

Criterion: I - Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A

Year : 2015 - 2020



FATIMA COLLEGE (AUTONOMOUS), MADURAI - 625018

NAME OF THE PROGRAMME: M.C.A

PROGRAMME CODE: MCA

PROGRAMME OUTCOMES:

PO 1: Apply the knowledge of computing maths and science for the solution of problems and requirements

PO 2: Identify, critically analyze, formulate and develop computer applications using fundamental principles of relevant domain disciplines

PO 3: Design and evaluate solutions for computer based problems to meet the desired needs within realistic constraints such as safety, security and applicability

PO 4: Use research based knowledge to conduct experiments and interpret data to attain well-defined conclusions.

PO 5: Create, select and apply modern computing tools by understanding the limitations, with dexterity.

PO6: Demonstrate the competency in programming skills as per industry expectations.

PO7: Understand the impact of system solutions in societal, environmental and cultural issues within local and global contexts for sustainable development

PO8: Commit to professional ethics and cyber regulations, responsibilities & norms.

NAAC - 4th CYCLE - Self Study Report (SSR)



Criterion: I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A

Year : 2015 - 2020

PO9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary environment to manage projects.

PO10: Communicate effectively with the society about computing technologies.

PO11: Demonstrate knowledge and understanding of the management principles and apply these to manage projects.

PO12: Appreciate the importance of goal setting and to recognize the need for life-long learning in the broadest context of technological change.

PROGRAMME SPECIFIC OUTCOMES:

PSO 1: Ability to design and develop applications in the computing discipline to meet the customer's business objectives.

PSO 2: Ability to Integrate various system components to provide user interactive solutions for various challenges

PSO 3: Ability to test and maintain the software applications with latest computing tools and technologies.

PSO 4: Ability to understand the evolutionary changes in the practices and strategies in software project development.

PSO 5: Ability to enhance teamwork and leadership skills to solve time critical problems



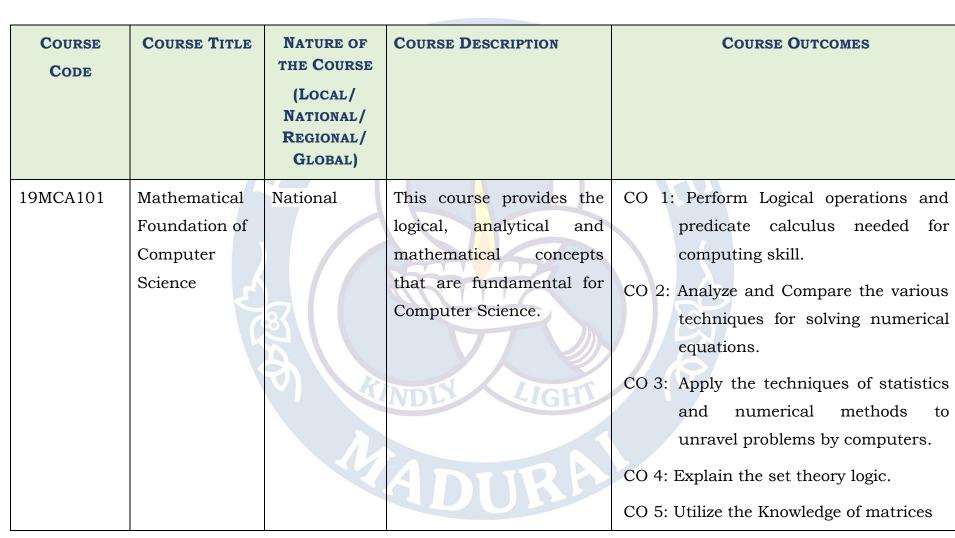
Criterion: I - Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A

Year : 2015 - 2020

2019 - 2020





Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				for designing and solving problems
19MCA102	Computer Organization and Architecture	Global	This course provides the basic structure of digital computers and the organization of various units such as control unit, Arithmetic & Logical unit, Memory unit and I/O unit in a digital computer	CO 1: Ability to perform arithmetic operations in various number systems. CO 2: Conceptualize the basics of organizational and architectural issues of a digital computer. CO 3: Demonstrate and perform computer arithmetic operations on integer and real numbers. CO 4: Identify logic for assembly language programming. CO 5: Analyze the performance of Reduced Instruction Set Architecture.
19MCA103	Operating	Global	This course provides	CO 1: Identify the components and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



Systems		knowledge on the	processes.
		concepts of abstraction, scheduling mechanisms, implementations and manages a computer's resources, especially the allocation of those resources among other programmes	CO 2: Analyze on scheduling algorithms and deadlocks. CO 3: Demonstrate the mapping between the physical memory and virtual memory. CO 4: Identify the secondary memory management techniques. CO 5: Analyze on the distributed systems and security issues.
Programming In C	Global	This course provides the layout of a C program and venture into control statements, loops, functions and basic I/O. Development skills will be continued by learning more complex data types	CO 1: Identify the basic terminologies used in C programming. CO 2: Design programs involving decision structures and loops. CO 3: Implement code reusability with the help of user defined functions. CO 4: Develop advanced applications



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			such as arrays, structures and pointers. CO	using nested structures. 5: Demonstrate the dynamics of memory by the use of pointers and files.
19MCA105	Lab I- Visual Programming	Global	programming knowledge CO using Visual C#. This course content includes	 Develop GUI applications. Design and Deploy application programs. Design and implement applications using databases.
19MCA106	Lab II - C Programming	Global	This course provides CO 1 exposure to problem-	l: Develop programs using branching statements and control statements.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				solving through	CO 2: Create applications using arrays,
				programming. It aims to	functions, pointers and files.
				train the students with	CO 3: Gain skills to handle strings and
				the basic concepts of the	files.
				C-programming language	
				and its practical	
			7	implementation	
1	9MCA 107	Skill Based	Global	This course provides focus	CO 1: Use Linux utilities and develop
		Lab I – Linux		on the fu <mark>nd</mark> amental tools	shell scripts to perform tasks.
		2	87	and concepts of Linux and Unix OS. It gives practical exposure on topics such	CO 2: Effectively use Linux environment to accomplish software
				as LINUX environment,	development tasks.
				commands, file system,	CO 3: Monitor system performance and
			A CO	processes and utilities.	network activities.
				Specific emphasis is given	
				to the bash shell and user	
				environment with several	
				flavours of UNIX/Linux	



Criterion : I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			using a version of Red Hat	
			Linux.	
			ACAS	
19MCA108	Soft Skills I -	National	This course provides skills	CO 1: Display competence in oral and
	Communicativ		of oral and written	written communication.
	e English		communication to work	CO 2: Use current technology related to
			in different environments,	the communication.
			develop emotional	
			sensitivity and an	
			awareness of how to work	
			and negotiate with people.	
				<u></u>
19MCA201	Data	Global	This course provides	CO 1: Select appropriate data structures
	Structures		knowledge on several	as applied to specified problem
	And		fundamental algorithms	definition.
	Algorithms	4	and data structures and	CO 2: Implement operations like
			to implement them in C++	searching, insertion, deletion and
		1/1	to be an effective designer,	traversing in trees.
			developer, or customer for new applications.	CO 3: Compare the data structures of
			rr	advanced search trees.
	1	l	8	1



Criterion : I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			ACOL	CO 4: Implement appropriate heap operations, sorting, searching techniques for a given problem. CO 5: Determine and analyze the complexity of graph Algorithms.
19MCA202	Software Engineering	Global	This course provides the fundamental perception of Software Engineering which includes system requirements, finding the effective methods to analyze, design, code, test and implement the full application with appropriate tools	 CO 1: Compare the different domains and process models. CO 2: Identify the data, class and flow oriented modeling concepts. CO 3: Analyze on the design oriented concepts. CO 4: Identify the managerial aspects of software development. CO 5: Generate project schedule for different activities of software development
19MCA203	Relational	Global	This course provides an	CO 1: Design conceptual models of a



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Database		introduction to the design	database using ER model.
	Management		and creation of relational	CO 2: Outline the features of DBMS and
	Systems		databases with an	Relational Database design.
			examination on the characteristics of PL/SQL and its usage to extend and automate SQL to administer the Oracle database.	CO 3: Retrieve information from database by formulating complex SQL Queries. CO 4: Utilize PL/SQL programming to solve problems. CO 5: Implement Packages, Triggers for efficient retrieval of information.
19MCA204	Object Oriented Programming In C++	Global	This course provides knowledge on variable types, operators, control flow, functions, program structure, input and output, arrays, classes, and object-oriented concepts of programming.	CO 1: Outline the process and mechanism of functions. CO 2: Identify the relation between arrays and pointers, and use them efficiently in program CO 3: Use C++ classes for code reusability.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



19MCA205	Lab III – RDBMS	Global	This course provides practical knowledge in PL/SQL programming, utilizing the services provided by Oracle database in a stored procedure perspective. This also includes implementation of Subprograms, Triggers, and Cursors concepts in depth	CO 4: Discuss on the concept of function and operator overloading, virtual functions and polymorphism CO 5: Demonstrate the power of templates for generic programming. CO 1: Enhance Programming skills and techniques. CO 2: Formulate complex queries using SQL CO 3: Use the PL/SQL code constructs of IF-THEN-ELSE and LOOP types as well as syntax and command functions.
19MCA206	Lab IV - C++	Global	This course provides an	CO 1: Develop programs in object



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Τ	I	1	T
	Programming		introduction to the use of C++ programming language as an aid to solve mathematical and scientific problems.	oriented paradigm. CO 2: Analyze, use, and create different types of functions and classes. CO 3: Design programs to implement various data structure concepts
19MCA207	Skill Based Lab II – HTML & CSS	Global	This course provides focus on hypertext mark up language and cascading style sheet implementation. It covers the foundation concepts of semantic coding, usability & accessibility. It includes code syntax, commenting, writing, testing and maintenance of HTML and CSS	CO 1: Design and develop attractive WebPages. CO 2: Implement a variety of presentation effects in html documents using CSS. CO 3: Write valid standards-conformant html documents using variety of form elements
19MCA208	Soft Skills II –	National	This course make the	CO 1: Identify the communication



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Colloquium		students groom their differences in working environment
			personality and prove with different cultural styles.
			themselves as good CO 2: Practice the skills and behaviours
			Samaritans of the Society. required to facilitate a group.
			This course consists of individual or in-group CO 3: Demonstrate an effective
			class presentations presentation in a meeting.
		4	pertaining to the
			applications of concepts,
			Theories or issues in
	<u>r</u> k		human development.
19MCA301	Graph Theory	Global	This course provides a • Write precise & accurate
			basic knowlwdge of the mathematical definitions of graph
		O) (A)	structure of graphs and theory
			the techniques used to • Apply the principles and concepts of
			analyze problems in graph graph theory in practical situations.
			theory.
			• Solve the problems using the concepts of Graphs and trees.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			ACOL	•	Validate and critically assess a mathematical proof. Explore the modern applications of graph theory
19MCA302	Data Communicatio n And Networking	Global	This course provides the basic concepts, design principles and underlying technologies of networking.		Identify the functionalities of Networking layers of both OSI and TCP/IP reference models. Analyze the design issues of Data link layer and techniques to resolve it. Compare the principles of Switching and Routing algorithm. Predict the TCP and UDP related procedures. Outline the Application layer protocols.
19MCA303	Programming	Global	This course provides an exhaustive coverage of	•	Apply the basic Java constructs to develop solutions to real time



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



In Jav	ra	Core Java programming language features like OOPS and GUI programming.	 Analyze the hierarchy of java classes to develop object oriented programs. Design software in Java using Packages and Threads. Implement Concepts of AWT for creating GUI. Design a Software using JDBC.
19MCA304 Lab V MYSQ	F – PHP & Global	This course provides information about two powerful technologies. Together, these two technologies provide a powerful platform for building database-driven Web applications	 Design WebPages using server side scripting. Use PHP built-in functions and custom functions for processing. Create various interactive and dynamic websites
19MCA305 Lab V	I – Java Global	This course provides	Apply the basic Java constructs to



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Programming		experiential learning in		develop solutions to real time
			the implementation of	•	problems.
			Core Java Programming.	•	Analyze the hierarchy of java classes
			TEAD		to develop object oriented programs.
				•	Design software in Java using
		V			Packages and Threads.
		4/		•	Implement Concepts of AWT for
					creating GUI.
				•	Design a Software using JDBC.
19MCA306	Networking	Global	This course provides a	1	To implement wired and wireless
	Tools	<u> ల</u> ో	dependable and realistic		networks.
		3 1	experience to simulate	١.	To analyze various protocols in wired
	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	V B	wired and wireless		and wireless environment
			networks.		
19MCA307	Quantitative	National	This course provides		Apply quantitative techniques to solve
	Aptitude		gamut of skills which		variety of problems.
			facilitate the students to	•	Perform statistical analysis to



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Compiler Design	Global	enhance their employability quotient and do well in the professional space. It makes them think critically and apply basic mathematics skills to interpret data, draw conclusions and solve problems The course provides knowledge on the theory and tools that can be employed in order to perform syntax-directed translation of a high-level programming language into an executable code along with data flows. The concepts covered are	 To analyze the basic concepts and applications of Compiler Design To compare various lexical analyzers and grammars To formulate the conversion process between finite automata, regular grammars with the transition and transformation methods
--	--------------------	--------	---	--



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			Parsing, Scanning, Semantic Analysis, and Code Generation combined with the theory of computation conversions.	To identify if a language is regular, context-free, unambiguous after
19MCA402	Mobile Communicatio n & Application Development	Global	This course provides knowledge on key mobile system and wireless communication. It also aims at developing applications using Android	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	•	Apply Location Based Services of Android for ensuring women's safety and security
19MCA403	Programming In Python	Global	This course provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. Extra emphasis is placed on		Predict the basics of Python programming. Solve problems requiring the writing of well-documented programs in the Python language, including use of the logical constructs of that language. Use and manipulate Lists and python exception handling model to develop robust programs. Formulate solutions for String,
			features unique to Python, such as tuples, array slices, and output formatting	•	tuples and File operations. Apply object-oriented programming concepts to develop dynamic interactive Python applications



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



19MCA404	Lab VII - Mobile Application Development	Global	This course provides knowledge of developing applications for mobiles using native and hybrid frameworks.	Design and develop user Interfaces
19MCA405	Lab VIII – Python Programming	Global	This course provides the practical knowledge of implementing Pythonprograms with loops, functions and represent compound data using lists, tuples and dictionaries.	 Implement Math functions, Strings, List and Tuple in Python programs. Express different Decision Making statements and Functions. Interpret Object oriented programming in Python & File handling operations



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



19MCA406	Software	Global	This course provides focus	_	Finding defects in the programs
19MCA400		Global		•	
	Testing Tools		on the needs of automated		while developing the software.
			testing tools. The testing	•	Able to write test cases and test
			tactics of a project are		scenarios.
			done by understanding		Develop the scripts for finding the
			the customer's		defects and preventing them.
			requirements, test plannin	•	Understand the automated testing
			g, test design scenarios,		tools available
			test cases, test execution,		
			result analysis, defect		
			tracking and reporting		\(\frac{1}{2}\)
	ح				
19MCA407	Technical	National	This course provides skills	J • J	Enhance the technical skills for
	Aptitude		that are imperative for		employability.
			students to establish a	//•	Improve the proficiency of
			stronger connect with the		participation in competitive
			technical environment in		examinations
			which they operate. An		
			understanding of these		
			skills will enable students		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			to manage the placement challenges more effectively	
19MCADS01	Big Data Analytics	Global	This course provides familiarization to the important information technologies used in manipulating, storing and analyzing big data.	 Work with big data platform and Understand the fundamentals of various big data analysis techniques Analyze the big data analytic techniques for useful business applications. Design efficient algorithms for mining the data from large volumes. Examine the HADOOP and Map Reduce technologies associated with big data analytics Explore the applications of Big Data
19MCADS02	Big Data Security	Global	This course provides an overview of the cutting	Identify the need for security and best practices in a big data



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	1	Т		I	
			edge and new technologies		environment
			in the area of big data	•	Analyze the steps to secure big data
			security.	•	Build security in hadoop eco
					system
			LEAD		Assess the sensitivity of data in
					Hadoop
				•	Outline data security and event
					logging
1015015000	5	01.1.1			
19MCADS03	Data Analytics	Global	This co <mark>ur</mark> se provides	1	Outline the programming
	Using Pig And		knowledge on creating		constructs of Pig and database
	Hive		applications to analyze big		management using HiveQL
		81	data.	J •	Write scripts using Pig latin and
		2			perform various HiveQLqueries by
		V A	NDLY LIGHT		applying RDBMS concepts
			ADE AOII	•	Apply the concepts of Pig and Hive
					in simple tasks
			ADITO	•	Formulate and analyse different
				_	databases for different situations



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	. 2015 202			
				Create real time applications
19MCANWO	Cryptography And Network Security	Global	This course provides basic understanding of previous attacks on cryptosystems with the aim of preventing future attacks and to provide security using various cryptographic tools	 Evaluate the fundamentals of networks security, security architecture, threats and vulnerabilities. Compare Stream ciphers and block ciphers. Apply the different cryptographic operations of public key cryptography. Pertain the various Authentication schemes to simulate different applications. Analyze various Security practices and System security standards
19MCANW02	Wireless Sensor Networks	Global	This course provides knowledge on the architectures, functions	• Formulate the basic standardization of wireless networks.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			,	
			and performances of	• Analyze the implementation of
			wireless sensor systems	technologies related to WSN.
			and platforms. It also	• Identify and understand the
			describes and analyze the	security issues in ad hoc and
		837	specific requirements for	sensor networks.
			applications in wireless	• Compare the protocols and to
		3.9	sensor networks regarding	promote the research work in this
			energy s <mark>u</mark> pply, memory,	area.
			processing and	• Apply and solve problems in the
			transmiss <mark>ion</mark> capacity	applications of Wireless Networking
	z A			Area.
19MCANW03	High Speed	Global	This course covers the	Identify the building blocks and
	Networks		basics, architectures,	operation of high speed networking
		V) Và	protocols and technologies	and ATM.
			for high-speed networks.	• Analyze the cause of congestion,
			It includes LANs,	traffic slow down and related
			Protocols, TCP/IP Suite,	factors for Quality of Service
			Data Networks, high speed	Identify.
			LANs, link level flow and	• Apply the concepts learnt in this



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			error control, transport		course to optimize performance of
			level traffic control,		high-speed networks using Flow
			routing, MPLS switching		Control.
			and Network security.		Compare the different architectures
		33	LEAD		used for HSN.
				•	Describe the protocols that are
					used to design high speed
	_	4/			networks.
19MCAAD01	Web	Global	This course focuses on the	1.	Understand the basics of HTML
	Programming		two broad divisions of web		tags.
	Techniques		development, front-end	•	Analyze the advanced features of
		31	and back-end		HTML5.
			development. It gives	/	Implement the use of internal and
		O) (A)	information on how to		external Cascading Style
			load a web application,		Sheets (CSS) to format elements
			design and how to interact		on single or group of pages.
			with web pages using		Compose programs for the web and
			HTML, CSS and		other contexts using the JavaScript
			JavaScript		programming language.
			26		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	•	Apply various ECMA Script 6 methods in building interactive websites.
19MCAAD02	Internet	Global	This course provides an	A	Analyze React Components, the
	Programming		overview of client-side web		building blocks and its interaction
	Frameworks		UI frameworks of		with other web applications.
			Bootstrap 4. It focuses on	•	Design websites using various
			grids and responsive		Angular features including
			design u <mark>sin</mark> g CSS pre-		directives, components and
			processors, Less and Sass		services.
	3		and the basics of Node.js.	•	Compute and build applications
		81	It takes the students to	, ,	using Node.JS along with the
			move to the next level by		combination of Bootstrap.
		V) CA	building data-driven web	//•	Apply the concepts of MongoDB &
			apps using React		MySQL, the back-end databases.
				•	Utilize the conceptual and practical
			ADITOA		aspects of CSS Pre-processors and
					JSON



