Krupanidhi Group of Institutions Bangalore (Affiliated to Bangalore University)

PO-PSO Mapping to Course Outcomes

Department of Computer Applications (MCA)

			Maste	er of Com	puter	Appl	ication	ns												
n Course			Course Outcomes	Core/Specialisation/Add	Computational Knowledge	Problem Analysis	Design/Development of Solutions	Conduct Investigations of Comptex Computing Problems	Modern Tool Usage	Profession! Ethics	Life-long Learning	Project management and finance	Communication Efficacy	Societal and Environmental Concern		Innovation and Entrepreneurship	Knowledge Engineering	Programming	Advanced SE	Information Security
	-		Have a fundamental understanding of Probability, conditional	C/S/AOC	PO1	PO2	PO3	P04	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	PSC
	MCA		probability and Bayes theorem.		2	2	1	2								١,				
	MCA	101.2	Understand and describe various probability distributions.		2	2	1									W				
Probability an Statistics	d MCA	101.3	Calculate and interpret measures for the centre and spread of a data set.	С	2	3		3					,		J	1	,			Г
Statistics	MCA	101.4	Identify when correlation and regression analyses are Appropriate		2	3		3					U	N.			•			Г
	MCA	101.5	To have the concept of sampling and estimation and Perform hypothesis testing.		2	2	1	2					4	VZ	nci	all	Dir	ecto	r	ns
	MCA		Understanding of number systems and representations		3	1								Pr	nci	7	30.0	Insti	tago	
	MCA	102.2	Understanding of Boolean algebra, design and implementation of various logic circuits		1	3	3						Kry	ipan	idhi	Grou	NanG	ur V	illag	e. Hol
Computer Organization a	MCA	102.3	Understanding of various types of memories and their working	c	1		3						1	2/1	nci idhi chik am F Bang	oad	Post	Vari	11u. 85	
Architecture	MCA	102.4	Understanding how instructions are executed by the processor			2	3					•	arn	netar	am F Bang	alor	6-2	50 U		Γ
	MCA	102.5	Ability to understand various data transfer techniques between the processor and I/O devices		3															
	MCA	103.1	Identify and use appropriate C language constructs to solve problems.				3											2		Γ
1	MCA	103.2	Implement algorithms using Control Structures in C				3											3		
Problem Solving Structured	with MCA	103.3	To understand the concept of code reusability with the help of user defined functions.				2											3		Π
Programming i	MCA		To understand pointers for implementing dynamic memory allocation and solving memory access problems.				2											3		
	MCA	103.5	To understand the concept of file system for handling data storage and apply it for solving problems.				2											3		
	MCA	104.1	Have good understanding of the relational data model.			2	1													
	MCA	104.2	Understand and successfully apply logical database design principles, E-R diagrams.			2	1													
DBMS	MCA		Understand normalizing database			2	1													
DishIS	MCA	104.4	Gain ability to write database queries using SQL.			3			1											

1	MCA104.5	Understand the concept of database transactions, concurrency control, backup, recovery, locking protocols, Security and Integrity.			2	1												
	MCA105.1	Understand the basic concepts of management, evolution of management, clear knowledge of the management function like planning & organizing, Different School of thought			2				2				2					
Essentials of Management and	MCA105.2	Understand the different management functions in detail.			2								2					\Box
Organizational Behaviour	MCA105.3	Understand the concept of motivational theories , coordination & controlling, leadership			3				2		2	2	3					
	MCA105.4	Understand basics of marketing, sales promotion, global Marketing							2			3						
	MCA105.5	Understand basic of Organizational behaviour, models of OB attitudes ,behavior							2			2	3					
	MCA106.1	Write C programs and learn how to edit, compile, debug, correct, recompile and run it.				1		1								3		
