А	Introduction to JSP, Life cycle of JSP, JSP Application Design	CO3, CO6				
	В	Scripting elements, scriptlet tag, expression tag, declaration tag,	CO3 CO6				
	С	Implicit Objects, JSP Objects, Directive Elements	CO3, CO6				
	Unit 4	Jquery& AJAX					
	A	Jquery& AJAX: Introduction, syntax, selector, events, Jquery	CO4, CO6				



	effect: h	nide/sh	ow, fade, slic	le, animate and stop		
В	Jquery	HTML	L: get, set, ad	d, remove, css		CO4, CO6
С	AJAX:	Introdu	action, reques	st, response, event		CO4, CO6
Unit 5	RMI A	ND J	AVA NET	WORKING		
А	Remote	e Meth	CO5			
	RMI					
В	Sockets	: Intro	CO5			
С	Socket	Implen	CO5			
	transmis	ssion o				
Mode of	Theory	y				
examination						
Weightage	CA					
Distribution	30%		20%	50%		
Text book/s*						
	1.	Ivan l	ipt, Perl &			
		CGI"				
	2.	Schile				
	3.	Schile				
Other	1.	Rick	5 with			
References		JavaS	Script and CS	S3", Microsoft		

PO and PSO mapping with level of strength for Course Name Web and its Applications (Course Code MCA 362)

Course Code_ Course Name	CO's	РО 1	PO 2	РО 3	PO4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO2	PSO 3
	CO1			2		2				3			2			
	CO2			2		2				3						
	соз			2		2				3			2	2	3	
Bcp262	CO4			2		2				3						
Web and Its	CO5			2		2				3						
Lab	CO6	3	3	3		2	3	2		3		2	3	3	3	2

Average of non-zeros entry in following table (should be auto calculated).

Course Code	Course Name	PO 1	РО 2	РО 3	РО 4	P O 5	PO 6	PO 7	PO 8	PO 9	PO 10	РО 11	PO 12	PSO 1	PSO 2	PSO 3
		3	3	2.1 6		2	3	2		3		2	2.3 3	2.5	3	2

Strength of Correlation

 1. Addressed to Slight (Low=1) extent
 2. Addressed to Moderate (Medium=2) extent

 2. Addressed to Substantial (Uich=2) extent

3. Addressed to Substantial (High=3) extent



	2.1	Template	A1: Sylla	bus for T	heory Cou	rses (SAMPLE)
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Sch	ool:	School of Engineering and technology	
Dep	artment	Department of Computer Science and Engineering	g
Pro	gram:	MSc	
Bra	nch:	CS&IT	
1	Course Code	MCT215	
2	Course Title	Cryptography and Network Security	
3	Credits	3	
4	Contact	3-0-0	
	Hours		
	(L-T-P)		
	Course	Elective	
	Status		
5	Course	To Have a good understanding of how applications c	an communicate
	Objective	securely and what tools and protocols exist in order to	o offer different levels
		of security	
6	Course	On successful completion of this module students wi	ll be able to
	Outcomes	CO1: Illustrate network security services and mechan	nisms.
		CO2: Evaluate Symmetrical and Asymmetrical crypt	ography.
		CO3: Apply Data integrity, Authentication, Digital S	ignatures.
		CO4: Analyze Various network security applications	s, IPsec, Firewall, IDS,
		Web security, Email security, and Malicious software	e etc.
		CO5: Demonstrate various factors which affect the se	ecurity of network
		CO6: Estimate the measure adapted towards network	security
7	Course	This course introduces aspects of cyber security, enco	ompassing the
	Description	principles, to analyze the data, identify the problems,	and choose the
		relevant countermeasures to apply.	
8	Outline syllabi		CO Mapping
	Unit 1	Security in Computing Environment and	
		Cryptography	
	А	Need for Security, Security Attack, Security	CO1, CO2
		Services, Information Security, Methods of	
		Protection.	
	В	Terminologies used in Cryptography, Substitution	CO5, CO6, CO3
		Techniques, Transposition Techniques.	
	С	Characteristics of Good Encryption Technique,	CO6, CO4, CO2
		Properties of Trustworthy Encryption Systems,	
		Types of Encryption Systems, Confusion and	
	T T 1 / 0	Diffusion, Cryptanalysis.	
	Unit 2	Encryption	