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



19MCAAD03	Software	Global	This course provides an	Explain the fundamental principles
		Global	_	
	Development		immersive experience in	and practices of the agile
	Frameworks		the technical, cultural and	development methods.
			social aspects of Agile and	Analyze the planning and execution
			Devops.	of the agile manifesto
				• Monitor the management to achieve
				complete product development.
				• Practice the integration of
				development and operations in
				software projects.
	4			• Present the software project by
		8		following the principles that best fit
		3		the technical and market demands
19MCAGE01	Resource	Global	This course provides	• Identify the applications of
	Management		solution to problems in	Operations Research and methods to
	Techniques		different environment that	solve business problems.
			needs decision making	 Apply linear programming to solve
			using optimization	operational problem with constraints.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			techniques.	 Apply transportation and assignment models to find optimal solution in warehousing and Travelling, Prepare project scheduling using PERT and CPM. Use optimization concepts in real world problems
19MCAGE02	Financial Management And Accounting	Global	This course provides an overview of financial concepts, process and operations from a managerial perspective.	 Preparation and analysis of balance sheet. Predict the Classification of Costing. Decide the budget preparation and control of a company. Analyze the flow of funds. Use Tally to implement the needs of financial accounting
19MCAGE03	Management Information Systems	National	This course provides the concept and the role of management information	 Analyze and synthesize business information needs to facilitate evaluation of strategic



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			systems to achie	leve	alternatives.
			strategic goals and to ga	gain •	Apply MIS knowledge and skills
			competitive advantages		learned to facilitate development,
				7/10	deployment and management of
			LEAD		information systems.
	9			•	Predict the use of information
					technology for business processes.
				•	Assess the use of technology of
					Information Systems for effective
					management.
	حر			•	Identify the security features and
		27			global issues in organization and
	R				society
19MCAGE04	E-Commerce	Global	This course provide	des •	Gain a comprehensive understanding
			information on	the	of the E-Commerce landscape,
			combination of Inter	net	current and emerging technology
			with E-Commerce, optic	ons	and infrastructure underpinnings of
			available for do:	oing	the business.
			business on the Intern	net, •	Analyze the impact of E-commerce on



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			features that helps to		business models and strategy.
			build E-Commerce web	•	Develop an understanding on how
			sites, marketing issues,		internet can help business grow/
			payment options, security		Describe the infrastructure for E-
			issues and customer		commerce
			service.	•	Assess electronic payment systems
				•	Gain an understanding on the
		4			importance of security, privacy, and
					ethical issues as they relate to E-
					Commerce.
1014040505		01.1.1			
19MCAGE05	Cyber	Global	This course provides the	1	Predict the forensics fundamentals
	Forensics	<u> </u>	investigation of computer-	7	and the various technologies used to
			related crimes with the		avoid computer crimes.
		(V)	goal of obtaining evidence	•	Illustrate different methods to collect
			to be presented in a court		and preserve digital evidence and
			of law		Digital Crime Scene.
			ABSTOA		Identify and Analyze Forensic
					Technical Surveillance Devices.
				•	Evaluate the Various tools and tactics



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			ACOV	followed in military. • Demonstrate the Usage of surveillance tools for tracking cyber criminals
19MCAGE06	Ethics In Computing	Global	This course provides the basis for ethical decision-making and the methodology for reaching ethical decisions concerning computing matters	 Predict the relationship between the law, ethics and computer technology. Outline the philosophical and ethical debates with the ideas and the nature of intellectual creativity. Design the impact of computer technology on free speech. Formulate the ethical and legal issues of the impact that computing technologies had on workplace. Develop a personal standpoint in relation to DataBase society and the usage of biometric data.
19MCAGE07	Entrepreneurs	Global	This course provides	Highlight the salient characteristics
			32	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	hip		the skills necessary to	of successful entrepreneur
	Development		succeed as an	• Enumerate the competencies
			entrepreneur. It includes	relevant for Entrepreneurial
			the fundamentals of	development.
		B	starting and operating a	• Delineate the growth of women
			business, developing a	Entrepreneurship in India.
		- 19	business plan, obtaining	• Identify the major problems faced in
		4	financing, marketing a	conducting EDPs.
			product or service and	• Discuss the methods of project
			developing an effective	appraisal used for small scale
	حد		accounting system	enterprises
19MCAGE21	Research	Global	This course provides an	• Predict the different stages of
	Methodology		overview of various	research process.
		O) (C)	methods employed in	 Apply methods to collect best data.
			quantitative and	• Assess the suitable research design &
			qualitative research.	work.
			ADITO	Compare categorical and continuous
				measures.
				Analyze the process of various reports



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				writing.
19MCAGE22	Data Mining And Data Warehousing	Global	This course provides the basic concepts, principles, methods, implementation techniques and applications of data mining	 Practice the pre-processing operations of data. Compare & contrast OLTP, OLAP and Data mining as techniques for extracting knowledge from a Data Warehouse. Perform Association Rule Mining for Market Basket Analysis. Design & deploy the appropriate Classification and Clustering techniques. Explore the recent trends in data mining.
19MCAGE23	Digital Image Processing	Global	This course provides an introduction to the basic concepts, methodologies and algorithms of digital	 To review the fundamental concepts of a digital image processing system. To examine various types of images, their intensity transformations and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			image processing focusing	spatial filtering.
			image enhancement,	• To analyze the different types of
			image analysis and object	noises and the filters used to restore
			recognition	and reconstruct the images.
			LEAD	To create colour images and pseudo
				images with smoothening and
		3.9		sharpening techniques.
		4		• To compare the various lossy and
				lossless compression mechanisms.
19MCAGE24	Artificial	Global	This course provides the	Identify problems that are amenable
	Intelligence &		basic principles of	to solution by AI methods.
	Expert	3	artificial intelligence. It	• Formulate search problems and
	Systems		will cover problem solving	implement search algorithms using
		(D)	paradigms, constraint	admissible heuristics.
			propagation and search	• Design and carry out an empirical
			strategies in the areas of	evaluation of different algorithms on
			applications including	a predicate logic and state the
			knowledge representation,	conclusions that the evaluation
			natural language	supports.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			processing, expert systems, vision and robotics	 Analyze games playing as adversarial search problems and implement optimal and efficient solutions. Apply the concepts of Expert Systems
			LEAD	in machine learning
19MCAGE25	Soft Computing	Global	This course provides the principal constituents of soft computing that is fuzzy logic, neural network theory and probabilistic reasoning. The course explores the features that are employed in various associated techniques	 Explore the functional components of artificial neural networks. Examine the principles of back propagation networks. Expose the students to the concepts of predicting the functionalities of ART. Analyze the logic principle of classical sets and fuzzy set operations in fuzzy set theory. Identify the concept of fuzzification and defuzzification involved in various systems



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



19MCAGE26	Cloud Computing	Global	This course provides comprehensive study of cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS).	 Compare the strengths and limitations of cloud computing. Identify the architecture, infrastructure and delivery models of cloud computing. Apply suitable virtualization concept. Choose the appropriate Cloud player, Programming Models and approach. Address the core issues of cloud computing such as security, privacy and interoperability
19MCAGE27	Advanced Dbms Techniques	Global	This course provides knowledge on the advanced topics of DBMS including query optimization, concurrency,	 Design the basic concepts of the advanced database design and dependencies. Compare the different data models. Compile the implementation concepts



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			complex queries, transaction management, organization of database systems and advanced indexing.	 of storage structures. Analyze on the advanced transaction management techniques. Discuss on the advanced databases
CODE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	Course Description	Course Objectives
MCA545	Cloud Computing	Global	This course provides comprehensive study of cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as	 Compare the strengths and limitations of cloud computing. Identify the architecture, infrastructure and delivery models of cloud computing. Apply suitable virtualization concept. Choose the appropriate Cloud player, Programming Models and approach.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			a Service (SaaS), and Business Process as a Service (BPaaS).	•	Address the core issues of cloud computing such as security, privacy and interoperability
MCA546E1	Digital Image Processing	Global	This course provides an introduction to the basic concepts, methodologies and algorithms of digital image processing focusing image enhancement, image analysis and object recognition		To review the fundamental concepts of a digital image processing system. To examine various types of images, their intensity transformations and spatial filtering. To analyze the different types of noises and the filters used to restore and reconstruct the images. To create color images and pseudo images with smoothening and sharpening techniques. To compare the various lossy and lossless compression mechanisms.
MCA546E2	Big Data Analytics	Global	This course provides familiarization to the	•	Work with big data platform and Understand the fundamentals of



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			important information	various big data analysis techniques
			technologies used in	• Analyze the big data analytic
			manipulating, storing and	techniques for useful business
			analyzing big data.	applications.
			LEAD	Design efficient algorithms for mining
				the data from large volumes.
				• Examine the HADOOP and Map
				Reduce technologies associated with
				big data analytics
				Explore the applications of Big Data
MCA546E3	Cyber	Global	This course provides the	Predict the forensics fundamentals
	Forensics	(8)	investigation of computer-	and the various technologies used to
			related crimes with the	avoid computer crimes.
			goal of obtaining evidence	Illustrate different methods to collect
			to be presented in a court	and preserve digital evidence and
			of law	Digital Crime Scene.
			ADITO	• Identify and Analyze Forensic
				Technical Surveillance Devices.
				Evaluate the Various tools and tactics



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				followed in military.
			ACOL	 Demonstrate the Usage of surveillance tools for tracking cyber criminals
MCA546E4	High Speed Networks	Global	This course covers the basics, architectures, protocols and technologies for high-speed networks. It includes LANs, Protocols, TCP/IP Suite, Data Networks, high speed LANs, link level flow and error control, transport level traffic control, routing, MPLS switching and Network security.	 Identify the building blocks and operation of high speed networking and ATM. Analyze the cause of congestion, traffic slow down and related factors for Quality of Service Identify. Apply the concepts learnt in this course to optimize performance of high-speed networks using Flow Control. Compare the different architectures used for HSN. Describe the protocols that are used to design high speed networks.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA547E1	Soft	Global	This course provides the		Explore the functional components of
WCA5+7E1		Global	1		-
	Computing		principal constituents of		artificial neural networks.
			soft computing that is	•	Examine the principles of back
			fuzzy logic, neural network		propagation networks.
			theory and probabilistic	•	Expose the students to the concepts
			reasoning. The course		of predicting the functionalities of
		37	explores the features that		ART.
			are employed in various	•	Analyze the logic principle of classical
			associated techniques		sets and fuzzy set operations in fuzzy
					set theory.
	4			•	Identify the concept of fuzzification
		37			and defuzzification involved in
				7	various systems
MCA547E2	Wireless	Global	This course provides	•	Formulate the basic standardization
	Sensor		knowledge on the		of wireless networks.
	Networks		architectures, functions	•	Analyze the implementation of
			and performances of		technologies related to WSN.
			wireless sensor systems	•	Identify and understand the security
			and platforms. It also		
	1	<u> </u>	12	1	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				-	
			describes and analyze the		issues in ad hoc and sensor
			specific requirements for		networks.
		G	applications in wireless	•	Compare the protocols and to
			sensor networks regarding		promote the research work in this
			energy supply, memory,		area.
			processing and	•	Apply and solve problems in the
		33	transmission capacity		applications of Wireless Networking
		4			Area.
MCA547E3	Software	Global	This cours <mark>e p</mark> rovides	•	Deliver successful software projects
	Project		knowledge in applying		that support organization's strategic
	Management		different techniques to		goals
		35	monitor & control project	J •	Match organizational needs to the
	V		and people		most effective software development
		O) CA	THOLL YEAR		model
			NDE SIGHT	•	Plan and manage projects at each
					stage of the software development life
			ADITOA		cycle
				•	Create project plans that address
					real-world management challenges
		1		1	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	Develop the skills for tracking and controlling software deliverables Predict the behavior of people working in teams and to explore the ways of Managing people in Software Environments.
MCA547E4	Service Oriented Architecture	Global	The course provides the SOA platform basics - building blocks, SOA platform layers, Service technology architecture and Vendor platforms	The creation of SOA compliant web service using various technologies Predict the various service oriented analysis techniques CO 3: Apply the knowledge on advanced concepts of service composition, Orchestration and Choreography. Understand web service framework with respect to SOA. Understand various open standards available for developing SOA



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				compliant web services.
MCA548	Internet Programming Using J2ee	Global	This course is to provide the ability to design console based, GUI based and web based applications.	 Create dynamic web pages, using Servlets and JSP. Make a reusable software component, using Java Bean. invoke the remote methods in an application using Remote Method Invocation (RMI) understand the multi-tier architecture of web-based enterprise applications using Enterprise JavaBeans (EJB)
MCA549	. Net Programming	Global	This course will cover the practical aspects of multitier application development using the .NET framework. The goal of this course is to	 Know about multi-tier application development. Create user interactive web pages using ASP.Net. Create simple data binding applications using ADO.Net



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



the basics of distributed application development. We will introduce the students to Web Service development and .NET remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Programming Global This course aims to introduce the students to some concepts of advanced Performing Database operations for Windows Form and web applications. Develop web services. Develop web services. Possign and develop Web applications by encapsulating an application's business logic.				introduce the students to	connectivity.
application development. We will introduce the students to Web Service development and .NET remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Programming Global This course aims to introduce the students to some concepts of advanced programming and practice Programming and practice Develop web services. Develop web services. Develop web services. Develop web services.					
We will introduce the students to Web Service development and .NET remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Programming Global This course aims to introduce the students to some concepts of advanced programming and practice Programming applications using pre-					
students to Web Service development and .NET remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Programming Global This course aims to introduce the students to some concepts of advanced programming and practice Programming applications using pre-					windows Form and web applications.
development and .NET remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Programming Global This course aims to introduce the students to some concepts of advanced programming and practice Designing Enterprise based applications by encapsulating an application's business logic. Designing applications using pre-				We will introduce the	Develop web services.
remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Programming Global This course aims to introduce the students to some concepts of advanced programming and practice programming and practice Programming applications using pre-				students to Web Service	
covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Global This course aims to introduce the students to some concepts of advanced programming and practice Programming and practice Design and develop Web applications Designing Enterprise based applications by encapsulating an application's business logic. Designing applications using pre-				development and .NET	
Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Global This course aims to introduce the students to some concepts of advanced programming and practice Designing Enterprise based applications by encapsulating an application's business logic. Designing applications using pre-				remoting. Technologies	
Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Programming Global This course aims to introduce the students to some concepts of advanced programming and practice Programming applications using pre-			4	covered in <mark>cl</mark> ude the	
framework classes, C#, ASP.NET, and ADO.NET. MCA550 Lab Ix- J2ee Global This course aims to introduce the students to some concepts of advanced programming and practice programming and practice framework classes, C#, ASP.NET, and ADO.NET. • Design and develop Web applications • Designing Enterprise based applications by encapsulating an application's business logic. • Designing applications using pre-				Common Language	
MCA550 Lab Ix- J2ee Global This course aims to introduce the students to some concepts of advanced programming and practice ASP.NET, and ADO.NET. Design and develop Web applications Designing Enterprise based applications by encapsulating an application's business logic. Designing applications using pre-				Runtime (CLR), .NET	
MCA550 Lab Ix- J2ee Global This course aims to introduce the students to some concepts of advanced programming and practice Design and develop Web applications Designing Enterprise based application's by encapsulating an application's business logic. Designing applications using pre-				framework classes, C#,	\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \
MCA550 Lab Ix- J2ee Global This course aims to introduce the students to some concepts of advanced programming and practice Design and develop Web applications Designing Enterprise based application's by encapsulating an application's business logic. Designing applications using pre-		{		ASP.NET. and ADO.NET.	
Programming introduce the students to some concepts of advanced programming and practice programming and practice introduce the students to some concepts applications by encapsulating an application's business logic. Designing Enterprise based application's business logic. Designing applications using pre-			8		\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
some concepts of advanced programming and practice programming and practice applications by encapsulating an application's business logic. Designing applications using pre-	MCA550	Lab Ix- J2ee	Global	This course aims to	Design and develop Web applications
of advanced application's business logic. programming and practice Designing applications using pre-		Programming	O I A	introduce the students to	• Designing Enterprise based
programming and practice • Designing applications using pre-				some concepts	applications by encapsulating an
				of advanced	application's business logic.
on reusing components built frameworks.				programming and practice	Designing applications using pre-
				on reusing components	built frameworks.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA551	Lab X Net Programming	Global	This course provides introduction to .Net IDE Component Framework, Programming concepts in .Net Framework and Creating website using	 .Create user interactive web pages using ASP.Net. CO Create simple data binding applications using ADO.Net connectivity.
		7	ASP.Net Controls.	 Performing Database operations for Windows Form and web applications.
MCA552	Skill Based Lab V- Domain Study	Global	The course train the students to critically evaluate a set of research topics on a particular domain based on the interest of the student.	 Identify the domain to be analyzed Prepare an in depth study on the recent trends in the chosen domain Present the various analysis using various tools Create a model on the analysis done Create a research paper from the analysis and findings
MCA553	Soft Skills V- Interpersonal Skill For	Global	This course provides the skills needed to find a job and also the skills needed	 Outline the roles played in workgroups and teams Describe how good communication



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A

Year : 2015 - 2020



	Corporate		to excel at the time of	influences working relationship.
	Readiness		entering a career.	
MCA554	Open Source	Global	This COURSE emphasizes	Starts with Java development with
	Lab- Iii -		the features of Netbeans	Maven in NetBeans IDE
	Netbeans		environment.	Describe the
				complete Java development workflow,
				including testing

2018 - 2019

COURSE	Course Title	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	Course Description	Course Objectives
MCA101	Mathematical Foundation of Computer	National	This course provides the logical, analytical and mathematical concepts	 Perform Logical operations and predicate calculus needed for computing skill.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Science		that are fundamental for	Analyze and Compare the various
			Computer Science.	techniques for solving numerical
			ACOM	equations.
				Apply the techniques of statistics and
		333	LEAD	numerical methods to unravel
				problems by computers.
		3.9		• Explain the set theory logic.
				Utilize the Knowledge of matrices for
				designing and solving problems
MCA102	Computer	Global	This course provides the	• Ability to perform arithmetic
	Organization		basic structure of digital	operations in various number
	and	31	computers and the	systems.
	Architecture		organization of various	• Conceptualize the basics of
			units such as control unit,	organizational and architectural
			Arithmetic & Logical unit,	issues of a digital computer.
			Memory unit and I/O unit	Demonstrate and perform computer
			in a digital computer	arithmetic operations on integer and
				real numbers.
				Identify logic for assembly language



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	programming.Analyze the performance of Reduced Instruction Set Architecture.
MCA103	Operating Systems	Global	This course provides knowledge on the concepts of abstraction, scheduling mechanisms, implementations and manages a computer's resources, especially the allocation of those resources among other programmes	 Identify the components and processes. Analyze on scheduling algorithms and deadlocks. Demonstrate the mapping between the physical memory and virtual memory. Identify the secondary memory management techniques. Analyze on the distributed systems and security issues.
MCA104	Data Structures and Algorithms	Global	This course provides knowledge on several fundamental algorithms and data structures and	 Select appropriate data structures as applied to specified problem definition. Implement operations like searching,



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			to implement them in C++	insertion, deletion and traversing in
			to be an effective designer,	trees.
			developer, or customer for	• Compare the data structures of
			new applications.	advanced search trees.
			LEAD	• Implement appropriate heap
				operations, sorting, searching
		339		techniques for a given problem.
				Determine and analyze the complexity
				of graph Algorithms.
MCA105	Programming in	Global	This course provides the	Identify the basic terminologies used
	c		layout of a C program and	in C programming.
		3	venture into control	Design programs involving decision
	V		statements, loops,	structures and loops.
			functions and basic I/O.	• Implement code reusability with the
			Development skills will be	help of user defined functions.
			continued by learning	Develop advanced applications using
			more complex data types	nested structures.
			such as arrays, structures	Demonstrate the dynamics of memory
			and pointers.	
	I .	<u> </u>	51	1



