

Master of Computer Application (MCA) 2015-18

Program Educational Objectives (PEOs)	
PEO1	To provide opportunities for acquiring in-depth knowledge of fundamental concepts and IT enabled skills for venerable development.
PEO2	To develop an ability to identify, critically analyze and formulate a computing problem.
PEO3	To promote use of open source technology and encourage for innovative software development.
PEO4	To emphasize on awareness of changing trends and career avenues in computer applications and management through various student driven activities.
PEO5	To inculcate human values, professional ethics, research orientation and social responsibilities.

Program Outcomes (POs)	
By the culmination of this program, the post graduate acquires the ability	
PO1	To get acquainted with IT and management enabled skills.
PO2	To develop software applications to resolve comprehensive problems using systematic analysis and design approach.
PO3	To integrate and apply the contemporary IT practices.
PO4	To imbibe learning abilities, skill development and awareness of social concerns.
PO5	To demonstrate team work with the ability of leadership, analytical reasoning for solving time critical problems.
PO6	To imbibe the strong human values for responsible professional in IT.

Course Outcomes (Cos)

SEMESTER	Track	Code	Subject/Course		Course Outcome [CO] Students will get acquainted with
SEM-I	COMMON	IT11	Fundamentals of Computer	CO1	Organization of computer.
				CO2	Working of the memory system and basic processing unit.
				CO3	Number system and data representation.
		IT12	C Programming with Data Structure	CO1	Basics of programing logic.
				CO2	Analytical thinking.
				CO3	Complex problem solving approach.
				CO4	Data structure concepts.
		IT13	Software Engineering	CO1	Requirement analysis.
				CO2	System design.
				CO3	Agile software development methodology.
		IT14	Database Management System	CO1	Conceptual knowledge on database and normalization process.
				CO2	Concurrency control and security techniques.
				CO3	Database schema design.
		BM11	Principles and Practices of Management and	CO1	Basics of Management concepts.
CO2	Organizational Behavioural Concepts and its applications.				

SEMESTER	Track	Code	Subject/Course		Course Outcome [CO] Students will get acquainted with
			Organizational Behavior		
		BM12	Business Process Domains*	CO1	Business processes, practices and their applications.
				CO2	Business applications like CRM and SCM.
				CO3	Financial aspects of business and management.
				CO4	Analysis of financial statements.
		IT12L	C and DS Lab	CO1	Basics of programing logic.
				CO2	Analytical thinking.
				CO3	Complex problem solving approach.
				CO4	Data structure concepts.
		IT14L	DBMS Lab	CO1	Conceptual knowledge on database and normalization process.
				CO2	Concurrency control and security techniques.
				CO3	Database schema design.
		SS11	Word Power	CO1	Writing skills and spoken ability
SEM-II	COMMON	IT21	Essentials of Operating System	CO1	Fundamentals of operating system.
				CO2	Memory management and process management.
				CO3	Dedlock, file system and disk management.
		IT22	Web Technologies	CO1	Basics HTML and CSS.
				CO2	Client side scripting languages like javascript
				CO3	Server side scripting languages like ASP
		IT23	Core Java	CO1	Object Oriented concepts and its implementation
				CO2	Java swing and collection framework.
				CO3	AWT, Applet and Multithreading
		IT24	Essentials of Networking	CO1	Transmission media and multiplexing
				CO2	Common network architectures, ISO-OSI and TCP-IP reference models
				CO3	Local Area Networks and broadband networks
				CO4	IP addressing & routing
		MT21	Discrete Mathematics	CO1	Their logical capabilities.
				CO2	Applications of mathematics in real world problem.
				CO3	Complex problem solving & programing,
		BM21	Essentials of Marketing*	CO1	Essentiality of Marketing.
				CO2	Application of IT for the business benefits.
		IT22L	Mini Project using Web Technology	CO1	Ability to develop static and dynamic website.
				CO2	Ability to Analyze the system
IT23L	Core Java Lab	CO1	Object Oriented concepts and its implementation		
		CO2	Java swing and collection framework.		
		CO3	AWT, Applet and Multithreading.		
SS21	Oral Communication	CO1	Dynamic thinking ability in english-speaking.		

