

**Annexure to Notification No.F(Pres-Syllabi.PG-CBCS)Acad/KU/14 dated 15-05-2014
Syllabus for MCA 1st to 6th semester**

Choice based Credit System (CBCS)

Scheme and course structure for

MCA 6th semester effective from academic session 2016 and onwards

Semester-VI						
Course Code	Course name	Paper category	Hours / Week			Credits
			L	T	P	
MCA14601CR	SRS, Analysis and Design	Core	3	0	0	3
MCA14602CR	Software Testing	Core	3	0	0	3
MCA14603CR	Software Project Demonstration	Core	0	0	6	3
MCA14604CR	Software Project Dissertation	Core	0	0	6	3
MCA14605EA	Oracle Fundamentals 1 and 2	Elective (Allied)	3	0	0	3
MCA14606EA	Dot Net Technologies	Elective (Allied)	3	0	0	3
MCA14607EA	Advanced Java Programming	Elective (Allied)	3	0	0	3
MCA14608EA	Organization Behavior and Personal Management	Elective (Allied)	3	0	0	3
MCA14609EA	Research Methodology	Elective (Allied)	3	0	0	3
MCA14610EA	Research Dissertation	Elective (Allied)	0	0	6	3
MCA14611EO	Open elective (To be selected from outside department)	Elective (Open)	4	0	0	4
24 Credits=31 Contact Hours						

Core:

MCA14601CR SRS, Analysis and Design
MCA14602CR Software Testing
MCA14603CR Software Project Demonstration
MCA14604CR Software Project Dissertation

Electives:(any 4)

MCA14605EA Oracle Database Management 1 and 2
MCA14606EA Dot Net Technologies
MCA14607EA Advanced Java Programming
MCA14608EA Organization Behavior and Personal Management
MCA14609EA Research Methodology
MCA14610EA Research Dissertation
MCA14611EO Open elective (To be selected from outside department)

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Course No: MCA14601CR

Course Title: SRS, Analysis and Design

UNIT -I

Software Requirements Analysis and Specification Concepts:

Requirement Engineering, Requirement Elicitation Techniques, Requirements Documentation, Characteristics and Organization of SRS, Analysis Principles, Analysis Modeling – Data Modeling,

Functional Modeling and Behavioral Modeling; Structured vs. Object Oriented Analysis.

UNIT -II

Software Design and Coding Concepts:

Design Principles, Data Design, Architectural design, Interface Design, Component Level Design,

Object Oriented Design Concepts, Cohesion and Coupling and their classification, top-down, bottom-up and middle-out design, Coding, Coding Standards, Coding Conventions, Programming

Style.

UNIT –III

Testing:

Verification and Validation, Testing Process, Design of Test Cases, Functional Testing, Software

Testing Strategies, Unit Testing, Integration Testing, Top Down and Bottom Up Integration Testing,

Alpha & Beta Testing, System Testing and Debugging.

Software Quality Assurance:

Software Quality, Software Quality Factors, Quality Assurance and Standards, Quality Planning,

Quality Control, ISO 9000 Certification for Software Industry, SEI Capability Maturity Model and

Comparison between ISO & SEI CMM. Introduction to Six Sigma, SPICE.

UNIT –IV

Technical Metrics for Software:

Software Measurements: What and Why, A Framework for Technical Software Metrics, Metrics for

the Analysis Model, Metrics for Design Model, Metrics for Source Code, Metrics for Testing, Metrics for Software Quality, Metrics for Maintenance.

CASE (Computer Aided Software Engineering) and Introduction to UML:

CASE and its Scope, Building blocks of CASE, CASE Tools, CASE Environment, UML Concepts,

Use Case Diagrams, Sequence Diagrams, Collaboration Diagrams, Class Diagrams, State Transition

Diagrams, Component and Deployment Diagrams.