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				by the use of pointers and files.
MCA106	Lab I – Visual Programming	Global	This Course provides programming knowledge using Visual C#. This course content includes program development and design, object-oriented programming, screen design, structured programming techniques and event-driven programming using objects.	 Develop GUI applications. Design and Deploy application programs. Design and implement applications using databases.
MCA107	Lab II- C Programming	Global	This course provides exposure to problem- solving through programming. It aims to train the students with	 Develop programs using branching statements and control statements. Create applications using arrays, functions, pointers and files. Gain skills to handle strings and files.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



1 301				
			the basic concepts of the	
			C-programming language	
			and its practical	
			implementation.	
			(EAD	
MCA108	Skill Based lab	Global	This course	Use Linux utilities and develop shell
	I –Linux		provides focus on the	scripts to perform tasks.
		77	fundamental tools and	Effectively use Linux environment to
			concepts of Linux and	accomplish software development
			Unix OS. It gives practical	tasks.
			exposure on topics such	Monitor system performance and
	٤		as LINUX environment,	network activities.
		3	commands, file system,	/\&\\\
			processes and utilities.	
		7) (Specific emphasis is given	
			to the bash shell and user	
			environment with several	
			flavours of UNIX/Linux	
			using a version of Red Hat	
			Linux.	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA109	Soft Skills I -	National	This course provides skills	• Display competence in oral and
	Communicative		of oral and written	written communication.
	English		communication to work	• Use current technology related to the
			in different environments,	communication.
			develop emotional	
			sensitivity and an	/(Q)
			awareness of how to work	
			and negotiate with people.	
MCA110	Open Source	Global	This cours <mark>e p</mark> rovides	• Recognize when to use each of the
	Lab I– Libre		knowledge of rich	Libre Office programs to create
	Office		applications for all your	professional and academic
			document production and	documents.
			data processing needs:	• Use Libre Office programs to create
			Writer, Calc, Impress,	personal, academic and business
			Draw, Math and Base.	documents following current
				professional and/or industry
			ADITRE	standards.
MCA212	Financial	Global	This course provides an	Preparation and analysis of balance



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Management		overview of financial	sheet.
	and Accounting		concepts, process and	Predict the Classification of Costing.
			operations from a	Decide the budget preparation and
			managerial perspective.	control of a company.
		33	LEAD	Analyze the flow of funds.
				• Use Tally to implement the needs of
				financial accounting
MCA213	Software	Global	This course provides the	Compare the different domains and
	Engineering		fundamental perception of	process models.
			Software Engineering	• Identify the data, class and flow
	E		which includes system	oriented modelling concepts.
		35	requirements, finding the	• Analyze on the design oriented
		D. L.	effective methods to	concepts.
		V A	analyze, design, code, test	• Identify the managerial aspects of
			and implement the full	software development.
			application with	Generate project schedule for different
			appropriate tools	activities of software development
MCA214	Management	National	This course provides the	• Analyze and synthesize business



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Information		concept and the role of	information needs to facilitate
	Systems		management information	evaluation of strategic alternatives.
			systems to achieve	• Apply MIS knowledge and skills
			strategic goals and to gain	learned to facilitate development,
			competitive advantages.	deployment and management of
				information systems.
		3.9		• Predict the use of information
		4		technology for business processes.
				• Assess the use of technology of
				Information Systems for effective
	_A		No.	management.
		a		• Identify the security features and
				global issues in organization and
		\$ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		society. Interpret how to use
)		NDLY	information technology to solve
				business problems.
MCA215	Relational	Global	This course provides an	• Design conceptual models of a
	Database		introduction to the design	database using ER model.
	Management		and creation of relational	Outline the features of DBMS and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Systems		databases with an examination on the characteristics of PL/SQL	 Relational Database design. Retrieve information from database by formulating complex SQL Queries.
			and its usage to extend and automate SQL to administer the Oracle database.	 Utilize PL/SQL programming to solve problems. Implement Packages, Triggers for efficient retrieval of information.
MCA216	Object Oriented Programming in C++	Global	This course provides knowledge on variable types, operators, control flow, functions, program structure, input and output, arrays, classes, and object-oriented concepts of programming.	 Outline the process and mechanism of functions. Identify the relation between arrays and pointers, and use them efficiently in program Use C++ classes for code reusability. Discuss on the concept of function and operator overloading, virtual functions and polymorphism Demonstrate the power of templates for generic programming.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA217	Lab III-RDBMS	Global	This course provides practical knowledge in PL/SQL programming, utilizing the services provided by Oracle database in a stored procedure perspective. This also includes implementation of Subprograms, Triggers, and Cursors concepts in depth	 Enhance Programming skills and techniques. Formulate complex queries using SQL Use the PL/SQL code constructs of IF-THEN-ELSE and LOOP types as well as syntax and command functions.
MCA218	Lab IV- C++ Programming	Global	This course provides an introduction to the use of C++ programming language as an aid to solve mathematical and scientific problems.	 Develop programs in object oriented paradigm. Analyze, use, and create different types of functions and classes. Design programs to implement various data structure concepts



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA219	Skill Based Lab	National	The main aim of this	• Use accounting and business
	II -Tally		course to introduce the	terminology
			students to the Basic of	• explain the objective of financial
			Accounts and the usage of	reporting and related key accounting
			Tally for accounting	assumptions and principles.
		6	purpose. It covers how to	• Create company, enter accounting
		377	maintain accounts with	voucher entries including advance
			and without inventory.	voucher entries.
				• Do reconcile bank statement, do
			A-7-1456	accrual adjustments, and also print
	2			financial statements.
		3		Generate reports
MCA220	Soft Skills II –	Global	This course make the	• Identify the communication
	Colloquium		students groom their	differences in working environment
			personality and prove	with different cultural styles.
			themselves as good	Practice the skills and behaviors
			Samaritans of the Society.	required to facilitate a group.
			This course consists of	Demonstrate an effective presentation
			individual or in-group	
	_1	1	59	I.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			class presentations pertaining to the applications of concepts, Theories or issues in human development.	in a meeting.
MCA221	Open Source Lab II – Blender	Global	This course provides knowledge to use Blender in 3D graphic design	 Learn to Use Blender to Create Beautiful 3D Models From Zero. create valid and complete 3D meshes for use in visualisation, games design, and 3D printing.
MCA321	System Software	Global	This course is to introduce the student to the collection of programs and documents which constitute the system software of a computer platform.	 Understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger. Describe the various concepts of assemblers and macro- processors. Understand the various phases of compiler and compare its working



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				with assembler.
MCA322	Data Communication And Networking	Global	This course provides the basic concepts, design principles and underlying technologies of networking.	 Identify the functionalities of Networking layers of both OSI and TCP/IP reference models. Analyze the design issues of Datalink layer and techniques to resolve it. Compare the principles of Switching and Routing algorithm. Predict the TCP and UDP related procedures. Outline the Application layer protocols.
MCA323E1	E-Commerce	Global	This course provides information on the combination of Internet with E-Commerce, options available for doing business on the Internet,	 Gain a comprehensive understanding of the E-Commerce landscape, current and emerging technology and infrastructure underpinnings of the business. Analyze the impact of E-commerce on



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			footsmooth at halmat-	hypoiness models and strates-
			features that helps to	business models and strategy.
			build E-Commerce web	Develop an understanding on how
			sites, marketing issues,	internet can help business grow/
			payment options, security	Describe the infrastructure for E-
		33	issues and customer	commerce
			service.	Assess electronic payment systems
		3.9		• Gain an understanding on the
		4		importance of security, privacy, and
				ethical issues as they relate to E-
				Commerce.
MCA323E2	Distributed	Global	The course provides the	• To learn the fundamentals of
	Operating	35	fundamentals of	Distributed Operating Systems.
	System		Distributed Operating	• To learn the mechanisms involved in
		V)	system and facilitate the	memory management in Distributed
			students to gain	OS
			knowledge on distributed	• .Analyze the various device and
			operating system concepts	resource management techniques for
			that includes architecture,	timesharing and distributed systems
			Mutual exclusion	• Understand the Mutual exclusion,



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			algorithms, deadlock	Deadlock detection and agreement
			detection algorithms and	protocols of Distributed operating
			agreement protocols	system
				Interpret the mechanisms adopted for
			LEAD	file sharing in distributed Applications
MCA323E3	Theory of	Global	The learning objectives of	Discuss key notions of computation,
	Computation		this course are to:	such as algorithm, computability,
			introduce students to the	decidability, reducibility, and
			mathemati <mark>cal</mark> foundations	complexity, through problem solving.
			of computation including	• Explain the models of computation,
	E		automata theory;	including formal languages, grammars
		3	the theory of formal	and automata, and their connections.
			languages and grammars;	State and explain the Church-Turing
		O) (S	the notions of algorithm,	thesis and its significance.
			decidability, complexity,	Analyze and design finite automata,
			and computability.	pushdown automata, Turing
			ADVIDA	machines, formal languages, and
				grammars.
				• Solve computational problems



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COM	regarding their computability and complexity and prove the basic results of the theory of computation.
MCA323E4	Embedded Systems	Global	This course provides the fundamentals of embedded system hardware and firmware design will be explored	 Understand hardware and software design requirements of embedded systems. Analyze the embedded systems' specification and develop software programs. Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems.
MCA324	Advanced Programming Principles	Global	This course builds upon the basic concept of C pointers and Python programming:.	 Design, implement, test and debug programs that use loops and arrays. Design, implement, test and debug programs that use functions. Design, implement, test and debug



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				programs that use arrays for
				character strings and that
			ACOM	use pointers for character strings.
				Use if-else statements and switch-
		(3)	LEAD	case statements to write programs
				in Python to tackle any decision-
				making scenario.
		4		Master Object-oriented programming
				to create an entire Python project
				using objects and classes.
			No.	Store and retrieve information using
	E			variables
		31		
MCA325	Programming in	Global	This course provides an	Apply the basic Java constructs to
	JAVA	V) R	exhaustive coverage of	develop solutions to real time
			Core Java programming	problems.
			language features like	Analyze the hierarchy of java classes
			OOPS and GUI	to develop object oriented programs.
			programming.	Design software in Java using
				Packages and Threads.
	1	I	<u>l</u>	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



					Implement Consents of ATIVE Con-
MCA326 Lab – V- Advanced C & Python Programming Advanced C & Programming Programming Advanced C & Understand basic data structures such as arrays, linked lists, stack using pointers Bescribe the Python language syntax including control statements, loops and functions to write programs Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data MCA327 Lab – VI- JAVA Global This course Apply the basic Java constructs to					
MCA326 Lab - V- Advanced C & Python Programming Programming Describe the Python language syntax including control statements, loops and functions to write programs running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab - VI- JAVA Global This course aims to train the student to use the pointer concepts of the C language and provides the basic of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. • Apply the basic Java constructs to					creating GUI.
Advanced C & Python Programming the student to use the pointer concepts of the C language and provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global the student to use the pointer concepts of the C language and provides the basic soft wising pointers Describe the Python language syntax including control statements, loops and functions to write programs Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to				ACOM	Design a Software using JDBC.
Python Programming Pointer concepts of the C language and provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global Pointer concepts of the C language and provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course using pointers Describe the Python language syntax including control statements, loops and functions to write programs Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to	MCA326	Lab – V-	Global	This course aims to train	• Understand basic data structures
Programming language and provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global Global Global Global Describe the Python language syntax including control statements, loops and functions to write programs Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data Apply the basic Java constructs to		Advanced C &		the student to use the	such as arrays, linked lists, stack
basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course basics of writing and including control statements, loops and functions to write programs • Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data • Apply the basic Java constructs to		Python		pointer concepts of the C	using pointers
running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab - VI- JAVA Global Tunning Python scripts to and functions to write programs Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data Apply the basic Java constructs to		Programming		language and provides the	• Describe the Python language syntax
more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course more advanced features such as file operations, in Python to store, process and sort the data • Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort the data • Apply the basic Java constructs to				basics of writing and	including control statements, loops
such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to				running Python scripts to	and functions to write programs
regular expressions, working with OOPs concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to				more advanced features	• Examine the core data structures like
working with OOPs the data concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to		₹'		such as file operations,	lists, dictionaries, tuples and sets
concept and using the extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to			35	regular expressions,	in Python to store, process and sort
extensive functionality of Python modules. MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to				working with OOPs	the data
Python modules. MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to			V) (A	concept and using the	
MCA327 Lab – VI- JAVA Global This course • Apply the basic Java constructs to				extensive functionality of	
12ppij die saase saka sonististes to				Python modules.	
	MCA327	Lab – VI- JAVA	Global	This course	Apply the basic Java constructs to
		Programming		provides experiential	develop solutions to real time



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



		1		
			learning in the	problems.
			implementation of Core	Analyze the hierarchy of java classes
			Java Programming.	to develop object oriented programs.
				Design software in Java using
		33	LEAD	Packages and Threads.
				• Implement Concepts of AWT for
		3.57		creating GUI.
		4		Design a Software using JDBC.
MCA328	Skill Based Lab	Global	This cours <mark>e p</mark> rovides focus	• Design and develop attractive
	III-HTML, CSS.		on hypertext markup	WebPages.
	3		language and cascading	Implement a variety of presentation
		35	stylesheet	effects in html documents using CSS.
			implementation. It covers	Write valid standards-conformant
		V)	the foundation concepts of	html documents using variety of form
			semantic coding, usability	elements
			& accessibility. It includes	
			code syntax, commenting,	
			writing, testing and	
			maintenance of HTML and	
			maintenance of HTML and	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	<u> </u>		000	
			CSS	
MCA329	Soft skills III – Quantitative Aptitude	National	This course provides gamut of skills which facilitate the students to enhance their employability quotient and do well in the professional space. It makes them think critically and apply basic mathematics skills to interpret data, draw conclusions and solve problems	 Apply quantitative techniques to solve variety of problems. Perform statistical analysis to interpret information
MCA330	Open Source Lab– I Blender	Global	This course provides knowledge to use Blender in 3D graphic design	 Learn to Use Blender to Create Beautiful 3D Models From Zero. create valid and complete 3D meshes for use in visualization, games design, and 3D printing.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	~			
MCA433	Graph Theory	Global	This course provides a	• Write precise & accurate
			basic knowlwdge of the	mathematical definitions of graph
			structure of graphs and	theory
			the techniques used to	Apply the principles and concepts of
			analyze problems in graph	graph theory in practical situations.
		G	theory.	• Solve the problems using the concepts
		37	(A))	of Graphs and trees.
				• Validate and critically assess a
				mathematical proof.
				• Explore the modern applications of
	€			graph theory
MCA434E1	Computer	Global	To learn the basic	• To list the basic concepts used in
	Graphics		principles for design, use	computer graphics.
			and understand the	• To implement various algorithms to
			hardware and software	scan, convert the basic geometrical
			components of graphics	primitives, transformations, Area
			systems, techniques for	filling, clipping.
			designing 2D, 3D pictures	• To describe the importance of 2
			and to provide a complete	
	•		69	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			and balanced view on the multimedia field covering almost all major domains.	dimensional and 3 dimensional transformations. • To define the fundamentals of multimedia systems and compression. • To understand different standards of file format and multimedia Input/Output technologies.
MCA434E2	Data Mining & Data Warehousing	Global	This course provides the basic concepts, principles, methods, implementation techniques and applications of data mining	 Practice the pre-processing operations of data. Compare & contrast OLTP, OLAP and Data mining as techniques for extracting knowledge from a Data Warehouse. Perform Association Rule Mining for Market Basket Analysis. Design & deploy the appropriate Classification and Clustering techniques. Explore the recent trends in data



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				mining.
MCA434E3	Compiler Design	Global	The course provides knowledge on the theory and tools that can be employed in order to perform syntax-directed translation of a high-level programming language into an executable code along with data flows. The concepts covered are Parsing, Scanning, Semantic Analysis, and Code Generation combined with the theory of computation conversions.	 To analyze the basic concepts and applications of Compiler Design To compare various lexical analyzers and grammars To formulate the conversion process between finite automata, regular grammars with the transition and transformation methods To demonstrate the knowledge of formal connection and relationship to expressions and languages To identify if a language is regular, context-free, unambiguous after reducing it to normal forms
MCA434E4	Network	Global	This course provides basic	• Evaluate the fundamentals of



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Security and		understanding of previous	networks security, security
	Cryptography		attacks on cryptosystems	architecture, threats and
			with the aim of preventing	vulnerabilities.
			future attacks and to	Compare Stream ciphers and block
			provide security using	ciphers.
			various cryptographic	• Apply the different cryptographic
		3.9	tools	operations of public key cryptography.
		4		• Pertain the various Authentication
				schemes to simulate different
				applications.
	4		No.	Analyze various Security practices
	6	37		and System security standards
MCA435E1	Software	Global	This course will examine	• List a range of different software
	Testing		fundamental software	testing techniques and strategies and
			testing and related	be able to apply specific(automated)
			program analysis	unit testing method to the projects.
			techniques and emerging	Distinguish characteristics of
			concepts such as test-	structural testing methods.
			case prioritization and	Demonstrate the integration testing



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			their impact on testing will be examined	 which aims to uncover interaction and compatibility problems as early as possible. Discuss about the functional and system testing methods. Demonstrate various issues for object oriented testing.
MCA435E2	OOAD & UML	Global	This course provides the basic principles of object orientation and OO analysis and design Using the Unified Process and the Unified Modelling Language (UML) as tools.	 Describe the three pillars of object-orientation and explain the benefits of each. Create use case documents that capture requirements for a software system. Create class diagrams that model both the domain model and design model of a software system. Create interaction diagrams that model the dynamic aspects of a software system.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	 Explain the facets of the Unified Process approach to designing and building a software system. Describe how design patterns facilitate development and list several of the most popular patterns.
MCA435E3	Ethics in Computing	Global	This course provides the basis for ethical decision-making and the methodology for reaching ethical decisions concerning computing matters	 Predict the relationship between the law, ethics and computer technology. Outline the philosophical and ethical debates with the ideas and the nature of intellectual creativity. Design the impact of computer technology on free speech. Formulate the ethical and legal issues of the impact that computing technologies had on workplace. Develop a personal standpoint in relation to Database society and the



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				usage of biometric data.
MCA435E4	Client/ Server Computing	Global	To know the role of client and server in the Network, and the information exchanging. This course is to design and develop Components of Client/ Server Applications and connectivity.	 Understand fundamental concepts of Client Server systems, system models of distributed systems, networks that distributed systems run on. Explore communication protocols between processes in distributed systems, Middleware, Enterprise Application integration, and Web Services Security Gain Exposure on most common used servers. Understand the concept of client-server development and learn problem solving skills through design scenarios for network environment. Develop a client -server based application.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA436	Mobile	Global	This course provides	•	Identify, Predict and Evaluate Wireless
	communication		knowledge on key mobile		Communication Protocols
	& Application		system and wireless	•	Compare and analyze various
	Development		communication. It also		multiplexing techniques in mobile
			aims at developing		environment.
			applications using	•	Demonstrate the architectures,
	4	2	Android		challenges and solutions of Wireless communication.
				•	Assess the role of Wireless Networks in shaping the future internet.
	2	87	Williams.		Design and develop apps for mobiles using Android.
	L			/•	Apply Location Based Services of
		री वि	NDLY LIGHT		Android for ensuring women's safety and security
MCA437	Web Based	Global	This course provides a	•	Develop a dynamic webpage by the
	Programming		basic overview and		use of java script and DHTML.
			understanding of many	•	Connect with a DBMS and perform