	MCA106.2	Given a computational problem, identify and abstract the programming6task involved and implement it using appropriate C language constructs.			2	2		1								3		
C Lab	MCA106.3	Understand and Implement user defined functions, procedures, pointers and file systems			2	2		1								3		
	MCA106.4	To understand the different coding standards and conventions for writing a readable and simple code						1								3		
	MCA106.5	Debug and trace the execution of programs written in C language.						1								3		
	MCA107.1	To design, create and alter relational tables and include integrity Constraints	-11		3	1		1										
	MCA107.2	To insert, delete and update records in a table			3			1										
DBMS Lab	MCA107.3	Gain ability to write data retrieval queries, subqueries using SQL.			3	2		1										
	MCA107.4	To write queries for joining multiple tables.			3	2		1										
	MCA107.5	To implement the concept of triggers, procedures and functions using PL/SQL.			3	2												
	MCA201.1	Formulate a real-world problem as a mathematical programming model.		2	1								1	_				
	MCA201.2	Understand the theoretical workings of the simplex method for linear programming and perform iterations of it by hand.				2							JY	1	,			
Operations Research	MCA201.3	Solve specialized linear programming problems like the transportation and assignment problems		2		1					10	(a)		,				
	MCA201.4	Understand the basic concept of game theory and queuing theory.			2	1						1/	ina	I/D	rec	tor	ions	
	MCA201.5	Understand the network analysis techniques and Simulation.			2		2				P	Line	Cre	hup C	f Ins	fitue	ae.	
	MCA201.1	Formulate a real-world problem as a mathematical programming model.				3				Kı	upa	nnai Chi	kkat	ella	Mun Man	rthu	r Ho	οlι
	MCA201.2	Understand the theoretical workings of the simplex method for linear programming and perform iterations of it by hand.		1		3				Car	mel	aram	Roal	oella d Po ore -	560	035		
Operating Systems	MCA201.3	Solve specialized linear programming problems like the transportation and assignment problems		2		3				-		Ba	igar.				- 7	
	MCA201.4	Understand the basic concept of game theory and queuing theory.				3												

		MCA201.5	Understand the network analysis techniques and Simulation.				1		2											
Ī		MCA203.1	To introduce the object oriented concepts		3													2		
	C++ and Object Oriented	MCA203.2	To familiarize with constructors, destructors and pointers in CPP		3													2		
1	programming	MCA203.3	To perform overloading and type conversions		3													2		
1	Paradigms	MCA203.4	To gain knowledge in inheritance		3													2		
		MCA203.5	To familiarize the features such as templates and exception Handling		3													2		
		MCA204.1	To analyse, design and manage the development of a computing based system, component or process to meet desired needs within realistic constraints in one or more application domains.		2	3	2					2	3						2	
	Software Engineering	MCA204.2	To understand software testing and quality assurance techniques at the module level, and understand these techniques at the system level		2	2			2			2							2	
		MCA204.3	To use knowledge, techniques, skills and modern tools necessary for software engineering practice			2			2			2								Г
		MCA204.4	To function on multidisciplinary teams							1			2		3					
		MCA204.5	To communicate effectively with stakeholders involved in Projects							1			3		2					
ı		MCA205.1	To differentiate the linear and nonlinear data structures		3						1				2	2		2		
		MCA205.2	Implement the various kinds of sorting and searching techniques.				3				1				2	2		2		
	Data Structures	MCA205.3	To implement the concept of nonlinear data structures using arrays and linked list.		3		2				1				2	2		2		