SEMESTER	Track	Code	Subject/Course	Course Outcome [CO] Students will get acquainted with			
SEM-III	COMMON	MTC31	Probability and Combinatorics	CO1	The concept of probability.		
				CO2	Probability theory to solve interesting problems.		
				CO3	Applications of different distributions in real world problems.		
	COMMON	ITC31	Multimedia Tools for Presentation*	CO1	Various multimedia tools and software to make the presentation effective		
				SSC31	Soft Skills- Presentation	CO1	The concept of Professional working environment & able to apply the different stakeholders in real world.
	TRACK I : SOFTWARE & APPLICATION DEVELOPMENT	T1-IT31	Advanced Data Structure and C++ programming	CO1	The applications of Object Oriented Programming concepts.		
				CO2	The concepts of Data Structures.		
				CO3	Implementation of Data Structure concepts using object oriented programming		
		T1-IT32	Design and Analysis of Algorithms (DAA)	CO1	Concepts of algorithm and its complexity.		
				CO2	Complex problem solving through various methods for optimization.		
				CO3	Approaches to solve large computing problems.		
		T1-IT33	Object Oriented Analysis and Design	CO1	Object-oriented analysis & design concepts.		
				CO2	Design components to maximize their reuse.		
				CO3	Unified Modelling Language.		
		T1-IT34	Advanced Internet Technology	CO1	Web development concepts.		
				CO2	Web designing using HTML5, JQuery.		
				CO3	AJAX and XML		
				CO4	Server side scripting languages like PHP		
		T1-IT31L	DS & C++ Lab	CO1	Implementation of the oops concept.		
				CO2	Applications of data structure and algorithms for problem solving.		
		T1-IT34L	Mini Project using AIT	CO1	Identification of problems and designing of web based system.		
				CO2	Publishing the website.		
		TRACK II : INFRASTRUCTURE & SECURITY MANAGEMENT	T2-IT31	IT Infrastructure Architecture	CO1	IT Infrastructure management concept.	
	CO2				Service delivery and service support process.		
	CO3				Service Management and storage management		
	T2-IT32		Data Centre Architecture & Storage Management	CO1	Designing of a Data Centre.		
				CO2	Understanding of the options in the running of an efficient Data Centre.		
				CO3	Value of data to a business, information lifecycle, challenges in data storage and data management and solutions available for data storage.		
	T2-IT33		Introduction to Information Security	CO1	Values of Information security.		
CO2				Implementation of information security practices in IT companies.			
CO3				Models, Standards & Legal Framework.			

SEMESTER	Track	Code	Subject/Course		Course Outcome [CO] Students will get acquainted with
		T2-IT34	Office Automation Tools	CO1	Basic knowledge of office automation tools.
				CO2	Applications of office automation tools in the various areas of business.
		T2-IT31L	Mini Project on IT Architecture and Information Security	CO1	Case studies based on information security
				CO2	Implement different encryption and decryption techniques in the projects and applications.
		T2-IT34L	Office Automation Tools – Lab	CO1	Practical exposure on tools required for office automation.
				CO2	Comparison of various office automation tools like office equipments, hardware and software.
	TRACK III : INFORMATION MANAGEMENT & QUALITY CONTROL	T3-IT31	Enterprise Resource Planning	CO1	ERP systems, its structure, modules
				CO2	Benefits of ERP system
				CO3	Implementation and post implementation issues through real-life cases
		T3-IT32	Data Communication & Computer Networks	CO1	Data Communication Networks and Reference Models
				CO2	IP Addressing and Routing & DNS
				CO3	Networking protocols
				CO4	Fundamentals of network security
				CO5	Advanced network technologies.
		T3-IT33	Data Warehouse, Mining, BI Tools & applications	CO1	Concepts of data-warehousing
				CO2	Data mining techniques
				CO3	Importance of BI in emerging world.
		T3-IT34	Information Security & Audit	CO1	Value of information and its security practices
				CO2	Implementation of information security practices in IT companies.
				CO3	Framework for security policies, controls and auditing for security
		T3-IT32L	DCCN Lab	CO1	Basic practical's of networking.
				CO2	Different network management tools.
				CO3	Virtualization, IP address configuration, firewall configuration.
		T3-IT34L	BI Tools Lab	CO1	Data Mining Techniques
	CO2			Spreadsheet based data mining tool & BI tools such as XLMiner	
	CO3			Business Intelligence Tool like Pentaho	
	TRACK IV : NETWORKING	T4-IT31	Network Administration I	CO1	Fundamental knowledge about the network administration
CO2				Practical exposure by creating LAN'S, WAN'S etc.	
CO3				Configurations of router & switches	
T4-IT32		Windows Server Configurations	CO1	Installing and configuring servers, roles and features	
	CO2		Deployment and configuration of core network services,		