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			key Web technologies	 insert, update and delete operations on DBMS table. Write a server side program Perform various MySQL database queries
MCA438	Lab – VII – Mobile Application Development	Global	This course provides knowledge of developing applications for mobiles using native and hybrid frameworks.	 Install and configure Android application development tools. Design and develop user Interfaces for the Android platform. Apply Java programming concepts to Android application development. Familiar with technology and business trends impacting mobile applications.
MCA439	Lab – VIII- PHP & MYSQL Lab	Global	This course is to understand the usage of PHP and MYSQL in	 Create a PHP web page that is unique to each visitor Validate user input Create, back up and restore a MySQL



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			dynamic web development		database
			language.	•	Perform various MySQL database
			ACOM		queries
MCA440	Skill Based Lab	Global	This course provides focus	•	Finding defects in the programs while
	IV- Software		on the needs of automated		developing the software.
	Testing Tools		testing tools. The testing	•	Able to write test cases and test
	Lab		tactics of a project are		scenarios.
			done by understanding	•	Develop the scripts for finding the
			the custom <mark>er</mark> 's		defects and preventing them.
			requirements, test plannin	•	
	E		g, test design scenarios,	•	Understand the automated testing
		35	test cases, test execution,		tools available
	V		result analysis, defect		
		V) B	tracking and reporting		
MCA441	Soft skills IV-	National	This course provides skills	•	Enhance the technical skills for
	Technical		that are imperative for		employability.
	Aptitude		students to establish a	•	Improve the proficiency of
			stronger connect with the		participation in competitive



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			technical environment in which they operate. An understanding of these skills will enable students to manage the placement challenges more effectively	examinations
MCA442	Open Source Lab– II GIMP	Global	This course focuses how to Use GIMP for simple graphics needs without having to learn advanced image manipulation methods.	 Demonstrate working with images. Demonstrate working with selections, layers, and painting tools. Demonstrate methods for photo retouching. Demonstrate methods for making color corrections. Demonstrate using masks and the quick mask mode
MCA545	Cloud Computing	Global	This course provides comprehensive study of cloud concepts and	 Compare the strengths and limitations of cloud computing. Identify the architecture,



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS).	 infrastructure and delivery models of cloud computing. Apply suitable virtualization concept. Choose the appropriate Cloud player, Programming Models and approach. Address the core issues of cloud computing such as security, privacy and interoperability
MCA546E1	Digital Image Processing	Global	This course provides an introduction to the basic concepts, methodologies and algorithms of digital image processing focusing image enhancement, image analysis and object recognition	 To review the fundamental concepts of a digital image processing system. To examine various types of images, their intensity transformations and spatial filtering. To analyze the different types of noises and the filters used to restore and reconstruct the images. To create color images and pseudo images with smoothening and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COM	 sharpening techniques. To compare the various lossy and lossless compression mechanisms.
MCA546E2	Big Data Analytics	Global	This course provides familiarization to the important information technologies used in manipulating, storing and analyzing big data.	 Work with big data platform and Understand the fundamentals of various big data analysis techniques Analyze the big data analytic techniques for useful business applications. Design efficient algorithms for mining the data from large volumes. Examine the HADOOP and Map Reduce technologies associated with big data analytics Explore the applications of Big Data
MCA546E3	Cyber Forensics	Global	This course provides the investigation of computer-related crimes with the	 Predict the forensics fundamentals and the various technologies used to avoid computer crimes.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			goal of obtaining evidence to be presented in a court of law	 Illustrate different methods to collect and preserve digital evidence and Digital Crime Scene. Identify and Analyze Forensic Technical Surveillance Devices. Evaluate the Various tools and tactics followed in military. Demonstrate the Usage of surveillance tools for tracking cyber criminals
MCA546E4	High Speed Networks	Global	This course covers the basics, architectures, protocols and technologies for high-speed networks. It includes LANs, Protocols, TCP/IP Suite, Data Networks, high speed LANs, link level flow and error control, transport level traffic	 Identify the building blocks and operation of high speed networking and ATM. Analyze the cause of congestion, traffic slow down and related factors for Quality of Service Identify. Apply the concepts learnt in this course to optimize performance of high-speed networks using Flow



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	1	1		· · · · · · · · · · · · · · · · · · ·
			control, routing, MPLS	Control.
			switching and Network	Compare the different architectures
			security.	used for HSN.
				Describe the protocols that are used
			LEAD	to design high speed networks.
MCA547E1	Soft Computing	Global	This course provides the	• Explore the functional components of
			principal constituents of	artificial neural networks.
			soft compu <mark>ti</mark> ng that is	• Examine the principles of back
			fuzzy logic <mark>, ne</mark> ural	propagation networks.
			network theory and	• Expose the students to the concepts
	E		probabilistic reasoning.	of predicting the functionalities of
		3	The course explores the	ART.
			features that are	Analyze the logic principle of classical
		D) (A	employed in various	sets and fuzzy set operations in fuzzy
			associated techniques	set theory.
				Identify the concept of fuzzification
			ADVIDA	and defuzzification involved in various
			ADUD.	systems



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA547E2	Wireless Sensor Networks	Global	This course provides knowledge on the architectures, functions and performances of wireless sensor systems and platforms. It also describes and analyze the specific requirements for applications in wireless sensor networks regarding	 Formulate the basic standardization of wireless networks. Analyze the implementation of technologies related to WSN. Identify and understand the security issues in ad hoc and sensor networks. Compare the protocols and to promote the research work in this area. Apply and solve problems in the applications of Wireless Networking
MCA547E3	Software Project	Global	energy supply, memory, processing and transmission capacity This course provides	Area. • Deliver successful software projects
WCA547E5	Management	Global	knowledge in applying different techniques to monitor & control project and people	 beliver successful software projects that support organization's strategic goals Match organizational needs to the most effective software development model



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				• Plan and manage projects at each
				stage of the software development life
			A COM	cycle
				Create project plans that address real-
			LEAD	world management challenges
				Develop the skills for tracking and
				controlling software deliverables
		4		• Predict the behaviour of people
				working in teams and to explore the
				ways of Managing people in Software
	مع ا		William .	Environments.
MCA547E4	Service	Global	The course provides the	The creation of SOA compliant web
	Oriented		SOA platform basics -	service using various technologies
	Architecture	TO I A	building blocks, SOA	• Predict the various service oriented
			platform layers, Service	analysis techniques
			technology architecture	Apply the knowledge on advanced
			and Vendor platforms	concepts of service composition,
			SOURCE	Orchestration and Choreography.
				Understand web service framework
			OΓ	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			ACO	with respect to SOA. • Understand various open standards available for developing SOA compliant web services.
MCA548	Internet Programming using J2EE	Global	This course is to provide the ability to design console based, GUI based and web based applications.	 Create dynamic web pages, using Servlets and JSP. Make a reusable software component, using Java Bean. invoke the remote methods in an application using Remote Method Invocation (RMI) understand the multi-tier architecture of web-based enterprise applications using Enterprise JavaBeans (EJB)
MCA549	. NET Programming	Global	This course will cover the practical aspects of multitier application development using the .NET framework. The goal	 Know about multi-tier application development. Create user interactive web pages using ASP.Net. Create simple data binding



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			of this course is to	applications using ADO.Net
			introduce the students to	connectivity.
			the basics of distributed	Performing Database operations for
			application development.	Windows Form and web applications.
			We will introduce the	Develop web services.
			students to Web Service	
			development and .NET	
		4	remoting. Technologies	
			covered include the	
			Common L <mark>an</mark> guage	
			Runtime (CLR), .NET	λ,
	4		framework classes, C#,	
			ASP.NET, and ADO.NET.	
MCA550	Lab IX- J2EE	Global	This course aims to	Design and develop Web applications
	Programming		introduce the students to	• Designing Enterprise based
		8	some concepts	applications by encapsulating an
			of advanced	application's business logic.
			programming and practice	Designing applications using pre-built
			on reusing components	frameworks.
			87	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA551	Lab X Net Programming	Global	This course provides introduction to .Net IDE Component Framework, Programming concepts in .Net Framework and Creating website using ASP.Net Controls.	 Create user interactive web pages using ASP.Net. CO Create simple data binding applications using ADO.Net connectivity. Performing Database operations for Windows Form and web applications.
MCA552	Skill Based Lab V- Domain Study	Global	The course train the students to critically evaluate a set of research topics on a particular domain based on the interest of the student.	 Identify the domain to be analyzed Prepare an in depth study on the recent trends in the chosen domain Present the various analysis using various tools Create a model on the analysis done Create a research paper from the analysis and findings
MCA553	Soft skills V- Interpersonal Skill for	Global	This course provides the skills needed to find a job and also the skills needed	 Outline the roles played in workgroups and teams Describe how good communication



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Corporate		to excel at the time of	influences working relationship.
	Readiness		entering a career.	
MCA554	Open Source	Global	This COURSE emphasizes	Starts with Java development with
	Lab- III -		the features of Netbeans	Maven in NetBeans IDE
	Netbeans		environment.	Describe the
				complete Java development workflow,
		27		including testing





Criterion : I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – M.C.A

Year : 2015 - 2020



2017 - 2018

CODE	Course	NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL /GLOBAL)	Course Description	Course Objectives
MCA101	Mathematical Foundation of Computer Science	National	This course provides the logical, analytical and mathematical concepts that are fundamental for Computer Science.	 Perform Logical operations and predicate calculus needed for computing skill. Analyze and Compare the various techniques for solving numerical equations. Apply the techniques of statistics and numerical methods to unravel problems by computers. Explain the set theory logic. Utilize the Knowledge of matrices



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				for designing and solving problems
MCA102	Digital Principles and Computer Organization	Global	This course provides the basic structure of digital computers and the organization of various units such as control unit, Arithmetic & Logical unit, Memory unit and I/O unit in a digital computer	 Ability to perform arithmetic operations in various number systems. Conceptualize the basics of organizational and architectural issues of a digital computer. Demonstrate and perform computer arithmetic operations on integer and real numbers. Identify logic for assembly language programming. Analyze the performance of Reduced Instruction Set Architecture.
MCA103	Operating Systems	Global	This course provides the basic structure of digital computers and the organization of various units	Ability to perform arithmetic operations in various number systems.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – M.C.A



	. 2015				· · · · · · · · · · · · · · · · · · ·
			such as control unit, Arithmetic &	•	Conceptualize the basics of
			Logical unit, Memory unit and I/O		organizational and architectural
			unit in a digital computer		issues of a digital computer.
				•	Demonstrate and perform
		R	LEAD		computer arithmetic operations on
					integer and real numbers.
				•	Identify logic for assembly language
					programming.
				•	Analyze the performance of
					Reduced Instruction Set
		5			Architecture.
MCA104	Visual	National	This Course provides programming	•	Develop GUI applications.
	Programming	M	knowledge using Visual C#. This	•	Design and Deploy application
		(A) /	course content includes program		programs.
			development and design, object-	•	Design and implement applications
			oriented programming, screen		using databases.
			design, structured programming		
			techniques and event-driven		
			programming using objects.		
			92		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	01.1.1	771	T1 .10 .1 1
	Global	This course provides the layout of	Identify the basic terminologies
in C		a C program and venture into	used in C programming.
		control statements, loops,	Design programs involving decision
		functions and basic I/O.	structures and loops.
		Development skills will be	Implement code reusability with
		continued by learning more	the help of user defined functions.
		complex data types such as arrays,	Develop advanced applications
		structures and p <mark>oi</mark> nters.	using nested structures.
			Demonstrate the dynamics of
			memory by the use of pointers and
			files.
Lab II- Visual	Global	This Course provides programming	Develop GUI applications.
Programming	B 11	knowledge using Visual C#. This	Design and Deploy application
& Tally		course content includes program	programs.
		development and design, object-	Design and implement applications
		oriented programming, screen	using databases.
		design, structured programming	
		techniques and event-driven	
	Lab II- Visual Programming	in C Lab II- Visual Global Programming	in C a C program and venture into control statements, loops, functions and basic I/O. Development skills will be continued by learning more complex data types such as arrays, structures and pointers. Lab II- Visual Programming knowledge using Visual C#. This course content includes program development and design, object-oriented programming, screen design, structured programming



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



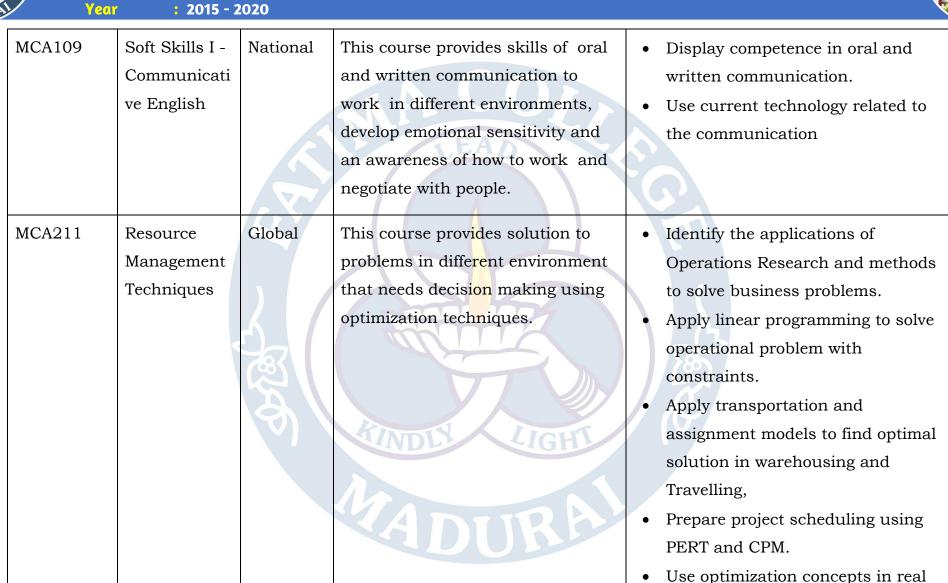
			programming using objects.	
MCA107	Lab II- C Programming	Global	This course provides exposure to problem-solving through programming. It aims to train the students with the basic concepts of the C-programming language and its practical implementation	 Develop programs using branching statements and control statements. Create applications using arrays, functions, pointers and files. Gain skills to handle strings and files.
MCA108	Skill Based lab I – Linux	Global	This course provides focus on the fundamental tools and concepts of Linux and Unix OS. It gives practical exposure on topics such as LINUX environment, commands, file system, processes and utilities. Specific emphasis is given to the bash shell and user environment with several flavours of UNIX/Linux using a version of Red Hat Linux.	 Use Linux utilities and develop shell scripts to perform tasks. Effectively use Linux environment to accomplish software development tasks. Monitor system performance and network activities.



Criterion : I – Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A





Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				world problems
MCA212	Data Structures and Algorithms	Global	This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications.	 Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap operations, sorting, searching techniques for a given problem. Determine and analyze the complexity of graph Algorithms.
MCA213	Software Engineering	Global	This course provides the fundamental perception of Software Engineering which includes system requirements,	 Compare the different domains and process models. Identify the data, class and flow oriented modeling concepts.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			finding the effective methods to analyze, design, code, test and implement the full application with appropriate tools	 Analyze on the design oriented concepts. Identify the managerial aspects of software development. Generate project schedule for different activities of software development
MCA214	Relational Database Management Systems	Global	This course provides an introduction to the design and creation of relational databases with an examination on the characteristics of PL/SQL and its usage to extend and automate SQL to administer the Oracle database.	 Design conceptual models of a database using ER model. Outline the features of DBMS and Relational Database design. Retrieve information from database by formulating complex SQL Queries. Utilize PL/SQL programming to solve problems. Implement Packages, Triggers for efficient retrieval of information.



Criterion : I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA215	Objected	Global	This course provides knowledge on	Outline the process and
	Oriented		variable types, operators, control	mechanism of functions.
	Programming		flow, functions, program structure,	Identify the relation between arrays
	in C++		input and output, arrays, classes,	and pointers, and use them
			and object-oriented concepts of	efficiently in program
			programming.	• Use C++ classes for code
		13.7		reusability.
				Discuss on the concept of function
				and operator overloading, virtual
				functions and polymorphism
		4		Demonstrate the power of
		A		templates for generic programming.
MCA216	Lab –III	Global	This course provides practical	Enhance Programming skills and
	RDBMS Lab		knowledge in PL/SQL	techniques.
			programming, utilizing the services	Formulate complex queries using
			provided by Oracle database in a	SQL
			stored procedure perspective. This	Use the PL/SQL code constructs of
			also includes implementation of	IF-THEN-ELSE and LOOP types as
			Subprograms, Triggers, and	
	1	ı	98	ı



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



		·		
			Cursors concepts in depth	well as syntax and command
				functions.
MCA217	Lab IV- C++ Lab	Global	This course provides an introduction to the use of C++ programming language as an aid to solve mathematical and scientific problems.	 Develop programs in object oriented paradigm. Analyze, use, and create different types of functions and classes. Design programs to implement various data structure concepts
MCA218	Skill Based Lab II- Multimedia Lab	Global	This course is to teach students the essentials of working in 3D using an array of features and tools. This course teaches new users the basics of creating, embellishing, and animating 3D scenes.	 Model objects using a variety of techniques Design and apply materials Adjust basic lighting Animate simple objects Build and animate simple, effective environments
MCA219	Soft Skills II – Colloquium	National	This course make the students groom their personality and prove	Identify the communication differences in working environment



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			themselves as good Samaritans of the Society. This course consists of individual or in-group class presentations pertaining to the applications of concepts, Theories or issues in human development.	 with different cultural styles. Practice the skills and behaviors required to facilitate a group. Demonstrate an effective presentation in a meeting.
MCA321	System Software	Global	This course is to introduce the student to the collection of programs and documents which constitute the system software of a computer platform.	 Understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger. Describe the various concepts of assemblers and macro- processors. Understand the various phases of compiler and compare its working with assembler.
MCA322	Data Communicati on And	Global	This course provides the basic concepts, design principles and underlying technologies of	Identify the functionalities of Networking layers of both OSI and TCP/IP reference models.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	NI -4 1 *				A 1 (1 1 1 1 CD)
	Networking		networking.	•	Analyze the design issues of Data
					link layer and techniques to resolve
			ACOM		it.
			N	•	Compare the principles of
			LEAD		Switching and Routing algorithm.
					Predict the TCP and UDP related
		13.7			procedures.
				•	Outline the Application layer
					protocols.
MCA323E1	E-Commerce	Global	This course provides information	1	Gain a comprehensive
			on the combination of Internet with		understanding of the E-Commerce
		(2)	E-Commerce, options available for	/	landscape, current and emerging
			doing business on the Internet,		technology and infrastructure
			features that helps to build E-		underpinnings of the business.
			Commerce web sites, marketing	•	Analyze the impact of E-commerce
			issues, payment options, security		on business models and strategy.
			issues and customer service.	•	Develop an understanding on how
					internet can help business grow/



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



Teu	, 2015 - 2				
			MA COLLEAD		Describe the infrastructure for E-commerce Assess electronic payment systems Gain an understanding on the importance of security, privacy, and ethical issues as they
MCA323E2	Distributed Operating	Global	The course provides the fundamentals of Distributed	•	To learn the fundamentals of Distributed Operating Systems.
	System	5) (EUSA)	Operating system and facilitate the students to gain knowledge on distributed operating system concepts that includes architecture, Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols		To learn the mechanisms involved in memory management in Distributed OS .Analyze the various device and resource management techniques for timesharing and distributed systems Understand the Mutual exclusion,
					Deadlock detection and agreement protocols of Distributed operating