		MCA205.4	Familiarize the concept of advanced data structures like red black trees, avl trees etc				3				1				2	2		2		
		MCA205.5	Implement the concept of balancing a tree and the rotations to do it.				2				1				2	2		2		
	CPP Lab	MCA206.1	To develop programs with object oriented programming concepts using C++.		3	3	3													Г
-	CFF Lab	MCA206.2	To implement generic programming				3													Г
L		MCA206.3	To implement exception handling		2		2													
		MCA207.1	To implement the linear data structures like arrays, linked list.		3		3				1				2	2		2		
		MCA207.2	To implement the various kinds of sorting and searching techniques.		3		3				1				2	2		2		
	DS Lab	MCA207.3	To implement the concept of stacks using arrays and linked list.		3		2				1				12	2		2		
		MCA207.4	To implement the concept of queues using arrays and linked list.		3		2				1			J	2	2		2		
		MCA207.5	To implement the concept of nonlinear data structures like graphs and trees.				2				1	a li	(a)	\mathbb{Z}	2	2		2		
	System Administration			AOC	X							1	4	cina	1/1	ire	stitu	rion:	5	
		MCA301.1	Understand and use asymptotic notations to analyse the performance of basic algorithms			3		2				P	rii	hi Gr	oup	of Ir	stitu r Vil' arth	age,		
		MCA301.2	Identify, analyse and evaluate various Algorithm Design Strategies and solve Problems: Divide And Conquer, Branch and Bound, Backtracking strategies			3	3	2			ŀ	12/	1 Ch	ikka n Ro	bella ad P	ost V	r Villarth	ur H	DDII	

		Blattify, analyse, and say also televations ablantificacionists			_		_	_			_	_		_			_	_
Design and Analysis of Algorithms	MCA302.3	istanti ya mingosi andang mori menunci angani mori kepigi and fetangges underliv edirohiem eddynamic giorge muning disposty Nuntegies		3	î	3	2	3					. 9.	\sim				
Data	MCA302.3	Distrifyhouselidennodic valsiste varitum Graphi Algieithuns and Substricted weedia.		3	3	1	2	2		(~1	W		/			
Communications and Computer Networks		Understand the basic concept of Number Theory and related familiarize the middle has been proposed a protocols used in the Data, link layer of OSI reference Model Approximation Problems		3	3		2	2		,	10		/ 	1/0	ire	tor		
	MCA302.4	Introduce the student to advanced networking concepts like wired and wireless protocols, and routing algorithms		3	3			2			Ŕ	rin	cipa ni Gi		of Int	stitu	age.	
	MCA302.5	Build an understanding of IP addressing and multicasting		3	2			2	П	K	rup	aniu	11.1.0	hella	nou	*	Lle	ıldı
	MCA303.1	To operationalise the relationship between system software and machine architecture.		3	1		2				12/	10,	n Ro	ad Po	ist ve	11	16.00	
System Software and	MCA303.2	To Distinguish the design and implementation of assemblers, linkers and loaders.		3	1		2			Ca	me	larai Ba	ngal	ore -	560	055		
Compiler Design	MCA303.3	To Have knowledge of the design of compilers		2	1		3											
	MCA303.4	To implement automata theory		2	1		3											
	MCA303.5	To apply the design and implementation of parsers.		2	1		3											$\overline{}$
	MCA304.1	Ability to solve problems using only pure object oriented concepts		2	2	1							2			2		
Java Programming	MCA304.2	Make decision to solve a problem using package, library and threads Handling Errors and Exceptions		2	2	1		2					2			2		
	MCA304.3	Able to develop networking applications		2	2	2							2			1		\vdash
i	MCA304.4	Ability to design and develop database applications		2	2	2		2					2					
	MCA304.5	Design and develop software solutions		2	2	2		2		1			2			3		
	MCA305.1	Provide a platform to plot the basic graphics primitives like points, lines, polygons, curves etc.						3										
	MCA305.2	Facilitate to apply both two dimensional and three dimensional transformations to images drawn.				3												
Computer Graphics	MCA305.3	Display an image by removing all unwanted, invisible parts using clipping techniques for lines and polygons.				3												