Text Book:

1. Ian Sommerville : Software Engineering, Seventh Edition, Pearson Education.

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1. R.S. Pressman : Software Engineering: A Practitioner's Approach, Sixth Edition, McGraw Hill.
2. S.L. Pfleeger, J.M. Atlee : Software Engineering: Theory and Practice, Second Edition, Pearson Education.
3. Douglas Bell : Software Engineering for Students, Fourth Edition, Pearson Education.
4. Pankaj Jalote : An Integrated Approach to Software Engineering, Second Edition, Narosa.
5. K.K. Aggarwal, Yogesh Singh : Software Engineering, Second Edition, New Age International.

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Course No: MCA14602CR

Course Title: Software Testing

UNIT -I

Introduction:

Software Process, Characteristics of a Software Process, Process Models, Project Management Process and its Phases, Software Measurements, Metrics, Scheduling, Estimation.

Software Quality Assurance Concepts and Standards :

Quality Concepts, Quality Control, Quality Assurance, SQA Activities, Software Reviews, Formal

Technical Reviews, Review Guidelines, Software Reliability, Software Safety, Quality Assurance

Standards, ISO 9000, ISO 9001:2000, ISO 9126 Quality Factors, CMM, TQM, Six Sigma, SPICE,

UNIT -II

Risk Management and Change Management:

Software Risks, Risk Identification, Risk Projection, Risk Refinement, The RMMM Plan, Software

Configuration Management, Baselines, Software Configuration Items, SCM Process: Version Control, Change Control, Configuration Audit, Configuration Management for Web Engineering.

UNIT -III

Software Testing:

Testing, Verification and Validation, Test Strategies for Conventional and Object Oriented Software, Unit Testing, Integration Testing, Validation Testing, Alpha and Beta Testing, System

Testing, Recovery Testing, Security Testing, Stress Testing, Performance Testing, Metrics for Source Code, Metrics for Testing, Debugging Process, Debugging Strategies.

Testing Techniques:

Software Testing Fundamentals, Black Box and White Box Testing, Basis Path Testing, Flow Graph Notation, Independent Program Paths, Graph Matrices, Control Structure Testing, Condition Testing, Data Flow Testing, Loop Testing, Graph Based Testing Methods, Equivalence

Partitioning, Boundary Value Analysis, Object Oriented Testing Methods: Applicability of Conventional Test Case Design Methods, Fault-Based Testing, Scenario-Based Testing, Random

Testing and Partition Testing for Classes, InterClass Test Case Design.

UNIT -IV

Testing Process:

Test Plan Development, Requirement Phase, Design Phase and Program Phase Testing, Testing Client/Server Systems, Testing Web based Systems, Testing Off-the-Shelf Software, Testing in

Multiplatform Environment, Testing for Real Time Systems, Testing Security.

SOFTWARE TESTING TOOLS: Taxonomy of testing tools, Methodology to evaluate automated testing tools, Load runner, win runner and rational testing tools, silk test, java testing tools. JMetra, JUNIT, cactus

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1. Ian Sommerville : Software Engineering, Seventh Edition, Pearson Education.
2. R.S. Pressman : Software Engineering: A Practitioner's Approach, Sixth Edition, Tata McGraw-Hill.
3. William E. Perry : Effective Methods for Software Testing, Second Edition, John Wiley & Sons.

References:

1. S.L. Pfleeger, J.M. Atlee : Software Engineering: Theory and Practice, Second Edition, Pearson Education.
2. K.K. Aggarwal, Yogesh Singh : Software Engineering, Second Edition, New Age International.
3. Pankaj Jalote : An Integrated Approach to Software Engineering, Second Edition, Narosa.
4. Nina S Godbole : Software Quality Assurance – Principles and Practice, Narosa.
5. Boris Beizer : Software Testing Techniques, Second Edition, Dreamtech.