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MA COZZ	•	system Interpret the mechanisms adopted for file sharing in distributed Applications
MCA323E3	Theory of Computation	Global	The learning objectives of this course are to: introduce students to the mathematical foundations of computation including automata theory; the theory of formal languages and grammars; the notions of algorithm, decidability, complexity, and computability.		Discuss key notions of computation, such as algorithm, computability, decidability, reducibility, and complexity, through problem solving. Explain the models of computation, including formal languages, grammars and automata, and their connections. State and explain the Church-Turing thesis and its significance. Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MACOLL	Solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation.
MCA323E4	Embedded	Global	This course provides the	Understand hardware and software
	Systems		fundamentals of embedded	design requirements of embedded
			system hardware and firmware	systems.
			design will be ex <mark>plo</mark> red	Analyze the embedded systems'
		7		specification and develop software programs.
		787\\		 Evaluate the requirements of
		MA		programming Embedded Systems,
		(A) /	KANNY / LICHT	related software architectures and
			WINDES CIGITS	tool chain for Embedded Systems.
MCA324	Advanced	Global	This course builds upon the basic	Design, implement, test and debug
	Programming		concept of C pointers and Python	programs that use loops and
	Principles		programming:.	arrays.
	•	•		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			ALEAD LIGHT		Design, implement, test and debug programs that use functions. Design, implement, test and debug programs that use arrays for character strings and that use pointers for character strings. Use if-else statements and switch-case statements to write programs in Python to tackle any decision-making scenario. Master Object-oriented programming to create an entire Python project using objects and classes. Store and retrieve information using variables
MCA325	Programming	Global	This course provides an exhaustive	•	Apply the basic Java constructs to
	in JAVA		coverage of Core Java programming language features		develop solutions to real time problems.
	1	1	105		



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	1				
			like OOPS and GUI programming.	•	Analyze the hierarchy of java
			MA COLLEAD		classes to develop object oriented programs. Design software in Java using Packages and Threads. Implement Concepts of AWT for creating GUI. Design a Software using JDBC.
MCA326	Lab – V- Advanced C & Python Programming	Global	This course aims to train the student to use the pointer concepts of the C language and provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules.	•	Understand basic data structures such as arrays, linked lists, stack using pointers Describe the Python language syntax including control statements, loops and functions to write programs Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				sort the data
MCA327	Lab – VI- JAVA Programming	Global	This course provides experiential learning in the implementation of Core Java Programming.	 Apply the basic Java constructs to develop solutions to real time problems. Analyze the hierarchy of java classes to develop object oriented programs. Design software in Java using Packages and Threads. Implement Concepts of AWT for creating GUI. Design a Software using JDBC.
MCA328	Skill Based Lab III- HTML, CSS.	Global	This course provides focus on hypertext mark-up language and cascading style sheet implementation. It covers the foundation concepts of semantic coding, usability & accessibility. It	 Design and develop attractive WebPages. Implement a variety of presentation effects in html documents using CSS. Write valid standards-conformant



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



		_		
			includes code syntax, commenting,	html documents using variety of
			writing, testing and maintenance of	form elements
			HTML and CSS	
MCA329	Soft skills III - Quantitative Aptitude	National	This course provides gamut of skills which facilitate the students to enhance their employability quotient and do well in the professional space. It makes them think critically and apply basic mathematics skills to interpret data, draw conclusions and solve problems	 Apply quantitative techniques to solve variety of problems. Perform statistical analysis to interpret information
MCA330	Open Source Lab– I Blender	Global	This course provides knowledge to use Blender in 3D graphic design	 Learn to Use Blender to Create Beautiful 3D Models From Zero. create valid and complete 3D meshes for use in visualization, games design, and 3D printing.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA433	Graph Theory	Global	This course provides a basic knowlwdge of the structure of graphs and the techniques used to analyze problems in graph theory.	 Write precise & accurate mathematical definitions of graph theory Apply the principles and concepts of graph theory in practical situations. Solve the problems using the concepts of Graphs and trees. Validate and critically assess a mathematical proof. Explore the modern applications of graph theory
MCA434E1	Computer Graphics	Global	To learn the basic principles for design, use and understand the hardware and software components of graphics systems, techniques for designing 2D, 3D pictures and to provide a complete and balanced view on the	 To list the basic concepts used in computer graphics. To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	•			· · · · · · · · · · · · · · · · · · ·
			multimedia field covering almost all major domains.	 To describe the importance of 2 dimensional and 3 dimensional transformations. To define the fundamentals of multimedia systems and compression. To understand different standards of file format and multimedia Input/Output technologies.
MCA434E2	Data Mining & Data Warehousing	Global	This course provides the basic concepts, principles, methods, implementation techniques and applications of data mining	 Practice the pre-processing operations of data. Compare & contrast OLTP, OLAP and Data mining as techniques for extracting knowledge from a Data Warehouse. Perform Association Rule Mining for Market Basket Analysis. Design & deploy the appropriate Classification and Clustering



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			AA CO/>	techniques.Explore the recent trends in data mining.
MCA434E3	Compiler Design	Global	The course provides knowledge on the theory and tools that can be employed in order to perform syntax-directed translation of a high-level programming language into an executable code along with data flows. The concepts covered are Parsing, Scanning, Semantic Analysis, and Code Generation combined with the theory of computation conversions.	 To analyze the basic concepts and applications of Compiler Design To compare various lexical analyzers and grammars To formulate the conversion process between finite automata, regular grammars with the transition and transformation methods To demonstrate the knowledge of formal connection and relationship to expressions and languages To identify if a language is regular, context-free, unambiguous after reducing it to normal forms

vulnerabilities.

cryptography.

applications.

ciphers.

Compare Stream ciphers and block

Apply the different cryptographic

Pertain the various Authentication

Analyze various Security practices

and System security standards

• List a range of different software

and be able to apply

testing techniques and strategies

specific(automated) unit testing

schemes to simulate different

operations of public key



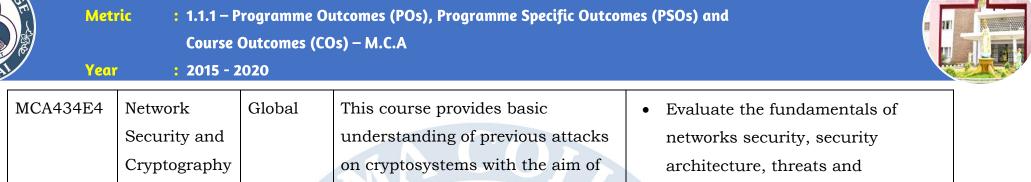
MCA435E1

Software

Testing

Global

Criterion : I - Curricular Aspects



preventing future attacks and to

provide security using various

cryptographic tools

techniques and emerging concepts

fundamental software testing and

This course will examine

related program analysis



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			their impact on testing will be	method to the projects
			their impact on testing will be	method to the projects.
			examined	 Distinguish characteristics of
			ALUIN	structural testing methods.
			N	Demonstrate the integration testing
			LEAD	which aims to uncover interaction
				and compatibility problems as early
				as possible.
				 Discuss about the functional and
				system testing methods.
				Demonstrate various issues for
		5		object oriented testing.
MCA435E2	OOAD &	Global	This course provides the basic	Describe the three pillars of object-
	UML	M	principles of object orientation and	orientation and explain the benefits
			OO analysis and design Using the	of each.
			Unified Process and the Unified	Create use case documents that
			Modelling Language (UML) as tools.	capture requirements for a
			MADEIDA)	software system.
			ATTOM TO THE	• Create class diagrams that model
				both the domain model and design
·				



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – M.C.A



	, 2010	_0_0			
MCA435E3	Ethics in Computing	Global	This course provides the basis for ethical decision-making and the methodology for reaching ethical decisions concerning computing matters		model of a software system. Create interaction diagrams that model the dynamic aspects of a software system. Explain the facets of the Unified Process approach to designing and building a software system. Describe how design patterns facilitate development and list several of the most popular patterns. Predict the relationship between the law, ethics and computer technology. Outline the philosophical and ethical debates with the ideas and
			decisions concerning computing	•	Outline the philosophical and
				•	Design the impact of computer technology on free speech.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MA COL	 Formulate the ethical and legal issues of the impact that computing technologies had on workplace. Develop a personal standpoint in relation to Database society and the usage of biometric data
MCA435E4	Client/ Server Computing	Global	To know the role of client and server in the Network, and the information exchanging. This course is to design and develop Components of Client/ Server Applications and connectivity.	 Understand fundamental concepts of Client Server systems, system models of distributed systems, networks that distributed systems run on. Explore communication protocols between processes in distributed systems, Middleware, Enterprise Application integration, and Web Services Security Gain Exposure on most common used servers.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – M.C.A



	•			
			MA COLLEAD	 Understand the concept of client-server development and learn problem solving skills through design scenarios for network environment. Develop a client –server based application.
MCA436	Mobile communicati on & Application Development	Global	This course provides knowledge on key mobile system and wireless communication. It also aims at developing applications using Android	 Identify, Predict and Evaluate Wireless Communication Protocols Compare and analyze various multiplexing techniques in mobile environment. Demonstrate the architectures, challenges and solutions of Wireless communication. Assess the role of Wireless Networks in shaping the future internet. Design and develop apps for



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MACOZZ	 mobiles using Android. Apply Location Based Services of Android for ensuring women's safety and security
MCA437	Web Based	Global	This course provides a	Develop a dynamic webpage by the
	Programming		basic overview and understanding	use of java script and DHTML.
			of many key Web technologies	• Connect with a DBMS and perform
				insert, update and delete
				operations on DBMS table.
				• Write a server side program
				 Perform various MySQL database
		(2)		queries
MCA438	Lab – VII –	Global	This course provides knowledge of	Install and configure Android
	Mobile	MA	developing applications for mobiles	application development tools.
	Application		using native and hybrid	Design and develop user Interfaces
	Development		frameworks.	for the Android platform.
			To make the second	Apply Java programming concepts
				to Android application



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MACOL	•	development. Familiar with technology and business trends impacting mobile applications.
MCA439	Lab – VIII- PHP & MYSQL Lab	Global	This course is to understand the usage of PFP and MYSQL in dynamic web development.		Create a PHP web page that is unique to each visitor Validate user input Create, back up and restore a MySQL database
MCA440	Skill Based Lab IV- Software Testing Tools Lab	Global	This course provides focus on the needs of automated testing tools. The testing tactics of a project are done by understanding the customer's requirements, test planning, test d esign scenarios, test cases, test execution, result analysis, defect tracking and	•	Finding defects in the programs while developing the software. Able to write test cases and test scenarios. Develop the scripts for finding the defects and preventing them. Understand the automated testing tools available



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			reporting	
MCA441	Soft skills IV- Technical Aptitude	National	This course provides skills that are imperative for students to establish a stronger connect with the technical environment in which they operate. An understanding of these skills will enable students to manage the placement challenges more effectively	 Enhance the technical skills for employability. Improve the proficiency of participation in competitive examinations
MCA442	Open Source Lab- II GIMP	Global	This course focuses how to Use GIMP for simple graphics needs without having to learn advanced image manipulation methods.	 Demonstrate working with images. Demonstrate working with selections, layers, and painting tools. Demonstrate methods for photo retouching. Demonstrate methods for making color corrections. Demonstrate using masks and the



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				quick mask mode
MCA545	Cloud Computing	Global	This course provides comprehensive study of cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS).	 Compare the strengths and limitations of cloud computing. Identify the architecture, infrastructure and delivery models of cloud computing. Apply suitable virtualization concept. Choose the appropriate Cloud player, Programming Models and approach. Address the core issues of cloud computing such as security, privacy and interoperability
MCA546E1	Digital Image Processing	Global	This course provides an introduction to the basic concepts, methodologies and algorithms of digital image processing focusing	 To review the fundamental concepts of a digital image processing system. To examine various types of



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			image enhancement, image	images, their intensity
			analysis and object recognition	transformations and spatial
				filtering.
				To analyze the different types of
		R	LEAD	noises and the filters used to
				restore and reconstruct the
				images.
				• To create color images and pseudo
				images with smoothening and
				sharpening techniques.
		7		 To compare the various lossy and
		100 l		lossless compression mechanisms.
MCA546E2	Big Data	Global	This course provides	Work with big data platform and
WICHGIG	_	Global	NUNDUN LIGHT	
	Analytics		familiarization to the important	Understand the fundamentals of
			information technologies used in	various big data analysis
			manipulating, storing and	techniques
			analyzing big data.	 Analyze the big data analytic
				techniques for useful business
	1	1		



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MA CO LEAD	 applications. Design efficient algorithms for mining the data from large volumes. Examine the HADOOP and Map Reduce technologies associated with big data analytics Explore the applications of Big Data
MCA546E3	Cyber Forensics	Global	This course provides the investigation of computer-related crimes with the goal of obtaining evidence to be presented in a court of law	 Predict the forensics fundamentals and the various technologies used to avoid computer crimes. Illustrate different methods to collect and preserve digital evidence and Digital Crime Scene. Identify and Analyze Forensic Technical Surveillance Devices. Evaluate the Various tools and tactics followed in military.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			AA CO/>	Demonstrate the Usage of surveillance tools for tracking cyber criminals
MCA546E4	High Speed Networks	Global	This course covers the basics, architectures, protocols and technologies for high-speed networks. It includes LANs, Protocols, TCP/IP Suite, Data Networks, high speed LANs, link level flow and error control, transport level traffic control, routing, MPLS switching and Network security.	 Identify the building blocks and operation of high speed networking and ATM. Analyze the cause of congestion, traffic slow down and related factors for Quality of Service Identify. Apply the concepts learnt in this course to optimize performance of high-speed networks using Flow Control. Compare the different architectures used for HSN. Describe the protocols that are used to design high speed



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				networks.
MCA547E1	Soft Computing	Global	This course provides the principal constituents of soft computing that is fuzzy logic, neural network theory and probabilistic reasoning. The course explores the features that are employed in various associated techniques	 Explore the functional components of artificial neural networks. Examine the principles of back propagation networks. Expose the students to the concepts of predicting the functionalities of ART. Analyze the logic principle of classical sets and fuzzy set operations in fuzzy set theory. Identify the concept of fuzzification and defuzzification involved in various systems
MCA547E2	Wireless Sensor Networks	Global	This course provides knowledge on the architectures, functions and performances of wireless sensor systems and platforms. It also describes and analyze the specific requirements for applications in	 Formulate the basic standardization of wireless networks. Analyze the implementation of technologies related to WSN. Identify and understand the



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			wireless sensor networks regarding	security issues in ad hoc and
			energy supply, memory, processing	sensor networks.
			and transmission capacity	Compare the protocols and to
				promote the research work in this
		R	LEAD	area.
				Apply and solve problems in the
				applications of Wireless Networking
		4		Area.
MCA547E3	Software	Global	This course prov <mark>ide</mark> s knowledge in	Deliver successful software projects
	Project		applying different techniques to	that support organization's
	Management		monitor & control project and	strategic goals
		1	people	Match organizational needs to the
		MA		most effective software
			AMDIY LICHT	development model
			WINDES CIGITS	Plan and manage projects at each
				stage of the software development
			MADEIDA)	life cycle
				Create project plans that address
				real-world management challenges



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				•	Develop the skills for tracking and
					controlling software deliverables
			ACOI	•	Predict the behavior of people
			N		working in teams and to explore
		R	LEAD		the ways of Managing people in
					Software Environments.
MCA547E4	Service	Global	The course provi <mark>d</mark> es the SOA	•	The creation of SOA compliant web
	Oriented		platform basics -building blocks,		service using various technologies
	Architecture		SOA platform lay <mark>er</mark> s, Service	•	Predict the various service oriented
			technology architecture and		analysis techniques
			Vendor platforms	•	Apply the knowledge on advanced
		(31)			concepts of service composition,
		MA			Orchestration and Choreography.
			KINDIY LICHT	•	Understand web service framework
			ANDES CIGITES		with respect to SOA.
				•	Understand various open
			MADITO A		standards available for developing
			A TOWN		SOA compliant web services.
		1			



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA548	Internet Programming using J2EE	Global	This course is to provide the ability to design console based, GUI based and web based applications.		Create dynamic web pages, using Servlets and JSP. Make a reusable software component, using Java Bean. invoke the remote methods in an application using Remote Method Invocation (RMI) Understand the multi-tier architecture of web-based enterprise applications using
MCA549	. NET Programming	1886)	This course will cover the practical aspects of multi-tier application development using the .NET framework. The goal of this course is to introduce the students to the basics of distributed application development. We will introduce the students to Web Service	•	Enterprise JavaBeans (EJB) Know about multi-tier application development. Create user interactive web pages using ASP.Net. Create simple data binding applications using ADO.Net connectivity.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			development and .NET remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#, ASP.NET, and ADO.NET.	 Performing Database operations for Windows Form and web applications. Develop web services.
MCA550	Lab IX- J2EE Programming	Global	This course aims to introduce the students to some concepts of advanced programming and practice on reusing components	 Design and develop Web applications Designing Enterprise based applications by encapsulating an application's business logic. Designing applications using prebuilt frameworks.
MCA551	Lab X Net Programming	Global	This course provides introduction to .Net IDE Component Framework, Programming concepts in .Net Framework and Creating website using ASP.Net Controls.	 Create user interactive web pages using ASP.Net. Create simple data binding applications using ADO.Net connectivity. Performing Database operations for



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				Windows Form and web
				applications.
MCA552	Skill Based	Global	The course train the students to	Identify the domain to be analysed
	Lab V-	1	critically evaluate a set of research	Prepare an in depth study on the
	Domain		topics on a particular domain	recent trends in the chosen domain
	Study		based on the interest of the	Present the various analysis using
			student.	various tools
				Create a model on the analysis
				done
				Create a research paper from the
				analysis and findings
MCA553	Soft skills V-	Global	This course provides the skills	Outline the roles played in
	Interpersonal	144 /	needed to find a job and also the	workgroups and teams
	Skill for	M	skills needed to excel at the time of	Describe how good communication
	Corporate		entering a career.	influences working relationship.
	Readiness		MADIOA	
MCA554	Open Source	Global	This COURSE emphasizes the	Starts with Java development with
	Lab- III -			Maven in NetBeans IDE
			129	1



Criterion: I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A

Year : 2015 - 2020



Netbeans	features of Netbeans environment.	• Describe the
		complete Java development
		workflow, including testing

2016 - 2017

CODE		NATURE OF THE COURSE (LOCAL/ NATIONAL/ REGIONAL/ GLOBAL)	Course Description	Course Objectives
MCA101	Mathematical Foundation of Computer Science	National	This course provides the logical, analytical and mathematical concepts that are fundamental for Computer Science.	 Perform Logical operations and predicate calculus needed for computing skill. Analyze and Compare the various techniques for solving numerical equations.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MACOL	 Apply the techniques of statistics and numerical methods to unravel problems by computers. Explain the set theory logic. Utilize the Knowledge of matrices for designing and solving problems 	1
MCA102	Digital Principles and Computer Organization	Global	This course provides the basic structure of digital computers and the organization of various units such as control unit, Arithmetic & Logical unit, Memory unit and I/O unit in a digital computer	 Ability to perform arithmetic operations in various number system Conceptualize the basics of organizational and architectural issue of a digital computer. Demonstrate and perform computer arithmetic operations on integer and real numbers. Identify logic for assembly language programming. Analyze the performance of Reduced Instruction Set Architecture. 	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA103	Operating	Global	This course provides the basic	•	Ability to perform arithmetic
Wichitoo	Systems	alobai	structure of digital computers		· -
	Systems				operations in various number systems.
			and the organization of various	>•	Conceptualize the basics of
			units such as control unit,		organizational and architectural issues
			Arithmetic & Logical unit,		of a digital computer.
			Memory unit and I/O unit in a	•	Demonstrate and perform computer
			digital computer		arithmetic operations on integer and
					real numbers.
				•	Identify logic for assembly language
					programming.
		٢) ا		•	Analyze the performance of Reduced
		A STATE OF THE STA			Instruction Set Architecture.
MCA104	Visual	National	This Course provides		Develop GUI applications.
	Programming		programming knowledge using	•	Design and Deploy application
			Visual C#. This course content		programs.
			includes program development	•	Design and implement applications
			and design, object-oriented		using databases.
			programming, screen design,		
			structured programming		