and Multimedia	MCA305.4	Create 3D objects and represent those using parametric curves.						3										
	MCA305.5	Ability to develop graphics applications using Open GL and Learn the concepts of audio and video compression in multimedia.						3										
	MCA306.1	Ability to solve problems using only pure object oriented concepts		2	2	1										2		
Java Lab	MCA306.2	Make decision to solve a problem using package, library and threads Handling Errors and Exceptions	1	2	2	1		2								2		
	MCA306.3	Able to develop networking applications		2	2	2										1		
	MCA306.4	Ability to design and develop database applications		2	2	2		2										
	MCA306.5	Design and develop software solutions		2	2	2		2		1						3		
	MCA306.1	Plot the basic graphics primitives like points, lines, polygons, curves etc. using OpenGL						3										
	MCA306.2	Implement two dimensional and three dimensional transformations using OpenGL				3												
Computer Gtraphics Lab	MCA306.3	Eliminate all unwanted, invisible parts using Cohen Sutherland line clipping and Sutherland Hedgeman polygon clipping algorithm.				3												
	MCA306.4	Create 3D objects and represent those using parametric curves.						2										

		MCA306.5	Image editing and animation using Adobe Photoshop and Flash						3											
	Yoga			AOC							X									
		MCA401.1	Ability to solve problems using only pure object oriented concepts and frameworks		2	2	1								2	2		2		
	Internet Programming	MCA401.2	Ability to design and develop database applications		2	2	1		2						2	2		2		
	using Framework	MCA401.3	Able to develop networking and distributed applications		2	2	2								2	2		1		
		MCA401.4	Ability to design GUI applications		2	2	2		2						2	2				
		MCA401.5	Design and develop Web applications		2	2	2		2			1			2	2		3		
	Business Processes and Information Systems			С						X		Х				1/4				
	Object Oriented Modelling and design with UML			С								Х				Х				
	590 S200 S 020	MCA406.1	Ability to solve problems using only pure object oriented concepts and frameworks		2	2	1									2	2	2		
IV			Ability to design and develop database applications	C	2	2	1		2							2	2	2	\Box	
	using Framework lab		Able to develop networking and distributed applications		2	2	2									2	2	1	igsquare	
		MCA406.4	Ability to design GUI applications		2	2	2		2							2	2		igsquare	
		MCA406.5	Design and develop Web applications		2	2	2		2			1				2	2	3	$\vdash \vdash$	
		MCA407.1	To understand and implement a requirement study and feasibility assessments of a given system.		1	2					2					2			2	
	Mini Project	MCA407.2	To facilitate the preparation of an SRS detailing the project management concepts, techniques and issues related to implementation.	С	1	2					2					3			2	
	Mini Project	MCA407.3	To describe analysis and design methodologies.		2	2					3					3			2	
		MCA407.4	To develop a real time system with adequate software project planning and tracking		2	2					3					3			2	
	sanAlekaanin sa	MCA407.5	To perform adequate testing and further, implement the system using PhP		2	2					2					3			2	
	Technical Writing			AOC									X						\Box	
		MCA501.1	To introduce the students, the basic concepts and techniques of Data mining and Warehousing and data pre-processing.		3	2		1									2		2	
	Data Mining	MCA501.2	Understand association mining algorithms for discovery of frequent item patterns in large data sets and their Visualizations	С	1	1		1						A			1		2	
		MCA501.3	Understand classification analysis algorithms for discovery and generation of rules in large data sets and their Visualizations		1	1		1			Δ		,,)Y	1		1		2	
		MCA501.4	Understand basic and advanced clustering analysis algorithms and Visualizations in Data Mining.		1	1		1			1	W					1		2	
	Linux Administration.	MCA502.1	To introduce the configuration and file system of a Linux OS		1				3			14	nci	pal Grot	/Di	rect	or initi	ons		2