				S 🥭 Beyond Boundaries					
А	Data Encryption	ion Standard ((DES) Algorithm, Double	CO1,CO2. CO3					
D	A dyon and En	25, Security 0	dend (AES) Algorithm	CO4 CO5 CO6					
D	DES and AES	S Comparison		04,003,000					
С	Characteristic	Characteristics of Public Key System, RSA							
	Technique, K	ey Exchange,	Diffie-Hellman Scheme,	CO4					
	Cryptographie	c Hash Functi	ons, Digital Signature,						
	Certificates, C	Certificate Au	thorities.						
Unit 3	Security								
А	Secure Progra	ams, Non-mal	icious Program Errors,	CO1,CO2, CO4					
	Viruses and C	Other Maliciou	is Code, Targeted						
	Malicious Co	de, Methods o	of Control.						
В	Objects to be	Protected, Pro	otection Methods of	CO6, CO3,CO1					
	Operating Sys	stems							
С	Memory Prot	ection, File Pi	cotection, User	CO3,CO4,CO6,CO5					
	Authenticatio	n.							
Unit 4	Network secu	urity							
А	Network Con	cepts, Threats	in Networks, Network	CO1,CO2, CO6					
	Security Cont	rols.							
В	Overview of	IP Security (II	PSec), IP Security	CO2,CO4,CO6					
	Architecture,								
	Associations	(SA), Authen	tication Header (AH),						
	Encapsulating	g Security Pay	vload (ESP), Internet Key						
	Exchange.								
С	Web Security	Requirement	s, Secure Socket Layer	CO1,CO3,CO5					
	(SSL), Transp	oort Layer Sec	curity (TLS), Secure						
	Electronic Tra	ansaction (SE	T)						
Unit 5	Electronic Ma	ail Security							
А	Threats to E-I	Mail, Require	ments and Solutions,	CO1,CO2, CO6					
	Encryption fo	r Secure E-M	ail, Secure E-Mail						
	System								
В	Firewalls – T	ypes, Compar	ison of Firewall Types,	CO1.CO2,CO6,CO5					
	Firewall Conf								
С	Planning and	Enforcing Se	CO2,CO3,CO5						
	Security Polic								
	for an Organi								
Mode of	Theory								
examination									
Weightage	CA	MTE	ETE						



Distribution	30%	20%	50%	
Text book/s*	1. John	E. Canavan,	" The Fundamentals of	
	Netwo	ork Security,"	Artech House, February	
	2001,	350 pages.		
	Handbook of	Information S	Security, HosseinBidgol	
Other				
References				

S.	Course Outcome	Program Outcomes (PO)
No.		& Program Specific
		Outcomes (PSO)
1.	CO1: Illustrate network security services and	PO1, PO2, PO4, PO10,
	mechanisms.	PSO1
2.	CO2: Evaluate Symmetrical and Asymmetrical	PO1, PO2, PO3, PO5,
	cryptography.	PO10, PSO1, PSO2
3.	CO3: Apply Data integrity, Authentication, Digital	PO1, PO2, PO6, PO8
	Signatures.	PO10, PSO1
4.	CO4: Analyze Various network security applications,	PO1, PO2, PO7, PO8,
	IPsec, Firewall, IDS, Web security, Email security, and	PO10, PSO1, PSO2
	Malicious software etc.	
5.	CO5: Demonstrate various factors which affect the	PO1, PO2, PO3, PO9,
	security of network	PO10, PSO1, PSO2
6.	CO6: Estimate the measure adapted towards network	PO1, PO2, PO9, PO10,
	security	PSO1, PSO2

PO and PSO mapping with level of strength for Course Name Cryptography and Network Security (Course Code MCT215)