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			techniques and event-driven programming using objects.	
MCA105	Programming in C	Global	This course provides the layout of a C program and venture into control statements, loops, functions and basic I/O. Development skills will be continued by learning more complex data types such as arrays, structures and pointers.	 Identify the basic terminologies used in C programming. Design programs involving decision structures and loops. Implement code reusability with the help of user defined functions. Develop advanced applications using nested structures. Demonstrate the dynamics of memory by the use of pointers and files.
MCA106	Lab II- Visual Programming & Tally	Global	This Course provides programming knowledge using Visual C#. This course content includes program development and design, object-oriented programming, screen design,	 Develop GUI applications. Design and Deploy application programs. Design and implement applications using databases.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA107	Lab II- C Programming	Global	structured programming techniques and event-driven programming using objects. This course provides exposure to problem-solving through programming. It aims to train the students with the basic concepts of the C-programming language and its practical implementation	Develop programs using branching statements and control statements. Create applications using arrays, functions, pointers and files. Gain skills to handle strings and files.
MCA108	Skill Based lab I - Linux	Global	This course provides focus on the fundamental tools and concepts of Linux and Unix OS. It gives practical exposure on topics such as LINUX environment, commands, file system, processes and utilities. Specific emphasis is given to the bash shell and user environment	Use Linux utilities and develop shell scripts to perform tasks. Effectively use Linux environment to accomplish software development tasks. Monitor system performance and network activities.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			with several flavours of UNIX/Linux using a version of Red Hat Linux.	
MCA109	Soft Skills I - Communicati ve English	National	This course provides skills of oral and written communication to work in different environments, develop emotional sensitivity and an awareness of how to work and negotiate with people.	 Display competence in oral and written communication. Use current technology related to the communication.
MCA211	Resource Management Techniques	450	This course provides solution to problems in different environment that needs decision making using optimization techniques.	 Identify the applications of Operations Research and methods to solve business problems. Apply linear programming to solve operational problem with constraints. Apply transportation and assignment



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MA COL	models to find optimal solution in warehousing and Travelling, Prepare project scheduling using PERT and CPM. Use optimization concepts in real world problems
MCA212	Data Structures and Algorithms	Global	This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications.	Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap operations, sorting, searching techniques for a given problem. Determine and analyze the complexity of graph Algorithms.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA213	Software Engineering	Global	This course provides the fundamental perception of Software Engineering which includes system requirements, finding the effective methods to analyze, design, code, test and implement the full application with appropriate tools	Compare the different domains and process models. Identify the data, class and flow oriented modeling concepts. Analyze on the design oriented concepts. Identify the managerial aspects of software development. Generate project schedule for different activities of software development
MCA214	Relational Database Management Systems	Global	This course provides an introduction to the design and creation of relational databases with an examination on the characteristics of PL/SQL and its usage to extend and automate SQL to administer the Oracle database.	Design conceptual models of a database using ER model. Outline the features of DBMS and Relational Database design. Retrieve information from database by formulating complex SQL Queries. Utilize PL/SQL programming to solve



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA215	Ohiostod	Global	This was a large of the second		problems. Implement Packages, Triggers for efficient retrieval of information.
WICAZIO	Objected Oriented Programming in C++	CHODAL CONTRACTOR OF THE CONTR	This course provides knowledge on variable types, operators, control flow, functions, program structure, input and output, arrays, classes, and object-oriented concepts of programming.		Outline the process and mechanism of functions. Identify the relation between arrays and pointers, and use them efficiently in program Use C++ classes for code reusability. Discuss on the concept of function and operator overloading, virtual functions and polymorphism Demonstrate the power of templates for generic programming.
MCA216	Lab –III	Global	This course provides practical knowledge in PL/SQL	•	Enhance Programming skills and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	RDBMS Lab		programming, utilizing the services provided by Oracle database in a stored procedure perspective. This also includes implementation of Subprograms, Triggers, and Cursors concepts in depth	techniques. Formulate complex queries using SQL Use the PL/SQL code constructs of IF- THEN-ELSE and LOOP types as well as syntax and command functions.
MCA217	Lab IV- C++ Lab	Global	This course provides an introduction to the use of C++ programming language as an aid to solve mathematical and scientific problems.	Develop programs in object oriented paradigm. Analyze, use, and create different types of functions and classes. Design programs to implement various data structure concepts
MCA218	Skill Based Lab II- Multimedia Lab	Global	This course is to teach students the essentials of working in 3D using an array of features and tools. This course teaches new users the basics of creating,	Model objects using a variety of techniques Design and apply materials Adjust basic lighting



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			embellishing, and animating 3D scenes.	•	Animate simple objects Build and animate simple, effective environments
MCA219	Soft Skills II - Colloquium	National	This course make the students groom their personality and prove themselves as good Samaritans of the Society. This course consists of individual or in-group class presentations pertaining to the applications of concepts, Theories or issues in human development.		Identify the communication differences in working environment with different cultural styles. Practice the skills and behaviors required to facilitate a group. Demonstrate an effective presentation in a meeting.
MCA321	System Software	Global	This course is to introduce the student to the collection of programs and documents which constitute the system software of a computer platform.	•	Understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger. Describe the various concepts of



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MACOL		assemblers and macro- processors. Understand the various phases of compiler and compare its working with assembler.
MCA322	Data Communicati on And Networking	Global	This course provides the basic concepts, design principles and underlying technologies of networking.		Identify the functionalities of Networking layers of both OSI and TCP/IP reference models. Analyze the design issues of Datalink layer and techniques to resolve it. Compare the principles of Switching and Routing algorithm. Predict the TCP and UDP related procedures. Outline the Application layer protocols.
MCA323E1	E-Commerce	Global	This course provides information on the combination of Internet with E-Commerce, options available for doing business on	•	Gain a comprehensive understanding of the E-Commerce landscape, current and emerging technology and infrastructure underpinnings of the



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



		(A) (A)	the Internet, features that helps to build E-Commerce web sites, marketing issues, payment options, security issues and customer service.		business. Analyze the impact of E-commerce on business models and strategy. Develop an understanding on how internet can help business grow/ Describe the infrastructure for E-commerce Assess electronic payment systems Gain an understanding on the importance of security, privacy, and ethical issues as they relate to E-Commerce.
MCA323E2	Distributed Operating System	Global	The course provides the fundamentals of Distributed Operating system and facilitate the students to gain knowledge on distributed operating system concepts that includes	•	To learn the fundamentals of Distributed Operating Systems. To learn the mechanisms involved in memory management in Distributed OS



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			architecture, Mutual exclusion	•	.Analyze the various device and
			algorithms, deadlock detection		resource management techniques for
			algorithms and agreement		timesharing and distributed systems
			protocols	•	Understand the Mutual exclusion,
			LEAD		Deadlock detection and agreement
					protocols of Distributed operating
		100			system
				•	Interpret the mechanisms adopted for
					file sharing in distributed Applications
MCA323E3	Theory of	Global	The learning objectives of	•	Discuss key notions of computation,
	Computation	100 m	this course are to: introduce		such as algorithm, computability,
			students to the mathematical	7	decidability, reducibility, and
			foundations		complexity, through problem solving.
			of computation including	•	Explain the models of computation,
			automata theory; the theory of		including formal languages, grammars
			formal languages and grammars;		and automata, and their connections.
			the notions of algorithm,	•	State and explain the Church-Turing
			decidability, complexity, and		thesis and its significance.
					



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			computability.	•	Analyze and design finite automata, pushdown automata, Turing machines, formal languages, and grammars. solve computational problems regarding their computability and complexity and prove the basic results of the theory of computation.
MCA323E4	Embedded Systems	Global	This course provides the fundamentals of embedded system hardware and firmware design will be explored		Understand hardware and software design requirements of embedded systems. Analyze the embedded systems' specification and develop software programs. Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA324	Advanced	Global	This course builds upon the	•	Design, implement, test and debug
	Programming		basic concepts of C pointers and		programs that use loops and arrays.
	Principles		Python programming:.	•	Design, implement, test and debug
			EAN		programs that use functions.
			LLAD		Design, implement, test and debug
					programs that use arrays for character
					strings and that use pointers for
					character strings.
				•	Use if-else statements and switch-case
					statements to write programs
		٤) [in Python to tackle any decision-
		68			making scenario.
		181		y•	Master Object-oriented programming
		18) /	A LONG		to create an entire Python project
			WINDLY LIGHT		using objects and classes.
				•	Store and retrieve information using
			MADITOR		variables
MCA325	Programming	Global	This course provides an	•	Apply the basic Java constructs to



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	in JAVA		exhaustive coverage of Core Java programming language features like OOPS and GUI programming.	•	develop solutions to real time problems. Analyze the hierarchy of java classes to develop object oriented programs. Design software in Java using Packages and Threads.
				•	Implement Concepts of AWT for creating GUI. Design a Software using JDBC.
MCA326	Lab – V- Advanced C & Python Programming	Global	This course aims to train the student to use the pointer concepts of the C language and provides the basics of writing and running Python scripts to more advanced features such as file operations, regular expressions, working with OOPs concept and using the extensive functionality of Python modules.		Understand basic data structures such as arrays, linked lists, stack using pointers Describe the Python language syntax including control statements, loops and functions to write programs Examine the core data structures like lists, dictionaries, tuples and sets in Python to store, process and sort



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



					the data
MCA327	Lab – VI- JAVA Programming	Global	This course provides experiential learning in the implementation of Core Java Programming.		Apply the basic Java constructs to develop solutions to real time problems. Analyze the hierarchy of java classes to develop object oriented programs. Design software in Java using Packages and Threads. Implement Concepts of AWT for creating GUI. Design a Software using JDBC.
MCA328	Skill Based Lab III- HTML, CSS.	Global	This course provides focus on hypertext markup language and cascading stylesheet implementation. It covers the foundation concepts of semantic coding, usability & accessibility. It includes code syntax,	•	Design and develop attractive WebPages. Implement a variety of presentation effects in html documents using CSS. Write valid standards-conformant html documents using variety of form elements



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			commenting, writing, testing and maintenance of HTML and CSS	
MCA329	Soft skills III - Quantitative Aptitude	National	This course provides gamut of skills which facilitate the students to enhance their employability quotient and do well in the professional space. It makes them think critically and apply basic mathematics skills to interpret data, draw conclusions and solve problems	 Apply quantitative techniques to solve variety of problems. Perform statistical analysis to interpret information
MCA330	Open Source Lab– I Blender	Global	This course provides knowledge to use Blender in 3D graphic design	 Learn to Use Blender to Create Beautiful 3D Models From Zero. create valid and complete 3D meshes for use in visualization, games design, and 3D printing.
MCA433	Graph Theory	Global	This course provides a basic knowlwdge of the structure of	Write precise & accurate mathematical



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) – M.C.A



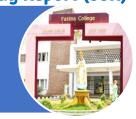
	• 2010			
			graphs and the techniques used to analyze problems in graph theory.	definitions of graph theory Apply the principles and concepts of graph theory in practical situations. Solve the problems using the concepts of Graphs and trees. Validate and critically assess a mathematical proof. Explore the modern applications of graph theory
MCA434E1	Computer Graphics	Global	To learn the basic principles for design, use and understand the hardware and software components of graphics systems, techniques for designing 2D, 3D pictures and to provide a complete and balanced view on the multimedia field covering	To list the basic concepts used in computer graphics. To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping. To describe the importance of 2 dimensional and 3 dimensional transformations. To define the fundamentals of



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			almost all major domains.	•	multimedia systems and compression. To understand different standards of file format and multimedia Input/Output technologies.
MCA434E2	Data Mining & Data Warehousing	Global	This course provides the basic concepts, principles, methods, implementation techniques and applications of data mining		Practice the pre-processing operations of data. Compare & contrast OLTP, OLAP and Data mining as techniques for extracting knowledge from a Data Warehouse. Perform Association Rule Mining for Market Basket Analysis. Design & deploy the appropriate Classification and Clustering techniques. Explore the recent trends in data mining.
MCA434E3	Compiler Design	Global	The course provides knowledge on the theory and tools that can	•	To analyze the basic concepts and applications of Compiler Design



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			be employed in order to perform syntax-directed translation of a high-level programming language into an executable code along with data flows. The concepts covered are Parsing, Scanning, Semantic Analysis, and Code Generation combined with the theory of computation conversions.	•	To compare various lexical analyzers and grammars To formulate the conversion process between finite automata, regular grammars with the transition and transformation methods To demonstrate the knowledge of formal connection and relationship to expressions and languages To identify if a language is regular, context-free, unambiguous after reducing it to normal forms
MCA434E4	Network Security and Cryptography	Global	This course provides basic understanding of previous attacks on cryptosystems with the aim of preventing future attacks and to provide security using various cryptographic tools	•	Evaluate the fundamentals of networks security, security architecture, threats and vulnerabilities. Compare Stream ciphers and block ciphers. Apply the different cryptographic operations of public key cryptography.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			MACOZ	•	Pertain the various Authentication schemes to simulate different applications. Analyze various Security practices and System security standards
MCA435E1	Software Testing	Global	This course will examine fundamental software testing and related program analysis techniques and emerging concepts such as test-case prioritization and their impact on testing will be examined		List a range of different software testing techniques and strategies and be able to apply specific(automated) unit testing method to the projects. Distinguish characteristics of structural testing methods. Demonstrate the integration testing which aims to uncover interaction and compatibility problems as early as possible. Discuss about the functional and system testing methods. Demonstrate various issues for object



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				oriented testing.
MCA435E2	OOAD & UML	Global	This course provides the basic principles of object orientation and OO analysis and design Using the Unified Process and the Unified Modeling Language (UML) as tools.	Describe the three pillars of object- orientation and explain the benefits of each. Create use case documents that capture requirements for a software system. Create class diagrams that model both the domain model and design model of a software system. Create interaction diagrams that model the dynamic aspects of a software system. Explain the facets of the Unified Process approach to designing and
			MADURA	building a software system. Describe how design patterns facilitate development and list several of the



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				most popular patterns.
MCA435E3	Ethics in Computing	Global	This course provides the basis for ethical decision-making and the methodology for reaching ethical decisions concerning computing matters	Predict the relationship between the law, ethics and computer technology. Outline the philosophical and ethical debates with the ideas and the nature of intellectual creativity. Design the impact of computer technology on free speech. Formulate the ethical and legal issues of the impact that computing technologies had on workplace. Develop a personal standpoint in relation to DataBase society and the usage of biometric data.
MCA435E4	Client/ Server Computing	Global	To know the role of client and server in the Network, and the information exchanging. This course is to design and develop	Understand fundamental concepts of Client Server systems, system models of distributed systems, networks that distributed systems run on.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			Components of Client/ Server Applications and connectivity.	•	Explore communication protocols between processes in distributed systems, Middleware, Enterprise Application integration, and Web Services Security Gain Exposure on most common used servers. Understand the concept of client- server development and learn problem solving skills through design scenarios for network environment. Develop a client –server based application.
MCA436	Mobile communicati on &	Global	This course provides knowledge on key mobile system and wireless communication. It also		Identify, Predict and Evaluate Wireless Communication Protocols Compare and analyze various
	Application Development		aims at developing applications using Android		multiplexing techniques in mobile environment.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				•	Demonstrate the architectures,
					challenges and solutions of Wireless
					communication.
				•	Assess the role of Wireless Networks in
		R	LEAD	~	shaping the future internet.
				•	Design and develop apps for mobiles
		13.37			using Android.
				•	Apply Location Based Services of
					Android for ensuring women's safety
					and security
MCA437	Web Based	Global	This course provides a		D
MCA437		Global	This course provides a		Develop a dynamic webpage by the use
	Programming		basic overview and		of java script and DHTML.
		I A I	understanding of many key Web	•	Connect with a DBMS and perform
			technologies		insert, update and delete operations on
			WINDES CIGITS		DBMS table.
				•	Write a server side program
			ADVIDA	•	Perform various MySQL database
					queries



Criterion : I - Curricular Aspects

Metric : 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA438	Lab – VII – Mobile Application Development	Global	This course provides knowledge of developing applications for mobiles using native and hybrid frameworks.	•	Install and configure Android application development tools. Design and develop user Interfaces for the Android platform. Apply Java programming concepts to Android application development. Familiar with technology and business
MCA439	Lab – VIII- PHP &MYSQL Lab	Global	This course is to understand the usage of PHP and MySQL in dynamic web development.		Create various dynamic PHP web pages Validate user input Create, back up and restore a MySQL database
MCA440	Skill Based Lab IV- Software Testing Tools Lab	Global	This course provides focus on the needs of automated testing tools. The testing tactics of a project are done by understanding the customer's	•	Finding defects in the programs while developing the software. Able to write test cases and test scenarios. Develop the scripts for finding the



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			requirements, test planning, test design scenarios, test cases, test execution, result analysis, defect tracking and reporting		defects and preventing them. Understand the automated testing tools available
MCA441	Soft skills IV- Technical Aptitude	National	This course provides skills that are imperative for students to establish a stronger connect with the technical environment in which they operate. An understanding of these skills will enable students to manage the placement challenges more effectively	•	Enhance the technical skills for employability. Improve the proficiency of participation in competitive examinations
MCA442	Open Source Lab– II GIMP		This course focuses how to Use GIMP for simple graphics needs without having to learn advanced image	•	Demonstrate working with images. Demonstrate working with selections, layers, and painting tools. Demonstrate methods for photo



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			manipulation methods.		retouching.
				•	Demonstrate methods for making color
			MACUI		corrections.
			N	•	Demonstrate using masks and the
			LEAD		quick mask mode
MCA545	Software	Global	This course provides knowledge	•	Deliver successful software projects
	project		in applying different techniques		that support organization's strategic
	management		to monitor & control project and		goals
			people	•	Match organizational needs to the
					most effective software development
					model
		(SI)		•	Plan and manage projects at each
		I A		Y	stage of the software development life
			TAMIY LICHT		cycle
			ANDES CIGITS	•	Create project plans that address real-
					world management challenges
			MADEIDA	•	Develop the skills for tracking and
					controlling software deliverables
				•	Predict the behavior of people working



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			AA COM		in teams and to explore the ways of Managing people in Software Environments.
MCA546E1	Cloud Computing	Global	This course provides comprehensive study of cloud concepts and capabilities across the various Cloud service models including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Business Process as a Service (BPaaS).		Compare the strengths and limitations of cloud computing. Identify the architecture, infrastructure and delivery models of cloud computing. Apply suitable virtualization concept. Choose the appropriate Cloud player, Programming Models and approach. Address the core issues of cloud computing such as security, privacy and interoperability
MCA546E2	Wireless Sensor Networks	Global	This course provides knowledge on the architectures, functions and performances of wireless sensor systems and platforms. It	•	Formulate the basic standardization of wireless networks. Analyze the implementation of technologies related to WSN.