	Management and	MCA502.2	To Design and implement programs with shell scripts	С			1		3			(,,	11.5	Crot	10 01	Illac	cillar	eP.		2
V	Networking	MCA502.3	To Familiarize with Linux administrative roles and settings				1		2		Vm	pan	Jam	0,0	ijan	dur '	Ittel	41	12	3
		MCA502.4	To check and monitor performance of Linux systems		1				2		Ki,	911	Chil	kabi	1100	Var	thur	Hot		3
		MCA502.5	To introduce Linux networking		1				2	\Box	1	61 1	-	pood	POS	. ,			igsquare	3
		MCA503.1	To comprehend the working of the parallel architectures		1			2			arn	relar	am	Road Road galor	·a - 5	<i>60 0</i>	30		$\sqcup \sqcup$	2
		MCA503.2	To parallel solve complex problems using task/channel model	C	2			3		l ì	,a. ·		Ban	galot	-					2

- J'	Parallel Programming	MCA503.3	To implement shared memory model in parallel programs		2	\Box	$\overline{}$						\Box							7
		MCA503.4	To implement Message passing model in parallel programs.			\Box	$\overline{}$	3	3	$\overline{}$	\Box	$\overline{}$	$\overline{}$	$\overline{}$	-	\Box	$\overline{}$	$\overline{}$	$\overline{}$	3
		MCA503.5	To learn and implement Basic programs in CUDA	$\overline{}$		\vdash	$\overline{}$	3	\vdash	\Box	\square	$\overline{}$	\Box	\vdash	\vdash	\vdash	\square	\vdash	\Box	3
t			To introduce the configuration and file system of a Linux OS.		$\overline{}$	\square				$\overline{}$	\Box	$\overline{}$	\Box	\Box	$\overline{}$	$\overline{}$		\vdash		
		MCA506.1	Command knowledge	1 '	1 '	1 '	3	1	1	1 - 1	1 '	1 '	1 - 1	1 '	1 '	1 '	1 '	1 '	1 '	2
	f	MCA506.2	To Design and implement programs with shell scripts	C	$\overline{}$		3		2	\Box		$\overline{}$		\Box					$\overline{}$	2
	Linux Lab	MCA506.3	To Familiarize with Linux administrative roles and settings		1		2		2											3
	r r	MCA506.4	To check and monitor performance of Linux systems		1		2		1											3
		MCA506.5	To introduce Linux networking		1		2		1											3
n	Specialisations			C/S/AOC	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	9 PO10	PO11	PO12	PSO1	PSO2	PSO3	3 PSO
	1	MCA411.1	Understand the fundamentals of data warehouse and its Elements					1									3			
	1	MCA411.2	Understand the basic architecture of a data warehouse and data Staging	С				2									3			
	Data Warehousing	MCA411.3	Understand metadata and its management and Multidimensional data models, operations, OLAP, ROLAP, MOLAP.					3									3			
	r	MCA411.4	Understand designing and building of data warehouse		$\overline{}$		$\overline{}$		3						$\overline{}$		3			
	·	MCA411.5	Understand data layout for best access in multidimensional data model and data pre-processing tools.						3								3			
		MCA412.1	Review the fundamental concepts of a digital image processing system and Analyze images in the frequency domain using various transforms.	1 1	3			3				,					3			
	radium musike	MCA412.2	Evaluate the techniques for image enhancement and image restoration.	С	2	\vdash		3		\Box	\square	. 1	ラ	/	\Box		3			
	Processing	MCA412.3	Categorize various compression techniques and Interpret Image compression standards.		2			3	(1	11	(0)	Z					3			
	, , ,	MCA412.4	Interpret imagesegmentation and representation techniques.	'	2	['	(·	3	T	N Y	17/	('	["	Dire	cto	r '	3	ſ ,	1 '	
	i t		Understand various image processing applications		2		$\overline{}$	3		<u> </u>	4	rin?	4\/Y	1)He		tion	nS 3	+		
			Learn about soft computing techniques and their applications		3			3		P	nid	hi Gr ikka	our	of In	r Vi	lage				Γ
	r r	MCA413.2	Define the fuzzy systems	С	2			3	Kı	upo	C	ikk?	ben	ano	1	our F	100011	4		
	r r	MCA413.3	Analyse various neural network architectures		2			3		121	1 011	20	JAF	JOST V	aice		3			
	Soft Computing	MCA413.4	Understand the genetic algorithm concepts and their Applications		2			3	Car	mel	aran	ikka n Ro ngal	ore	- 560	0 0.3;		3			