SEMESTER	Track	Code	Subject/Course		Course Outcome [CO] Students will get acquainted with
					administer Active Directory , Creation and management Group Policy
				CO3	Creating and configure virtual machine settings
		T4-IT33	IT Infrastructure Monitoring	CO1	IT infrastructure.
				CO2	Different network management tools.
				CO3	Project and operations management.
		T4-IT34	Linux Administration I	CO1	Linux File system and user administration
				CO2	Basic linux commands for backup and printing the documents.
				CO3	Configuration of Domain Name Server
		T4-IT31L	Network Administration Lab – I	CO1	The fundamentals of network administration
				CO2	Practical knowledge of IP addressing, Routing, configurations of VLAN, VTP
		T4-IT32L	Server Configuration Lab (Windows and Linux)	CO1	Creation and configuration of Windows server.
				CO2	Creation and configuration of Linux server.
SEM-IV	COMMON	ITC41	Optimization Techniques	CO1	Understanding of the different optimization techniques.
				CO2	Application of optimization techniques.
				CO3	Managerial decision making
		ITC42	Research Methodology & Statistical Tools*	CO1	Research concepts with reference to business management scenario.
				CO2	Basic statistical techniques to solve various problems
		SSC41	Soft Skills -Interview *	CO1	IT and general soft skills to attempt job interview
	TRACK I : SOFTWARE & APPLICATION DEVELOPMENT	T1-IT41	Advanced Java	CO1	Socket programing, database connectivity, AWT
				CO2	Web development using Servlet, JSP
				CO3	Frameworks like MVC, Spring and Hibernate
		T1-IT42	Python programming	CO1	Fundamentals of Python Programming
				CO2	Implementation of Object oriented concepts using python programming.
				CO3	Formulating regular expressions for pattern matching.
		T1-IT43	Advance DBMS	CO1	Different data modelling techniques and its use.
				CO2	Different architectures of different database.
				CO3	Different data mining algorithm and its implementation in real life scenario.
		T1-IT44	Cloud Computing	CO1	Cloud serivces
				CO2	Virtulization
				CO3	Cloud security and issues in Cloud comouting
T1-IT41L	Adv. Java Lab	CO1	Implementation Socket programing, database connectivity,AWT		
		CO2	Web development using Servlet, JSP		
		CO3	Frameworks like MVC, Spring and Hibernat,		

SEMESTER	Track	Code	Subject/Course	Course Outcome [CO] Students will get acquainted with	
		T1-IT42L	Python Programming Lab	CO1	Fundamentals of Python Programming
				CO2	Implementation of Object oriented concepts using python programming.
	T2-IT41	Identity and Access Management	CO1	Windows advanced active directory services.	
			CO2	Access management solutions.	
			CO3	Troubleshooting Identity and Access Solutions.	
	T2-IT42	IT Advisory Services	CO1	Various a types of IT advisory services	
			CO2	Consulting skills	
			CO3	Global aspects	
	T2-IT43	Infrastructure Security Audit	CO1	IT infrastructure and current trends of it.	
			CO2	Security concerns of various devices.	
			CO3	Planning, reporting and audit for security.	
	T2-IT44	Enterprise Solutions Architecture	CO1	Understanding of enterprise, solution architects and framework	
			CO2	Students will understand areas where the architect is responsible for effective design and risk management.	
			CO3	Students will get architects with generally applicable knowledge and training.	
	T2-IT41L	Identity and Access Management Lab	CO1	Hands on experience on IDA Solutions.	
			CO2	Troubleshooting Identity and Access Solutions.	
	T2-IT42L	Mini Project on IT Advisory Services and Enterprise Solutions Architecture	CO1	Fundamentals of IT Advisory Services	
			CO2	Case studies based on IT advisory services	
	T3-IT41	E Commerce & Knowledge Management	CO1	E-commerce & m-commerce and electronic payment system.	
			CO2	Security issues in e-commerce	
			CO3	Knowledge management and various tools.	
	T3-IT42	Cyber Laws & Intellectual Property Rights	CO1	Cybercrime, its types and jurisdiction in the cyber world.	
			CO2	IT act 2000 and its amendments.	
			CO3	Intellectual property Rights	
			CO4	Copyright issues in Cyberspace.	
	T3-BM43	Customer Relationship Mgmt & Supply Chain Mgmt	CO1	Role of IT for SCM & CRM.	
			CO2	The application of IT in CRM	
CO3			Functionalities of CRM in service sector		
T3-IT44	Software Quality Assurance & Control	CO1	Software Quality Assurance and control,		
		CO2	The principles of software development emphasizing processes and activities of quality assurance.		
		CO3	Software Quality Assurance Metrics & Software Quality Infrastructure Components		
T3-	Mini Project based on	CO1	Development of mini project using the concepts of CRM.		