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



Т		1		1	
			also describes and analyze the	•	Identify and understand the security
			specific requirements for		issues in ad hoc and sensor networks.
			applications in wireless sensor	•	Compare the protocols and to promote
			networks regarding energy		the research work in this area.
			supply, memory, processing and		Apply and solve problems in the
			transmission capacity		applications of Wireless Networking
					Area.
MCA546E3	Human	Global	This course provid <mark>e</mark> s an	•	Explain the various functions of
	Resource		introduction to th <mark>e v</mark> arious		human resource management and
	Management		functions of human resource		identify their relationship to the
			management, including		workplace from the perspective of both
			compensation and benefits,		employee and employer.
		I A	staffing, recruitment and	•	Apply the principles of human
			selection, training and		resource management to the
			development, health and safety.		automotive industry in the areas of
					hiring, compensation and benefits.
			MADIIRA		Government legislation.
				•	Identify social issues relating to
					human resource management



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



• Identify and predict human resumanagement trends in the aut	source
management trends in the aut	
Indianagonioni di onta in onto di di	comotive
industry and develop proactive	<u>.</u>
solutions and techniques of ac	laptation
to changing industry demands	3.
Understand the polices and	
government legislation	
MCA546E4 Service Global The course provides the SOA • The creation of SOA compliant	web
Oriented platform basics -building blocks, service using various technological platform basics -building blocks,	gies
Architecture SOA platform layers, Service • Predict the various service orie	ented
technology architecture and analysis techniques	
Vendor platforms • Apply the knowledge on advan	ced
concepts of service composition	n,
Orchestration and Choreograp	hy.
Understand web service frame	work
with respect to SOA.	
Understand various open stan	dards
available for developing SOA co	ompliant



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				web services.
MCA547E1	Soft Computing	Global	This course provides the principal constituents of soft computing that is fuzzy logic, neural network theory and probabilistic reasoning. The course explores the features that are employed in various associated techniques	 Explore the functional components of artificial neural networks. Examine the principles of back propagation networks. Expose the students to the concepts of predicting the functionalities of ART. Analyze the logic principle of classical sets and fuzzy set operations in fuzzy set theory. Identify the concept of fuzzification and defuzzification involved in various systems
MCA547E2	Ethics in Computing	Global	This course provides the basis for ethical decision-making and the methodology for reaching ethical decisions concerning	 Predict the relationship between the law, ethics and computer technology. Outline the philosophical and ethical debates with the ideas and the nature



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	computing m	computing matters		of intellectual creativity. Design the impact of computer technology on free speech. Formulate the ethical and legal issues of the impact that computing	
			•	technologies had on workplace. Develop a personal standpoint in relation to DataBase society and the usage of biometric data.	
MCA547E3	Embedded Systems	Global	This course provides the fundamentals of embedded system hardware and firmware design will be explored	•	Understand hardware and software design requirements of embedded systems. Analyze the embedded systems' specification and develop software programs. Evaluate the requirements of programming Embedded Systems, related software architectures and tool



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



					chain for Embedded Systems.
MCA547E4	Distributed Systems	Global	The course provides knowledge on the fundamental concepts of distributed computer systems. Covers development techniques and runtime challenges, with a focus on reliability and system validation techniques.		List the principles of distributed systems and describe the problems and challenges associated with these principles. Understand Distributed Computing techniques, Synchronous and Processes. Apply Shared Data access and Files concepts. Design a distributed system that fulfills requirements with regards to key distributed systems properties.
		(2)	KINDLY LIGHT	•	Understand Distributed File Systems and Distributed Shared Memory.
			MADIRA	•	Understand the importance of security in distributed systems
MCA548	Internet		This course is to provide the	•	Create dynamic web pages, using



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	1	1			
	Programming		ability to design console based,		Servlets and JSP. Make a reusable
	using J2EE		GUI based and web based		software component, using Java Bean.
			applications.	•	invoke the remote methods in an
					application using Remote Method
			LEAD	\checkmark	Invocation (RMI)
				•	Understand the multi-tier architecture
					of web-based enterprise applications
					using Enterprise JavaBeans (EJB)
MCA549	. NET	Global	This course will cover the		Know about multi-tier application
Wichers		Global			
	Programming		practical aspects of multi-tier		development.
			application development using	•	Create user interactive web pages
		(3)	the .NET framework. The goal of	7	using ASP.Net.
		M	this course is to introduce the	7	
		1971	students to the basics of	•	Create simple data binding
			distributed application		applications using ADO.Net
			development. We will introduce		connectivity.
			the students to Web Service	•	Performing Database operations for
			development and .NET remoting.		Windows Form and web applications.
			Technologies covered include the		
		•			



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			Common Language Runtime	•	Develop web services.
			(CLR), .NET framework classes,		
			C#, ASP.NET, and ADO.NET.		
MCA550	Lab XI- J2EE Programming	Global	This course aims to introduce the students to some concepts of <i>advanced programming</i> and practice on reusing components	•	Design and develop Web applications Designing Enterprise based applications by encapsulating an application's business logic. Designing applications using pre-built
					frameworks.
MCA551	Lab XII Net Programming	Global	This course provides introduction to .Net IDE Component Framework, Programming concepts in .Net Framework and Creating website using ASP.Net Controls.		Create user interactive web pages using ASP.Net. Create simple data binding applications using ADO.Net connectivity. Performing Database operations for Windows Form and web applications.
MCA552	Skill Based Lab V- Domain	Global	The course train the students to critically evaluate a set of research topics on a particular	•	Identify the domain to be analyzed Prepare an in depth study on the recent trends in the chosen domain
		<u> </u>	167		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Study		domain based on the interest of	•	Present the various analysis using
			the student.		various tools
			A COM	•	Create a model on the analysis done
			N	1	Create a research paper from the
			LEAD		analysis and findings
MCA553	Soft skills V-	Global	This course provides the skills	•	Outline the roles played in workgroups
	Interpersonal		needed to find a job and also the		and teams
	Skill for		skills needed to excel at the time	•	Describe how good communication
	Corporate		of entering a care <mark>er.</mark>		influences working relationship.
	Readiness	7			

NAAC - 4th CYCLE - Self Study Report (SSR)



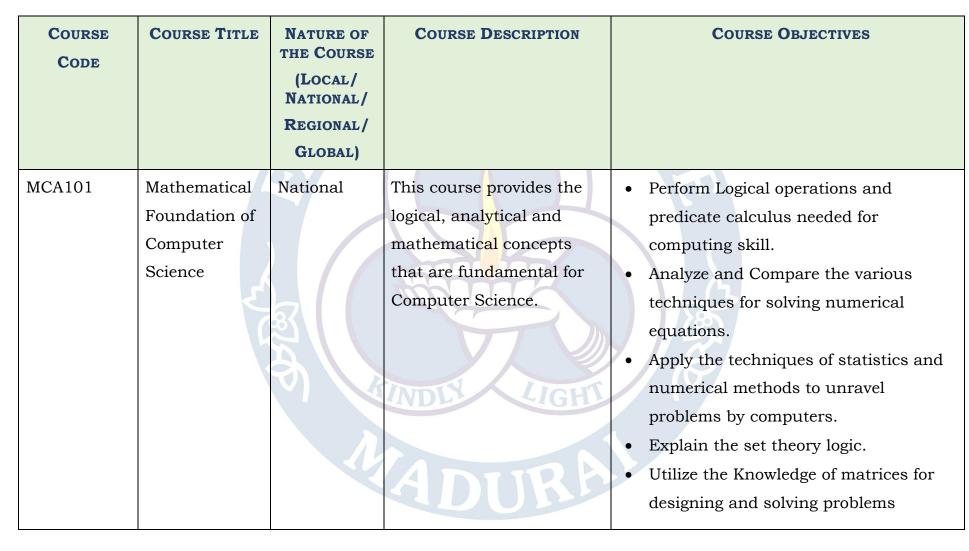
Criterion: I - Curricular Aspects

Metric: 1.1.1 - Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A

Year : 2015 - 2020

2015 - 2016





Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA102	Digital	Global	This course provides the	Ability to perform arithmetic
	Principles and		basic structure of digital	operations in various number systems.
	Computer		computers and the	Conceptualize the basics of
	Organization		organization of various	organizational and architectural issues
			units such as control unit,	of a digital computer.
			Arithmetic &Logical unit,	Demonstrate and perform computer
			Memory unit and I/O unit	arithmetic operations on integer and
			in a digital <mark>co</mark> mputer	real numbers.
				Identify logic for assembly language
			Rm 15/	programming.
	حر			Analyze the performance of Reduced
		3		Instruction Set Architecture.
MCA103	Operating	Global	This course provides the	Ability to perform arithmetic
	Systems	4	basic structure of digital	operations in various number systems.
			computers and the	Conceptualize the basics of
		Λ	organization of various	organizational and architectural issues
			units such as control unit,	of a digital computer.
			Arithmetic & Logical unit,	Demonstrate and perform computer
			Memory unit and I/O unit	
		•	170	



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



i cui					
			in a digital computer		arithmetic operations on integer and
					real numbers.
			AUUI	>	Identify logic for assembly language
					programming.
			LEAD	•	Analyze the performance of Reduced
					Instruction Set Architecture.
MCA104	Visual	National	This Course provides	•	Develop GUI applications.
	Programming		programmin <mark>g</mark> knowledge	•	Design and Deploy application
			using Visua <mark>l C</mark> #. This		programs.
			course content includes	•	Design and implement applications
	٤,		program development and		using databases.
		3	design, object-oriented		//85
			programming, screen	y	
		O)	design, structured		
			programming techniques		
			and event-driven	3	
			programming using		
			objects.		
		l			



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA105	Programming	Global	This course provides the		Identify the basic terminologies used in
Wichios		Global	_		
	in C		layout of a C program and		C programming.
			venture into control	•	Design programs involving decision
			statements, loops,		structures and loops.
			functions and basic I/O.		Implement code reusability with the
			Development skills will be		help of user defined functions.
			continued by learning	•	Develop advanced applications using
			more complex data types		nested structures.
			such as arrays, structures	•	Demonstrate the dynamics of memory
			and pointers.		by the use of pointers and files.
MCA106	Lab II- Visual	Global	This Course provides	•	Develop GUI applications.
	Programming	211	programming knowledge	•	Design and Deploy application
	& Tally	3 11	using Visual C#. This		programs.
		4	course content includes	•	Design and implement applications
			program development and		using databases.
		Λ	design, object-oriented		
			programming, screen		
			design, structured		
			programming techniques		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			and event-driven programming using objects.	
MCA107	Lab II- C Programming	Global	This course provides exposure to problem- solving through programming. It aims to train the students with the basic concepts of the C- programming language and its practical implementation	 Develop programs using branching statements and control statements. Create applications using arrays, functions, pointers and files. Gain skills to handle strings and files.
MCA108	Skill Based lab I - Linux	Global	This course provides focus on the fundamental tools and concepts of Linux and Unix OS. It gives practical exposure on topics such as LINUX environment,	 Use Linux utilities and develop shell scripts to perform tasks. Effectively use Linux environment to accomplish software development tasks. Monitor system performance and



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



Communicativ e English of oral and written communication to work in different environments, of oral and written communication. • Use current technology related to the communication.					I
Specific emphasis is given to the bash shell and user environment with several flavours of UNIX/Linux using a version of Red Hat Linux. MCA109 Soft Skills I - Communicativ e English This course provides skills of oral and written communication. This course provides skills of oral and written communication. • Use current technology related to the communication.				commands, file system,	network activities.
to the bash shell and user environment with several flavours of UNIX/Linux using a version of Red Hat Linux. MCA109 Soft Skills I - Communicativ e English This course provides skills of oral and written communication. • Display competence in oral and written communication. • Use current technology related to the communication.				processes and utilities.	
environment with several flavours of UNIX/Linux using a version of Red Hat Linux. MCA109 Soft Skills I - Communicativ e English National This course provides skills of oral and written communication. communication to work in different environments, using a version of Red Hat Linux. Display competence in oral and written communication. • Use current technology related to the communication.				Specific emphasis is given	
flavours of UNIX/Linux using a version of Red Hat Linux. MCA109 Soft Skills I - Communicativ e English This course provides skills of oral and written communication to work in different environments, flavours of UNIX/Linux using a version of Red Hat Linux. • Display competence in oral and written communication. • Use current technology related to th communication.				to the bash shell and user	
MCA109 Soft Skills I - Communicativ e English National Communication communication to work in different environments, Using a version of Red Hat Linux. Display competence in oral and write communication. Use current technology related to the communication.				environment with several	
MCA109 Soft Skills I - Communicativ e English Communication				flavours of UNIX/Linux	
MCA109 Soft Skills I - Communicativ e English Communication Communication Communication Communication to work in different environments, MCA109 Soft Skills I - National Communication Communication Communication Communication Use current technology related to the communication.				using a version of Red Hat	
Communicativ e English of oral and written communication to work in different environments, of oral and written communication. Use current technology related to the communication.			5/	Linux.	
Communicativ e English of oral and written communication to work in different environments, of oral and written communication. Use current technology related to the communication.					
e English communication to work in different environments, use current technology related to the communication.	MCA109	Soft Skills I -	National	This course provides skills	Display competence in oral and written
different environments, communication.		Communicativ		of oral and written	communication.
		e English		communication to work in	Use current technology related to the
develop emotional			3	different environments,	communication.
develop emodelia				develop emotional	
sensitivity and an			3) 10	sensitivity and an	
awareness of how to work				awareness of how to work	
and negotiate with people.				and negotiate with people.	
MCA211 Resource This course provides • Identify the applications of Operatio	MCA211	Resource		This course provides	Identify the applications of Operations
Management solution to problems in Research and methods to solve		Management		solution to problems in	Research and methods to solve



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



needs decision making using optimization techniques. • Apply linear programming to solve operational problem with constraints. • Apply transportation and assignment models to find optimal solution in warehousing and Travelling, • Prepare project scheduling using PERT and CPM. • Use optimization concepts in real world problems MCA212 Data Structures and Algorithms This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. • Apply transportation and assignment models to find optimal solution in warehousing and Travelling, • Prepare project scheduling using PERT and CPM. • Use optimization concepts in real world problems • Select appropriate data structures as applied to specified problem definition. • Implement operations like searching, insertion, deletion and traversing in trees. • Compare the data structures of advanced search trees. • Implement appropriate heap operations sorting searching		Techniques		different environment that		business problems.
techniques. • Apply transportation and assignment models to find optimal solution in warehousing and Travelling, • Prepare project scheduling using PERT and CPM. • Use optimization concepts in real world problems MCA212 Data Structures knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. • Apply transportation and assignment models to find optimal solution in warehousing and Travelling, • Prepare project scheduling using PERT and CPM. • Use optimization concepts in real world problems • Select appropriate data structures as applied to specified problem definition. • Implement operations like searching, insertion, deletion and traversing in trees. • Compare the data structures of advanced search trees. • Implement appropriate heap				needs decision making	•	Apply linear programming to solve
models to find optimal solution in warehousing and Travelling, Prepare project scheduling using PERT and CPM. Use optimization concepts in real world problems MCA212 Data Structures Algorithms Global This course provides knowledge on several fundamental algorithms Algorithms Algorithms Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Compare the data structures of advanced search trees.				using optimization		operational problem with constraints.
warehousing and Travelling, Prepare project scheduling using PERT and CPM. Use optimization concepts in real world problems MCA212 Data Structures and Algorithms Global This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap				techniques.	•	Apply transportation and assignment
Prepare project scheduling using PERT and CPM. Use optimization concepts in real world problems MCA212 Data Structures and Algorithms Algorithms Global This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. Prepare project scheduling using PERT and CPM. Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap				LEAD	4	models to find optimal solution in
MCA212 Data Structures and Algorithms Global This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. and CPM. Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap						warehousing and Travelling,
MCA212 Data Structures and Algorithms Global This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. Use optimization concepts in real world problems Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap					•	Prepare project scheduling using PERT
MCA212 Data Structures and Algorithms Global This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. world problems Select appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap			4			and CPM.
MCA212 Data Structures and Algorithms Algorithms Beautiful and an effective designer, developer, or customer for new applications. Clobal This course provides knowledge on several fundamental algorithms and data structures and to implement them in C++ to trees. Compare the data structures of advanced search trees. Implement appropriate data structures as applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap					•	Use optimization concepts in real
Structures and Algorithms Algorithms Algorithms knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. knowledge on several applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap						world problems
Structures and Algorithms Algorithms Algorithms knowledge on several fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. knowledge on several applied to specified problem definition. Implement operations like searching, insertion, deletion and traversing in trees. Compare the data structures of advanced search trees. Implement appropriate heap	MCAO10	Data	C1-1-1			
and Algorithms fundamental algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. • Implement operations like searching, insertion, deletion and traversing in trees. • Compare the data structures of advanced search trees. • Implement appropriate heap	MCA212		Global		•	
Algorithms and data structures and to implement them in C++ to be an effective designer, developer, or customer for new applications. and data structures and to insertion, deletion and traversing in trees. • Compare the data structures of advanced search trees. • Implement appropriate heap		Structures			J	applied to specified problem definition.
implement them in C++ to be an effective designer, developer, or customer for new applications. implement them in C++ to trees. • Compare the data structures of advanced search trees. • Implement appropriate heap		and		fundamental algorithms	•	Implement operations like searching,
be an effective designer, developer, or customer for new applications. • Compare the data structures of advanced search trees. • Implement appropriate heap		Algorithms	V)	and data structures and to		insertion, deletion and traversing in
developer, or customer for advanced search trees. new applications. • Implement appropriate heap				implement them in C++ to		trees.
new applications. • Implement appropriate heap			A	be an effective designer,	•	Compare the data structures of
				developer, or customer for		advanced search trees.
operations sorting searching				new applications.	•	Implement appropriate heap
operations, sorting, scarching						operations, sorting, searching



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA213	Software Engineering	Global	This course provides the fundamental perception of Software Engineering which includes system requirements, finding the effective methods to analyze, design, code, test and implement the full application with appropriate tools		techniques for a given problem. Determine and analyze the complexity of graph Algorithms. Compare the different domains and process models. Identify the data, class and flow oriented modeling concepts. Analyze on the design oriented concepts. Identify the managerial aspects of software development. Generate project schedule for different
MCA214	Relational Database	Global	This course provides an introduction to the design	•	Design conceptual models of a database using ER model.
	Management Systems		and creation of relational databases with an examination on the	•	Outline the features of DBMS and Relational Database design. Retrieve information from database by



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			characteristics of PL/SQL and its usage to extend and automate SQL to administer the Oracle database.	formulating complex SQL Queries. Utilize PL/SQL programming to solve problems. Implement Packages, Triggers for efficient retrieval of information.
MCA215	Objected Oriented Programming in C++	Global	This course provides knowledge on variable types, operators, control flow, functions, program structure, input and output, arrays, classes, and object-oriented concepts of programming.	Outline the process and mechanism of functions. Identify the relation between arrays and pointers, and use them efficiently in program Use C++ classes for code reusability. Discuss on the concept of function and operator overloading, virtual functions and polymorphism Demonstrate the power of templates for generic programming.
MCA216	Lab –III RDBMS Lab	Global	This course provides practical knowledge in	Enhance Programming skills and techniques.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			PL/SQL programming,	•	Formulate complex queries using SQL
			utilizing the services	•	Use the PL/SQL code constructs of IF-
			provided by Oracle		THEN-ELSE and LOOP types as well as
			database in a stored		syntax and command functions.
			procedure perspective.	•	
			This also includes		
			implementation of		
		4	Subprograms, Triggers,		
			and Cursors concepts in		
			depth		
MCA217	Lab IV- C++	Global	This course provides an	•	Develop programs in object oriented
	Lab	3	introduction to the use of		paradigm.
			C++ programming	y.	Analyze, use, and create different types
		TO IC	language as an aid to solve		of functions and classes.
			mathematical and		Design programs to implement various
		8	scientific problems.		data structure concepts
				1	uata structure concepts
MCA218	Skill Based	Global	This course is to teach	•	Model objects using a variety of
	Lab II-		students the essentials of		techniques
	1	İ	1		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Multimedia		working in 3D using an	•	Design and apply materials
	Lab		array of features and tools.	•	Adjust basic lighting
			This course teaches new	•	Animate simple objects
			users the basics of	•	Build and animate simple, effective
			creating, embellishing, and		environments
	2	67	animating 3D scenes.		
MCA219	Soft Skills II -	National	This course make the	•	Identify the communication differences
	Colloquium		students groom their		in working environment with different
			personality <mark>an</mark> d prove		cultural styles.
			themselves as good	•	Practice the skills and behaviors
	E		Samaritans of the Society.		required to facilitate a group.
		3	This course consists of	•	Demonstrate an effective presentation
			individual or in-group	y	in a meeting.
		7) 1	class presentations		
			pertaining to the		
			applications of concepts,	3	
			Theories or issues in		
			human development.		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