		MCA413.5	Identify and select a suitable soft-computing technology to solve a problem, construct a solution and implement a soft-computing solution		2			3			-50						3			
		MCA511.1	Understand the concept and challenge of big data and whyexisting technology is inadequate to analyse the big data;		1	2		3	3				'				3			
	ı J	MCA511.2	Collect, manage, store, query, and analyse various form of Bigdata	C	1	2		3	3								3			
	Big Data Analytics	MCA511.3	Gain hands-on experience on large-scale analytics to solvesome open big data problems by understanding and mining data Streams		1	2		3	3								3			
	, ,	MCA511.4	Understand the impact of big data for business decisions andstrategy using advanced clustering techniques		1	2		3	3								3			
	·!	MCA511.5	Understand the concepts of frameworks and techniques to visualize the output	<u>'</u>	1	2	'	3	3			['		['			3	['	<u>_</u> '	

1 1			1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -								_							_		\neg
		MCA512.1	Apply information retrieval principles to locate relevant information in large collections of data		1	2											3			
v		MCA512.2	Understand and deploy efficient techniques for the indexing of document objects that are to be retrieved	С	1	2											3			
V	Information Retrieval	MCA512.3	Implement features of retrieval systems for web-based and other search tasks						2								3			\Box
	Analytics	MCA512.4	Analyse the performance of retrieval systems using test Collections						2								3			\neg
			Collections								<u> </u>								-	-
		MCA512.5	Make practical recommendations about deploying information retrieval systems in different search domains, including considerations for document management and querying						2								3			
		MCA513.1	Understand the essentials like graph, Network measures and models for simulating social media models					3									3			
		MCA513.2	Understand data mining essentials for social media mining.	C				2									3			
	Social Media Mining	MCA513.3	Find and analyze communities in social media.		3									3			3			\neg
		MCA513.4	Understand the concept of Influence and Homophily. Analyze and perform recommendations in Social Media			3								3			3			
		MCA513.5	Understand Behaviour Analytics in social Media			3					\vdash			3			3		\neg	-
		MCA421.1	To understand and develop web applications using Servlets and Implement a code in JDBC to communicate with database		1													3		
		MCA421.2	To learn and comprehend the JSP Technologies	C	2						$\overline{}$							3	-	\neg
	J2EE	MCA421.3	To learn RMI architectures			2					$\overline{}$							2	\neg	\neg
		MCA421.4	Build Enterprise Applications using Session Bean, Entity Bean and MDB			2												3		
		MCA421.5	To learn Bean based queries, transactions															2	\neg	\neg
		MCA423.1	To implement applications using AngularJS frame Work		2	2									2			3		\neg
***	0 5 1.1	MCA423.2	Applying the frame work in real applications	C	2	2									2			3		\neg
IV	Open Source Lab	MCA423.3	To implement filters in applications		2	2									2			3	\neg	\neg
	PHP	MCA423.4	To apply the services and modules in applications		2	2									2			3	\neg	\neg
Ιİ		MCA423.5	Applying the framework to solve complex problems		2	2				3					2			3		
		MCA423.1	Able to develop simple apps		2	2	1		3						2			2		
		MCA423.2	Able to develop apps based on different types of menus	C	2	2	1		3					No.	2			2		
	Android	MCA423.3	Make decision to solve a problem using package, library and threads Handling Errors and Exceptions		2	2	2							V.	2			1		
		MCA423.4	Ability to design and develop database applications		2	2	2		3		$\overline{}$		'N'	7.	2			3		\neg
		MCA423.5	Able to design and develop mobile applications works with internet applications		2	2	2		3		<u>I</u>	W			2		_	3		
		MCA521.1	Facilitate understanding of the Model-View-Controller (MVC) design pattern and how it is best applied to Java Web application development with respect to a scenario.		1	2	2					rin	cip	al/	Dire	ecto nstit	ution Hage tur t	ıs		