											Р		PS
Course Code_	CO's	Р	Р	Р	Р	Р	Р	Р	Р	Р	0	PS	02
Course Name		0	0	0	0	0	0	0	0	0	1	0	
		1	2	3	4	5	6	7	8	9	0	1	
	CO1	3	3		3						3	2	
	CO2	3	2	3		3					3	2	3
	CO3	3	2				3		3		3	3	
Cryptography	CO4	3	3					3	3		3	3	2
and Network	CO5	2	3	3						3	2	3	3
Security	CO6	2	2							3	2	2	3

Average of non-zeros entry in following table (should be auto calculated).



Course Code	Course Name	P 0 1	P O 2	P 0 3	P 0 4	Р О 5	P O 6	P O 7	P O 8	P O 9	P O 1 0	PS O 1	PS O 2
(MCT- 215)	Cryptograp hy and Network Security	2. 6	2. 5	3	3	3	3	3	3	3	2. 6	2. 5	2. 75

Strength of Correlation

- 1. Addressed to Slight (Low=1) extent
- 2. Addressed to *Moderate (Medium=2) extent*
- 3. Addressed to Substantial (High=3) extent



MCA 2	66:	Software	Enginee	ering &	Testing
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Sch	pol:	School of Engineering and Technology							
Dep	artment	Department of Computer Science and Engineering							
Prog	gram:								
Bra	nch:								
1	Course Code	MCT216							
2	Course Title	Software Engineering & Testing							
3	Credits	3							
4	Contact	3-0-0							
	Hours								
	(L-T-P)								
	Course Status	Core							
5	Course	The course will prepare our students to be successful professionals in							
	Objective	the field with solid fundamental knowledge of softwar	re engineering.						
		Course focuses on Utilizing and exhibiting strong	communication						
	and interpersonal skills when functioning as members and leader								
		of multi-disciplinary teams. This Course allows students	s to apply their						
	foundations in software engineering to adapt to readily changi								
		environments using the appropriate theory, principles and processes.							
6	Course	Students will be able to:							
	Outcomes	CO1: Choose software model to apply on particular kind	of project.						
		CO2: Summarize various requirements for the Application	on under						
		development							
		CO3: Make use of Unified Modeling Language in softwa	ire						
		specification documents							
		CO4: Inspect code using various testing techniques to me	et user needs						
		as per SRS							
		CO5: Develop and deliver quality software as an individu	al or as part of						
		a multidisciplinary team							
		CO6: Adapt process of designing, constructing, and testin	ng end user						
	9	applications that will satisfy user needs	C						
/	Course	This course covers the software development	process from						
	Description	requirements elicitation and analysis, through spec	cification and						
		design, to implementation, integration, testing, and maintenand							
Qutline cyllebuc CO Max									
0	Unit 1	s CO Mapping							
		Introduction to software angineering Importance of	<u>CO1</u>						
	A	software Software characteristics Software	COI						
		applications. Software crisis and its causes							
	B	applications, software crisis and its causes.	<u>CO1</u>						
	U	model Prototyping Model Spiral Model V model	COI						
		model, Prototyping Model, Spiral Model, V model							