SEMESTER	Track	Code	Subject/Course		Course Outcome [CO] Students will get acquainted with
		IT43L	CRM & SCM	CO2	Development of mini project using the concepts of SCM.
		T3-IT44L	Software Quality Assurance Lab	CO1	S/W Configuration Management Tools
	CO2			Students will able prepare system analysis documentation.	
	TRACK IV :NETWORKING	T4-IT41	Network Administration II	CO1	Advanced concepts of network administration
				CO2	Troubleshooting of LAN switching and IP routing
				CO3	Routing protocols like OSPF, IGRP,EIGRP etc.
		T4-IT42	Internet of Things	CO1	Paradigm of objects interacting with people, information systems, and other objects via network communications
				CO2	IoT connectivity methods & technologies
				CO3	Different Protocols required for IoT
				CO4	Internet of Things Privacy, Security and Governance & different IoT applications
		T4-IT43	Linux Administration II	CO1	Administration of Database services
				CO2	E-mail management in Linux
				CO3	Management of kernel & its modules
				CO4	Configuration of Internet Connectivity
		T4-IT44	Wireless Networks	CO1	Wireless Local Area Network
	CO2			3G, 4G and associated technologies.	
	CO3			Sensor networks	
	CO4			Interworking between WLANs and 3g WWANs	
	T4-IT41L	Virtualization Lab	CO1	Knowledge of hardware virtualization	
			CO2	Knowledge of software virtualization	
T4-IT44L	Wireless Network Lab	CO1	Practical exposure on wireless networks.		
		CO2	Cases which helps to configure and understand real issues on the site.		
SEM-V	COMMON	ITC51	Software Project Management	CO1	Process of software project management and cost estimation
				CO2	Application of project Management tools, configuration management
				CO3	User roles and software teams.
		ITC51P	Project *	CO1	Collection of requirements and requirement analysis
				CO2	Preparation of SRS of the project
				CO3	Design phases of project with reference to SDLC.
	SSC51	Soft Skills - Group Discussion*	CO1	Leadership skills and techniques.	
	E & APPLICATION	T1-IT51	ASP .Net using C#	CO1	C# language in detail.
				CO2	Development web applications in ASP .Net using C# language.
CO3				Web services and AJAX technology in ASP .Net.	