		MCA521.2	Ability to map entities and attributes using modern tools	С					3			anic	m	1	and	ir Vi	Hag.	1-1-		-
	Struts and Hibernate		Create different types of persistent classes and Map java inheritance hierarchy with database tables using various mapping techniques				2			C-1	12	/1 Cl Jara	nikk m R	abel oad f	ost - 56	Varti 0 03	Hage S	юви		
		MCA521.4	Fetch data effectively from database using traditional SQL and Hibernate-Query Language		1				2	CS	, ,,,,,,	В	ang	slore						
v		MCA521.5	Ability to provide computational solutions for real life problems												3	2		2		3
		MCA522.1	Understand the data types in python		3												1			

	1		1		_				_		_			_	_	 _	_	_	_
	Open Source Lab – Python	MCA522.2	Ability to understand object oriented programing concepts and write programs in python. Handling Errors and Exceptions	C			2		3							-1	3		
		MCA522.3	Ability to design and develop database applications				2										3		$\overline{}$
		MCA522.4	Ability to design and develop web pages/applications				2		3								3		
	Developing Mobile Applications with iOS Platform			S					Х								х		
		MCA 431.1	To identify and understand the different categories of requirements in an effective manner		2	3							2		2			2	
	Software	MCA 431.2	To gain knowledge in the various elicitation techniques ,elicitation process	С	2	2	2		3				2					2	
	Requirements Engineering	MCA 431.3	To understand requirements specification process and the various modelling techniques		2	2	2						2					2	
		MCA 431.4	To become well versed in the requirements verification process.		2	2			2				2		2			2	
		MCA 431.5	To gain knowledge in requirements management.		2	2							3		2			2	
V		MCA431.1	Learn the goals of software design and the patterns for designing the software.		3	2												3	
	Software Design and architecture	MCA431.2	Know the need and use of software architecture such as classical, event based etc	С								3						3	
		MCA431.3	Introduce framework and the methods for automated and dynamic analysis.										3					3	
		MCA 433.1	To gain a basic knowledge in testing.		2	2							2					2	
		MCA 433.2	To understand different levels of testing and their issues	C	2	2	3						2					2	
	Software Testing	MCA 433.3	To gain knowledge about testing methods.		2	2	3						2					2	
		MCA 433.4			2	2	3						2					2	<u> </u>
		MCA 433.5			2	2	2		3				2					2	\vdash
		MCA531.1	To conduct project planning activities that accurately forecast project costs, and resources									3						2	L
	Software Project	MCA531.2	To impart knowledge on activity planning and resource Allocation	С								3						2	
	Management	MCA531.3	To perform monitoring, control and project closure successfully									3						2	
		MCA531.4	To be specialized in risk management concepts									3						2	_
		MCA531.5	To be familiar with project management tools and certifications									3						2	
		MCA533.1	Learn the basics of software risk and to classify them.		2	3	-0	$^{\wedge}$										3	
	Software Risk	MCA533.2	Familiarize the assessment of risks using tools.	C			- V	,4				3						3	_
V	Management	MCA533.3	Introduce the response to risk and the activities for maintenance.	٥)	$\nu_{/}$. ′					2					3	
		MCA532.1	To gain an understanding of human computer interface and Interaction		Q					or		2						3	
		MCA532.2	To understand the user design interface process and learn direct/indirect methods	С	Dr.	inc	ipa	Dir up of elland	nsti	tuti	ons	2						3	
	User Interface Design	MCA532.3	To implement and use windows components in design								ge.	2						3	
	Cost interface (Aesign	MCA532.4	To implement multimedia facilities in prototypes	- Kr	upar	nan	dob	elland	m. A		uo	5ld						3	