MCA220	Comprehensiv e Viva-II	Global	A COL		Identify the communication differences in working environment with different cultural styles. Practice the skills and behaviors required to facilitate a group. Demonstrate an effective presentation in a meeting.
MCA323	Resource Management Techniques	Global	This course provides solution to problems in different environment that needs decision making using optimization techniques.	· · · · · · · · · · · · · · · · · · ·	Identify the applications of Operations Research and methods to solve business problems. Apply linear programming to solve operational problem with constraints. Apply transportation and assignment models to find optimal solution in warehousing and Travelling, Prepare project scheduling using PERT and CPM. Use optimization concepts in real



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				world problems
MCA324	Data Communicatio n And Networking	Global	This course provides the basic concepts, design principles and underlying technologies of networking.	 Identify the functionalities of Networking layers of both OSI and TCP/IP reference models. Analyze the design issues of Datalink layer and techniques to resolve it. Compare the principles of Switching and Routing algorithm. Predict the TCP and UDP related procedures. Outline the Application layer protocols.
MCA325E1	System Programming	Global	This course is to introduce the student to the collection of programs and documents which constitute the system software of a computer platform.	 Understand the basics of system programs like editors, compiler, assembler, linker, loader, interpreter and debugger. Describe the various concepts of assemblers and macro- processors. Understand the various phases of



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



					compiler and compare its working with assembler.
MCA325E2	Distributed Operating Systems	Global	The course provides the fundamentals of Distributed Operating system and facilitate the students to gain knowledge on distributed operating system concepts that includes architecture, Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols		To learn the fundamentals of Distributed Operating Systems. To learn the mechanisms involved in memory management in Distributed OS Analyze the various device and resource management techniques for timesharing and distributed systems Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system Interpret the mechanisms adopted for file sharing in distributed Applications
MCA325E3	E- Commerce	Global	This course provides information on the	•	Gain a comprehensive understanding of the E-Commerce landscape, current



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			combination of Internet		and emerging technology and
			with E-Commerce, options		infrastructure underpinnings of the
			available for doing		business.
			business on the Internet,	•	Analyze the impact of E-commerce on
			features that helps to	•	business models and strategy.
			build E-Commerce web	•	Develop an understanding on how
			sites, marketing issues,		internet can help business grow/
		4/	payment options, security		Describe the infrastructure for E-
			issues and customer		commerce
			service.	•	Assess electronic payment systems
	- A			•	Gain an understanding on the
		a			importance of security, privacy, and
				7	ethical issues as they relate to E-
		3 16			Commerce.
MCA325E4	OOAD & UML	Global	This course provides the	•	Describe the three pillars of object-
		N A	basic principles of object		orientation and explain the benefits of
			orientation and OO		each.
			analysis and design Using	•	Create use case documents that
			the Unified Process and		capture requirements for a software



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			the Unified Modeling		system.
			Language (UML) as tools.	•	Create class diagrams that model both
					the domain model and design model of
					a software system.
		A Y	LEAD	•	Create interaction diagrams that model
					the dynamic aspects of a software
					system.
		4		•	Explain the facets of the Unified
					Process approach to designing and
					building a software system.
			No.	•	Describe how design patterns facilitate
		a			development and list several of the
		311		y	most popular patterns.
MCA326	Web	Global	This course provides a	•	Develop a dynamic webpage by the use
	Technologies		basic overview and		of java script and DHTML.
		n	understanding of many	•	Connect with a DBMS and perform
			key Web		insert, update and delete operations on
			technologies without		DBMS table.
			delving into programming		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			and discusses server technologies, Web and application servers, Hypertext Preprocessor (PHP) and content management systems.		CO3 3: Write a server side program
MCA327	Programming in JAVA	Global	This course provides an exhaustive coverage of Core Java programming language features like OOPS and GUI programming.		Apply the basic Java constructs to develop solutions to real time problems. Analyze the hierarchy of java classes to develop object oriented programs. Design software in Java using Packages and Threads. Implement Concepts of AWT for creating GUI. Design a Software using JDBC.
MCA328	Lab – VII- Web Programming	Global	This lab is to develop an ability to design and	•	Design and implement dynamic websites with good aesthetic sense of



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			implement static and dynamic website	>	designing and latest technical know-how's. Have a Good grounding of Web Application Terminologies, Internet Tools
MCA329	Lab – VIII- JAVA Programming	Global	This course provides experiential learning in the implementation of Core Java Programming.		Apply the basic Java constructs to develop solutions to real time problems. Analyze the hierarchy of java classes to develop object oriented programs. Design software in Java using Packages and Threads. Implement Concepts of AWT for creating GUI. Design a Software using JDBC.
MCA330	Skill Based Lab III- 3D Animation	Global	This course is to teach students the essentials of working in 3D using an	•	Model objects using a variety of techniques Design and apply materials



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			array of features and tools. This course teaches new users the basics of creating, embellishing, and animating 3D scenes.	 Adjust basic lighting Animate simple objects Build and animate simple, effective environments
MCA331	Soft skills III – Quantitative Aptitude	National	This course provides gamut of skills which facilitate the students to enhance their employability quotient and do well in the professional space. It makes them think critically and apply basic mathematics skills to interpret data, draw conclusions and solve problems	 Apply quantitative techniques to solve variety of problems. Perform statistical analysis to interpret information
MCA434	Software	Global	This course explores the	Understand software testing and



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Testing and		goals of quality assurance		quality assurance as a fundamental
	Quality		and quality control		component of software life cycle
	Assurance		activities performed during	•	C0 2: Define the scope of SW T&QA
			the life cycle of a software		projects
			product. EAD	•	Efficiently perform T&QA activities
					using modern software tools
				•	Estimate cost of a T&QA project and
	<u></u>	4			manage budgets
				•	Prepare test plans and schedules for a
					T&QA project Develop T&QA project
	Er A				staffing requirements
MCA435E1	Data Mining	Global	This course provides the	•	Practice the pre-processing operations
	And Data		basic concepts, principles,	y	of data.
	Warehousing	V) (C	methods, implementation	•	Compare & contrast OLTP, OLAP and
			techniques and		Data mining as techniques for
		N A	applications of data		extracting knowledge from a Data
			mining		Warehouse.
				•	Perform Association Rule Mining for
					Market Basket Analysis.
					market Dasket Allalysis.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	•	Design & deploy the appropriate Classification and Clustering techniques. Explore the recent trends in data mining.
MCA435E2	Network Protocols and Management	Global	This course provides a knowledge on various network protocols of TCP / IP networks and advanced Management of telecommunication network and intertechnologies		Appreciate the need for interoperable network protocols and management Understand general concepts and architecture behind standards based on network management Understand concepts and terminology associated with SNMP and TMN Analyse the various network protocols and management techniques in and as a typical distributed application Understand Advanced Information Processing Techniques such as Distributed Object Technologies,



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				Software Agents and Internet
MCA435E3	Compiler Design	Global	The course provides knowledge on the theory and tools that can be employed in order to perform syntax-directed translation of a high-level programming language into an executable code along with data flows. The concepts covered are Parsing, Scanning, Semantic Analysis, and Code Generation combined with the theory of computation conversions.	 To analyze the basic concepts and applications of Compiler Design To compare various lexical analyzers and grammars To formulate the conversion process between finite automata, regular grammars with the transition and transformation methods To demonstrate the knowledge of formal connection and relationship to expressions and languages To identify if a language is regular, context-free, unambiguous after reducing it to normal forms
MCA435E4	Digital Image Processing	Global	This course provides an introduction to the basic	To review the fundamental concepts of a digital image processing system.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			concepts, methodologies	•	To examine various types of images,
			and algorithms of digital		their intensity transformations and
			image processing focusing		spatial filtering.
			image enhancement,	•	To analyze the different types of noises
			image analysis and object		and the filters used to restore and
			recognition		reconstruct the images.
				•	To create color images and pseudo
					images with smoothening and
					sharpening techniques.
				•	To compare the various lossy and
	حم		William .		lossless compression mechanisms.
MCA436E1	Client / Server	Global	To know the role of client	•	Understand fundamental concepts of
	Computing		and server in the Network,		Client Server systems, system models
		V) (C	and the information		of distributed systems, networks that
			exchanging. This course is		distributed systems run on.
		h	to design and develop	•	Explore communication protocols
			Components of Client/		between processes in distributed
			Server Applications and		systems, Middleware, Enterprise
			connectivity.		Application integration, and Web
<u> </u>	ı	ı	101	1	



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			ACO	Services Security Gain Exposure on most common used servers. Understand the concept of client-server development and learn problem solving skills through design scenarios for network environment. Develop a client –server based application.
MCA436E2	Network Security and Crypt Analysis	Global	This course provides basic understanding of previous attacks on cryptosystems with the aim of preventing future attacks and to provide security using various cryptographic tools	Evaluate the fundamentals of networks security, security architecture, threats and vulnerabilities. Compare Stream ciphers and block ciphers. Apply the different cryptographic operations of public key cryptography. Pertain the various Authentication schemes to simulate different applications.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				Analyze various Security practices and System security standards
MCA436E3	Computer Graphics and Multimedia	Global	To learn the basic principles for design, use and understand the hardware and software components of graphics systems, techniques for designing 2D, 3D pictures and to provide a complete and balanced view on the multimedia field covering almost all major domains.	 To list the basic concepts used in computer graphics. To implement various algorithms to scan, convert the basic geometrical primitives, transformations, Area filling, clipping. To describe the importance of 2 dimensional and 3 dimensional transformations. To define the fundamentals of multimedia systems and compression. To understand different standards of file format and multimedia Input/Output technologies.
MCA436E4	Component Based	Global	The course focuses on providing programming	Utilize framework and components in real time application creation.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Technologies		ideas about components,	•	Understand different COM objects.
			architecture and CORBA	•	Use Applet and Servlets in their
			components and COM		component framework creation.
			objects	•	Differentiate framework Vs
			LEAD		Connectors.
				•	Know about Component distribution
					and acquisition.
MCA437	Mobile	Global	This course provides	•	C01: Identify, Predict and Evaluate
	communicatio		knowledge <mark>on</mark> key mobile		Wireless Communication Protocols
	n &		system and wireless	•	C02: Compare and analyze various
	Application <		communication. It also		multiplexing techniques in mobile
	Development	31	aims at developing		environment.
			applications using Android	7.	C03: Demonstrate the architectures,
		V	INDIX LIGHT		challenges and solutions of Wireless
			MUE		communication.
		λ		1	C04: Assess the role of Wireless
			ADITO		Networks in shaping the future
			A TOWN		internet.
				•	C05: Design and develop apps for
			104		



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	•	mobiles using Android. C06: Apply Location Based Services of Android for ensuring women's safety and security
MCA438	Web Engineering	Global	This course provides introduction to structured methodology utilizedinsoftware engineer ing to Web development projects and addresses the concepts, methods, technologies, and techniques of developing Web sites that collect, organize and expose information resources		Develop a web application using server side programming languages and components. Apply the web engineering methodologies for Web application development. Develop a component based web solution and use UML diagrams to describe such a solution.
MCA439	Lab – IX –	Global	This course provides	•	Install and configure Android



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Mobile		knowledge of developing		application development tools.
	Application		applications for mobiles	•	Design and develop user Interfaces for
	Development		using native and hybrid		the Android platform.
			frameworks.	•	Apply Java programming concepts to
		RY	LEAD		Android application development.
				•	Familiar with technology and business
					trends impacting mobile applications.
MCA440	Lab – X- Web	Global	This lab is t <mark>o</mark> develop an	•	Design and implement dynamic
	Applications		ability to de <mark>sig</mark> n and		websites with good aesthetic sense of
	Using PHP &		implement static and		designing and latest technical know-
	MYSQL		dynamic website		how's.
		3		•	Have a Good grounding of Web
					Application Terminologies, Internet
		0) (3	INDIX LIGHT		Tools
MCA441	Skill Based	Global	This course provides focus		Finding defects in the programs while
	Lab IV-		on the needs of automated		developing the software.
	Software	N N	testing tools. The testing	•	Able to write test cases and test
	Testing Tools		tactics of a project are		scenarios.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	Lab		done by understanding the customer's requirements, test plannin g, test design scenarios, test cases, test execution, result analysis, defect tracking and reporting		Develop the scripts for finding the defects and preventing them. Understand the automated testing tools available
MCA442	Soft skills IV- Technical Aptitude	National	This course provides skills that are imperative for students to establish a stronger connect with the technical environment in which they operate. An understanding of these skills will enable students to manage the placement challenges more effectively	•	Enhance the technical skills for employability. Improve the proficiency of participation in competitive examinations
MCA545	Software	Global	This course provides	•	Deliver successful software projects



Criterion: I - Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



	project		knowledge in applying		that support organization's strategic
	management		different techniques to		goals
			monitor & control project	•	Match organizational needs to the
			and people		most effective software development
			LEAD		model
				•	Plan and manage projects at each
					stage of the software development life
					cycle
				•	Create project plans that address real-
					world management challenges
	£			•	Develop the skills for tracking and
		2			controlling software deliverables
				y •	Predict the behavior of people working
		31 (6)			in teams and to explore the ways of
		1	INDLY		Managing people in Software
					Environments.
MCA546E1	Cloud	Global	This course provides	•	Compare the strengths and limitations
	Computing		comprehensive study of		of cloud computing.
			cloud concepts and	•	Identify the architecture,



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				:C
			capabilities across the	infrastructure and delivery models of
			various Cloud service	cloud computing.
			models including	Apply suitable virtualization concept.
			Infrastructure as a Service	Choose the appropriate Cloud player,
		833	(IaaS), Platform as a	Programming Models and approach.
			Service (PaaS), Software as	Address the core issues of cloud
			a Service (SaaS), and	computing such as security, privacy
		4	Business Process as a	
			Service (BPaaS).	and interoperability
			bervier (Braus).	
MCA546E2	Wireless	Global	This course provides	Formulate the basic standardization of
	Sensor		knowledge on the	wireless networks.
	Networks	35	architectures, functions	Analyze the implementation of
		Σ	and performances of	technologies related to WSN.
		O)	wireless sensor systems	Identify and understand the security
			and platforms. It also	issues in ad hoc and sensor networks.
		n	describes and analyze the	Compare the protocols and to promote
			specific requirements for	the research work in this area.
			applications in wireless	Apply and solve problems in the
			sensor networks regarding	applications of Wireless Networking



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			energy supply, memory, processing and transmission capacity	Area.
MCA546E3	Human Resource Management	Global	This course provides an introduction to the various functions of human resource management, including compensation and benefits, staffing, recruitment and selection, training and development, health and safety.	 Explain the various functions of human resource management and identify their relationship to the workplace from the perspective of both employee and employer. Apply the principles of human resource management to the automotive industry in the areas of hiring, compensation and benefits. Government legislation. Identify social issues relating to human resource management Identify and predict human resource management trends in the automotive industry and develop proactive solutions and techniques of adaptation.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COZ	•	to changing industry demands. Understand the polices and government legislation
MCA546E4	Service Oriented Architecture	Global	The course provides the SOA platform basics - building blocks, SOA platform layers, Service technology architecture and Vendor platforms		The creation of SOA compliant web service using various technologies Predict the various service oriented analysis techniques Apply the knowledge on advanced concepts of service composition, Orchestration and Choreography. Understand web service framework with respect to SOA. Understand various open standards available for developing SOA compliant web services.
MCA547E1	Soft Computing	Global	This course provides the principal constituents of soft computing that is	•	Explore the functional components of artificial neural networks. Examine the principles of back



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			fuzzy logic, neural network		propagation networks.
			theory and probabilistic	•	Expose the students to the concepts of
			reasoning. The course		predicting the functionalities of ART.
			explores the features that	•	Analyze the logic principle of classical
			are employed in various		sets and fuzzy set operations in fuzzy
			associated techniques		set theory.
				•	Identify the concept of fuzzification and
		4			defuzzification involved in various
					systems
MCA547E2	Ethics in	Global	This course provides the		Dradiat the relationship between the
WCA547E2		Global			Predict the relationship between the
	Computing		basis for ethical decision-		law, ethics and computer technology.
			making and the	•	Outline the philosophical and ethical
		21/	methodology for reaching		debates with the ideas and the nature
			ethical decisions		of intellectual creativity.
			concerning computing	•	Design the impact of computer
		A	matters		technology on free speech.
			ADITO	•	Formulate the ethical and legal issues
					of the impact that computing
					technologies had on workplace.
	1				



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			A COA	Develop a personal standpoint in relation to DataBase society and the usage of biometric data.
MCA547E3	Embedded Systems	Global	This course provides the fundamentals of embedded system hardware and firmware design will be explored	 Understand hardware and software design requirements of embedded systems. Analyze the embedded systems' specification and develop software programs. Evaluate the requirements of programming Embedded Systems, related software architectures and tool chain for Embedded Systems.
MCA547E4	Distributed Systems	Global	The course provides knowledge on the fundamental concepts of distributed computer systems. Covers	 List the principles of distributed systems and describe the problems and challenges associated with these principles. Understand Distributed Computing



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



		I			
			development techniques		techniques, Synchronous and
			and runtime challenges,		Processes.
			with a focus on reliability	•	Apply Shared Data access and Files
			and system validation		concepts.
			techniques.		Design a distributed system that
					fulfills requirements with regards to
					key distributed systems properties.
		4		•	Understand Distributed File Systems
					and Distributed Shared Memory.
				•	Understand the importance of security
	Ex.		William I.		in distributed systems
MCA548	Internet	Global	This course is to provide	•	Create dynamic web pages, using
	Programming		the ability to design	y	Servlets and JSP.
	using J2EE	V) (V	console based, GUI based	•	Make a reusable software component,
			and web based		using Java Bean.
		λ	applications.	•	invoke the remote methods in an
			ADITO		application using Remote Method
					Invocation (RMI)
				•	Understand the multi-tier architecture



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



				of web-based enterprise applications using Enterprise JavaBeans (EJB)
MCA549	. NET Programming	Global	This course will cover the practical aspects of multitier application development using the .NET framework. The goal of this course is to introduce the students to the basics of distributed application development. We will introduce the students to Web Service development and .NET remoting. Technologies covered include the Common Language Runtime (CLR), .NET framework classes, C#,	 Know about multi-tier application development. Create user interactive web pages using ASP.Net. Create simple data binding applications using ADO.Net connectivity. Performing Database operations for Windows Form and web applications. Develop web services.



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			ASP.NET, and ADO.NET.	
MCA550	Lab XI- J2EE Programming	Global	This course aims to introduce the students to some concepts of <i>advanced</i> programming and practice on reusing components	 Design and develop Web applications Designing Enterprise based applications by encapsulating an application's business logic. Designing applications using pre-built frameworks.
MCA551	Lab XII Net Programming	Global	This course provides introduction to .Net IDE Component Framework, Programming concepts in .Net Framework and Creating website using ASP.Net Controls.	 .Create user interactive web pages using ASP.Net. Create simple data binding applications using ADO.Net connectivity. Performing Database operations for Windows Form and web applications.
MCA552	Skill Based Lab V- Domain Study	Global	The course train the students to critically evaluate a set of research topics on a particular	 Identify the domain to be analyzed Prepare an in depth study on the recent trends in the chosen domain



Criterion: I – Curricular Aspects

Metric: 1.1.1 – Programme Outcomes (POs), Programme Specific Outcomes (PSOs) and

Course Outcomes (COs) - M.C.A



			domain based on the	•	Present the various analysis using
			interest of the student.		various tools
			ACOM	•	Create a model on the analysis done
				•	Create a research paper from the
			LEAD		analysis and findings
MCA553	Soft skills V-	Global	This course provides		Outling the releg played in weathersung
WCA333		Global	_	•	Outline the roles played in workgroups
	Interpersonal		the skills needed to find a		and teams
	Skill for		job and also the skills	•	Describe how good communication
	Corporate		needed to excel at the time		influences working relationship.
	Readiness		of entering a career.		