SEMESTER	Track	Code	Subject/Course		Course Outcome [CO] Students will get acquainted with
		T1-IT52	Service Oriented Architecture	CO1	Basic principles of service orientation and service oriented analysis techniques
				CO2	Technology underlying the service design
				CO3	Advanced concepts such as service composition, orchestration and Choreography
				CO4	Various WS specification standards
		T1-IT53	Big Data Analytics	CO1	Concept of Big data, its need in enterprise and challenges faced by enterprise application
				CO2	NOSQL database Concept & its
				CO3	Working of Hadoop distributed framework
		T1-IT54	Mobile Application Development	CO1	Architecture and features of Android
				CO2	Development the Mobile Apps for Android.
				CO3	Deployment of Android applications
		T1-IT51L	Mini Project using ASP .Net	CO1	Applications of various controls to create web site.
				CO2	CSS, Master Pages, State Management techniques and security issues in web development.
		T1-IT54L	Mini Project Using Mobile Application Development	CO1	Hands on practice to student to enhance their Android programming skills
				CO2	Development of mobile applications
	TRACK II :INFRASTRUCTURE & SECURITY MANAGEMENT	T2-IT51	Quality verification	CO1	Quality parameters, operational aspects
				CO2	Quality standards
				CO3	Testing Maturity Model
		T2-IT52	Infrastructure Auditing & Implementation	CO1	Fundamentals of infrastructure audit
				CO2	Appropriate methods to analyze and compare the usage of infrastructure
				CO3	Appropriate methods to evaluate the usage of infrastructure
		T2-IT53	IT Service Management	CO1	The organizational significance of managing the IT service
CO2				Achievement of internal and external customer satisfaction.	
CO3				New service development from both a product and process perspective.	
CO4				Complexities associated with implementing change	
T2-IT54		Digital and e-business Infrastructure and security mechanism	CO1	The knowledge of E-Commerce.	
			CO2	The knowledge of Digital security and digital payments.	
T2-IT52L		Mini Project on Infrastructure Audit	CO1	Exploration of various facets of infrastructure required for effective implementation of software projects.	
			CO2	The understanding of security management issues and Case studies	
T2-IT54L		Design of digital and e-business infrastructure and	CO1	Implementation of different security systems.	
			CO2	Implementation and configure various e-payment systems.	

SEMESTER	Track	Code	Subject/Course	Course Outcome [CO] Students will get acquainted with	
	TRACK III : INFORMATION MANAGEMENT & QUALITY CONTROL		security mechanism		
		T3-IT51	Software Testing & Tools	CO1	Fundamentals of Testing and software engineering
				CO2	Different types of testing.
				CO3	Approaches for testing
		T3-BM52	Entrepreneurship Development	CO1	Fundamentals of Entrepreneurship Management
				CO2	Business Plan
				CO3	Institutional Support towards the development of entrepreneurship in India
		T3-IT53	Decision Support System	CO1	The knowledge of DSS.
				CO2	Applications DSS Tools
				CO3	Data Mining and Warehousing concepts
		T3-IT54	Business Architecture	CO1	The architecture process frameworks
				CO2	Business, data and software architecture
				CO3	Application and infrastructure architecture
	T3-IT51L	CASE Tools Lab	CO1	Automated tools used for Software testing	
			CO2	Design & Development, Testing & Project Management	
	T3-BM52L	Activities based on Entrepreneurship Development	CO1	Generation of Business Plan	
			CO2	Preparation of project report	
	TRACK IV : NETWORKING	T4-IT51	Network Routing Algorithms	CO1	Different types of network routing protocols
				CO2	Different types of network routing algorithms
				CO3	Mobile IP networks and Ad-Hoc networks
		T4-IT52	Computer and Network Security	CO1	Security measures related to computer and network security.
				CO2	Network architecture and device security.
				CO3	Principles of application security.
T4-IT53		Cloud Architectures and Security	CO1	Cloud computing fundamentals and its security concepts.	
			CO2	Multi tenancy issues, Virtualization system-specific attacks.	
			CO3	Legal & Compliance issues related to cloud.	
T4-IT54		Unified Communication	CO1	Basic principles of Telecommunication switching, traffic and networks	
			CO2	Basic concepts of IP EPBAX system, wireless propagation and the techniques used to maximize the capacity of network.	
			CO3	Working of VOIP and its protocols.	
T4-IT52L		Computer and Network Security – Lab	CO1	Hands on knowledge of various thing like monitoring and analyzing network traffic	
			CO2	Installing and configuring different tools like wireshark, SNORT, NMAP, Port Scanners	

SEMESTER	Track	Code	Subject/Course		Course Outcome [CO] Students will get acquainted with
		T4-IT53L	Cloud Building within Organization (Deployment of cloud and cloud based applications)	CO1	Cloud architecture open source technology.
				CO2	Services and features offered by Azure and Amazon
				CO3	Installation of applications on cloud.
SEM-VI		ITC61	Open subject for each TRACK*		Open subject relevant for each TRACK*
		ITC61L	Open subject LAB		Lab on Open subject relevant for each TRACK*
		ITC61P	Project	CO1	Designing the Database for project
				CO2	Designing UI and apply necessary validation on form
				CO3	Coding and testing of project
CO4	Preparation of documentation for the project.				