		MCA532.5	To use software and paper prototyping tools to design user interfaces that take into account human capabilities and constraints, users' needs, usability goals and user experience Goals	Car	12/1 nela	Chi ram Bai	Roa Igalo	up of elland d Post re - 56	Var' 0 0	85	110	2						3	

		MCA441.1	Understand and apply concepts of Ethical hacking and Footprinting		1			1												2
	Mathematical	MCA441.2	To know the basics of System hacking and enumerations	C	1			2												2
	Foundations of	MCA441.3	Differentiate the concepts of Trojans, viruses and worms				1	2		1										3
	Information Security	MCA441.4	To understand the vulnerabilities of web applications and monitor the hacks				1	2												3
		MCA441.5	To understand SOL injections and Android Hacking				1	2	-		\vdash									3
			Learn the Web application architecture, its components and											-	-					
		MCA442.1	potential security weaknesses.																l	2
	Web and Database	MCA442.2	To impart knowledge about securing web application.	C	1									1						2
IV	Security	MCA442.3	Learn the levels of database security and SQL injection.		1															2
			Understand information leakage and securing database to																	2
		MCA442.4	database communication.									9	V .	,	l				l	2
		MCA443.1	Have an idea about various information hiding techniques and their need.		3				-			עע		1						3
			Understand the concept of steganography and different methods	_	_				\vdash	1 .	. UN	4			-					_
	Emerging Security	MCA443.2	of implementing steganography	C	2					M	W					_				3
	Technologies	MCA443.3	Understand the concept of watermarking		3					A	1//	-	1/	Oir	ecto)1				3
		MCA443.4	Have the knowledge about digital right management		3					- 7	-ir	cip	a_{1}	Dir	actit	ntio!	15			3
		MCA443.5	Various applications of information hiding techniques		3					- 1	1 11	C	coul	2 01	nsu	ution Mage hur 1	,			\vdash
-		MCA541.1	To be familiar with wired and wireless network protocols.		1	1			ν	run	anic	HI O	la al	land	m. A	Hab.	الطمة		i	2
		MCA541.2	Have a working knowledge of intrusion detection and malicious software.	C	1	1	1		_r	12/	1 C	nikk	and i	post	Vart	hur	1000			2
	Network Security	MCA541.3	To Know the working of IPsec.		1	\vdash									0.03	-			-	2
	Architecture	MCA541.4	To be familiar with web security.		1	\vdash			Ca	inc	R	anga	1010	- 5		-	-		-	2
	A 100 A		Understand the email security protocols like PGP, S/MIME and						\vdash		-	211.0		_	-	-			 	_
		MCA541.5	PEM.		1	1									l				l	2
		MCA502.1	Understand the concept of wireless network protocols.																	2
		MCA502.2	To impart knowledge about Viruses, WAP and WEP.	С										1						2
	Wireless Security	MCA502.3	Learn the RFID technology and its applications.		1		1							1						2
	,	MCA502.4	Understand wireless hacking techniques and mobile security.											1						2
v		MCA543.1	Interpret and appropriately apply the laws and procedures associated with identifying, acquiring, examining and		2	3	2													2
			presenting digital evidence.																	_
			Create a method for gathering, assessing and applying new and																	
		MCA543.2	existing legislation and industry trends specific to the practice	C	2	2	3								l				l	2
			of digital forensics.			\vdash			-		_									
	Cyber Forensics	MCA543.3	Employ fundamental computer theory in the context of computer forensics practices.		3															1
			Adhere to the ethical standards of the profession and apply																	
		MCA543.4	those standards to all aspects of the study and practice of digital forensics.		1					3				1						3
			Evaluate the effectiveness of available digital forensics tools																	\vdash
		MCA543.5	and use them in a way that optimizes the efficiency and quality	ne e	1	2			3											2
			of digital forensics investigations																	
-	Course Aggregate				137	111	98	48	70	10	17	22	18	12	41	28	42	62	38	39