A OLE PROCESS INCOMESS. EXITEME PROOTSIMMING LX P	~
Adaptive Software Development (ASD). Scrum), (01
Unit 2 Software requirement Specification	
A Requirement Engineering process Elicitation	<u> </u>
techniques Review and Management of User Need	ls
Types of Requirements	*0,
B Feasibility study DED data dictionary decision ta	ables CO2
C SRS Document IEEE standards for SRS with	
examples	02
Unit 3 Software Design	
A Design Concepts, Design Strategies: Function Orie	ented CO3
Design, Object Oriented Design, Top-Down	and
Bottom-Up Design	
B Effective modular design: Functional independe	ence. CO3
Cohesion, Coupling, Design documentation	,
C UML Diagrams and Tools: Introduction to U	UML CO3,CO6
Diagrams, Use Case, Object and Class, Intera	ction
diagram: Sequence & Collaboration .Introduction	n to
Rational Rose tool	
Unit 4 Software Testing	
A Fundamental of testing: Objectives, principles, m	nyths CO4
and facts, Error, Mistake, Bug, Fault and Fai	ilure,
limitations of testing	
B Levels of testing: Unit Testing, Integration Tes	sting, CO4,CO6
System Testing, Acceptance Testing: Alpha &	Beta
Testing, Integration techniques	
C White Box Testing, Black Box Testing, Verification	ation CO4,CO6
and Validation, Test case designing, Co	oding
Guidelines, Debugging	
Unit 5 Maintenance & Quality Management	
A Introduction to Maintenance, Need for Maintena	ance, CO5,CO6
Categories of Maintenance: Preventive, Corrective	e and
Perfective Maintenance, Cost of Maintenance	
B Quality Concepts: Quality, Quality Control, Cos	st of CO5,CO6
Quality, Software Quality Assurance, SQA Pl	lan ,
Software Reliability: Measures of Reliability	and
Availability, Software Safety	
C Statistical Software Quality Assurance: Six Sigma,	, The CO5,CO6
ISO 9000 Quality Standards, Capability Mat	urity
Model	
Mode of Theory/Jury/Practical/Viva	
examination	
Weightage CA MTE ETE	



				-	beyonu bounuaries				
Distribution	30%	20%	50%						
Text book/s*	1. Pressman R	. Pressman R S, "Software Engineering: A							
	Practitioners A	Practitioners Approach", McGraw Hill.							
Other	1. Sommervill	1. Sommerville, Ian. "Software Engineering", Pearson							
References	(Latest Ed).	(Latest Ed).							
	2. Schaum's S								

S.	Course Outcome	Program Outcomes (PO) &
No.		Program Specific Outcomes (PSO)
1.	CO1: Choose software model to apply for	PO1,PO2,PO7,PO8,PO9,PO10,
	particular kind of project.	PSO1,PSO2
2.	CO2: Summarize various requirements for the	PO1,PO2,PO3,PO7,PO8,PO9,PO1
	Application under development.	0, PSO1,PSO2
3.	CO3: Make use of Unified Modeling Language	PO1,PO2,PO3,PO4,PO7,PO8,PO9,
	in software specification documents;	PO10, PSO1,PSO2
4.	CO4: Inspect code using various testing	PO1,PO2,PO3,PO4,PO7,PO8,PO9,
	techniques to meet user needs as per SRS.	PO10, PSO1
5.	CO5: Develop and deliver quality software as an	PO1,PO2,PO3,PO7,PO8,PO9,PO1
	individual or as part of a multidisciplinary team.	0, PSO1
6.	CO6: Adapt process of designing, constructing,	PO1,PO2,PO3,PO4,PO5,PO6,PO7,
	and testing end user applications that will satisfy	PO8,PO9,PO10, PSO1,PSO2
	user needs	

PO and PSO mapping with level of strength for Course Name Software Engineering & Testing (**Course Code** MCT216)

Course Code_ Course Name	CO's	PO 1	PO 2	РО 3	PO4	РО 5	PO 6	РО 7	PO 8	РО 9	PO 10	PSO 1	PSO2
	CO1	3	3	-	-	-	-	3	3	2	1	3	2
	CO2	3	3	2	-	-	-	3	3	3	1	3	2
	CO3	3	3	3	3	-	-	3	3	3	1	3	3
	CO4	3	3	2	2	-	-	3	3	3	1	3	-
Software Engineering & Testing	CO5	3	3	2	-	-	-	3	3	3	1	3	-
	CO6	3	3	2	3	2	2	3	3	3	3	3	2

Average of non-zeros entry in following table (should be auto calculated).

Course Code	Course Name	РО 1	PO2	РО 3	PO 4	РО 5	PO 6	РО 7	PO 8	РО 9	PO 10	PSO 1	PSO 2
MCT216	Software Engineering & Testing	3	3	2.2	2.6	2	2	3	3	2.8	1.3	3	2.25

Strength of Correlation

1. Addressed to Slight (Low=1) extent 2. Addressed to Moderate (Medium=2) extent

3. Addressed to Substantial (High=3) extent



TERM-VI



Sc	hool: SET	Batch : 2020-22							
Pr	ogram: MCA	Current Academic Year:	2020-20						
Br	anch: NA	Semester: IIIrd							
1	Course Code	MCA354							
2	Course Title	SEMINAR							
3	Credits	4							
4	Contact Hours								
	(L-T-P)								
	Course Status	PG							
5	Course	The students will be iden	ntifying rele	evant information, defining	and explaining				
	Objective	topic chosen for seminar.	Students w	vill apply theories, methods	and knowledge				
	bases from multiple fields to a single question or problem.								
6	Course Students will be able :								
	Outcomes	CO1: Develop the ability f	for independ	lent learning and acquiring k	mowledge.				
		CO2: Identify and discuss	domain spe	cific problems.					
		CO3: Choose a multidisciplinary strategy to address real-world issues.							
		CO4: Apply principles of ethics and respect while interaction with others.							
		CO5: Demonstrate the ability to participate effectively in discussions.							
		CO6: Improve oral and wr	ritten comm	unication skills.					
7	Course	This is a 4-credit course	aimed at t	eaching 2nd year MCA st	udents to make				
	Description	research presentations. E	ach student	has to choose a paper /	topic related to				
		Computer Science and En	gineering. I	t need not be related to the N	Atech project. A				
		detailed literature review	v of a spec	cific research problem. Th	is can include:				
		background related to t	the problem	n, categorization of appro	baches, specific				
0	0 11 11 1	approaches, etc.			l				
8	Outline syllabus			~ ~ ~					
	Each student ha	s to choose a paper / top	ic related t	o Computer Science and	Engineering. It				
	need not be rela	ated to the MCA project.	A detailed	l literature review of a sp	ecific research				
	problem. This ca	an include: background re	elated to th	e problem, categorization	of approaches,				
	specific approac	hes, etc. Guidelines/Sugg	gestions on	how to prepare a good tal	k will be made				
	by MCA coordin	nator.							
	XX7 · 1 /		MODE	FTF					
	Weightage		MTE	ETE					
	Distribution	30%	20%	50%					

S.	Course Outcome	Program Outcomes (PO) & Program
No.		Specific Outcomes (PSO)
1.	CO1: Develop the ability for independent learning	PO1,PO2,PO3,PO4,PO8
	and acquiring knowledge.	
2.	CO2: Identify and discuss domain specific	PO1,PO2,PO3,PO8,PSO1,PSO2,PSO3
	problems.	
3.	CO3: Choose a multidisciplinary strategy to	PO1,PO2,PO3,PO4,,PO8,PSO1,PSO2,PSO3
	address real-world issues.	



		S S Beyond Boundaries				
4.	CO4: Apply principles of ethics and respect while	PO3,PO5,PO6,PO7,PO8				
	interaction with others.					
5	CO5: Demonstrate the ability to participate	PO1,PO3,PO4,PO7,PO8				
	effectively in discussions.					
6	CO6: Improve oral and written communication	PO1,PO3,PO4,PO6,PO7,PO8				
	skills.					

CO/PO-PSO Mapping

(1/2/3 indicates strength of correlation) 3-Strong, 2-Medium, 1-Low

Cours e												PSO2
Objec	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PSO1	
tives												
CO1	2	2	2	-	1	-	-	-	1	-	2	1
CO2	1	2	2	-	1	2	-	-	3	2	2	2
CO3	2	2	2	3	2	2	-	-	2	2	2	2
CO4	-	-	3	-	-	-	3	-	-	2	2	-
CO5	1	-	1	-	-	-	3	3	-	2	2	-
CO6	1	-	1	-	-	-	3	3	-	2	2	-
Avg												
PO												
attain												
ed	1	1	1.8	0.5	0.7	0.7	1.5	1	1	2	2	1