Course No: MCA14603CR

Course Title: Software Project Demonstration

Course No: MCA14604CR

Course Title: Software Project

Dissertation

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Course No: MCA14605EA

Course Title: Oracle Database Management 1 and 2

UNIT -I

Overview of database, Pfile, SPfile, Instance, Tablespaces, Datafiles, Other files Oracle managed files, Users, Schemas, Indexes, View, Sequences, Synonyms Privileges, Roles. Clusters, Hash clusters, Internal memory structure, SGA, PGA Background processes, External structure, Redo logs, Control files, Trace files, Alert logs Creating database manually, Client/server databases application, Standby databases, Database file layouts, I/O connections among data files, I/O bottlenecks among all data files Concurrent I/O among background processes, Defining recoverability and performance goals for the system, Defining the system hardware and mirroring architecture, Database space using overview, Implementation of the storage clause, Locally managed Tablespaces, Dictionary managed Tablespaces, Table segments, Index segments, Rollback segments, Temporary Free space, Resizing Datafiles, Control files, Online redo log Files, Deallocate space from segments, Shrinking Datafiles, Shrinking Tables, Clusters and indexes, Oracle managed files(OFA)

UNIT -II

Describe logical structure of a database, Different types of tablespaces, Changing the Tablespaces size, Allocating segments for temporary segments, Temporary segments in permanent Tablespaces, Changing tablespace status, Changing tablespace storage settings Oracle Managed Files (OMFs), Oracle Flexible Architecture(OFA), Different segments types and relationships, Extent usages, Block space utilization, Types of Logical and Physical backups,

Implementations, Integrations of backup procedures, NOARCHIVELOG Mode, ARCHIVELOG Mode Backup Methods –Closed Database Backup, Open Database Backup, Recovery in NOARCHIVELOG Mode, Recovery in ARCHIVELOG Mode, Recovery manager architecture, Recovery Manager Features, Using Recovery manager & RMAN, Using OEM backup manager, Generating lists and reports

UNIT -III

Overview of SQL *Net and Net8, Connect descriptors, Service names and Listeners, Net8 assistants, The multi protocol interchange, Dedicated Server Processes, Oracle Shared Server, Benefits of Oracle Shared Server, Client Server application, Database links, Tuning application design, Tuning SQL, Memory usage, Data storage, Data manipulation, Physical storage, Logical storage, Reducing net traffic using OEM

UNIT -IV

Security capabilities-Account security, Object privileges, System level roles and privileges Implementing security-operating system security, Create user, Drop user, User profiles, Password managements, Preventing password reuse, Setting password complexity, Using password file for authentication, Auditing, Login audits, Action audits, Object audits, Protecting the audit trail

Reference:

1. Oracle 9i DBA Handbook

By-Kevin Lonely, Marlene Theriault.

Oracle Press (Tata McGraw Hill Publication)

2. Oracle OCA Oracle 9i Associate DBA Certification Exam Guide

By- Jason Couchman, Sudheer N. Marishetti Oracle Press (Tata McGraw Hill Publication)

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Course No: MCA14606EA

Course Title: Dot NET Technologies

UNIT I

HTML - Concepts of Hypertext, Versions of HTML, Elements of HTML syntax, Head & Body Sections, Building HTML documents, Inserting texts, Images, Hyperlinks, Backgrounds and Colour controls, Different HTML tags, Table layout and presentation, Use of front size & Attributes List types and its tags, Use of Frames and Forms in web pages

Introduction to .NET Framework, .NET Architecture, CIL and JIT, Assemblies, Managed Code, Garbage Collection, MSIL and Metadata, CLR, CLI, CLS.

UNIT II

VB.NET Concepts: Flow Control, Type Conversions, Complex Variable Types, Arrays, Structs, String Manipulation. Functions, Debugging and Error Handling.

Object Oriented Programming using C#, Collections, Comparisons and Conversions. Generics.

UNIT III:

Basic Windows Programming: Controls, Button, Label and Link Label, Text Box, Radio and Checkbox, RichTextBox, List and CheckBoxes, TreeView and ListView Controls, Tab Control. Menus and ToolBars, SDI and MDI Applications.

UNIT IV

ASP.NET Web Programming: Site Management (Client and Server Side), Styles, Master Pages, Site Navigation, Authentication and Authorization, Web Service.

Data Access: Streams, XML, Connection and Command Objects, Data Reader, Data Adapter, Data Set.

Text Book : Professional VB.NET 2010 by Christian Nagel , Bill Evgen , Jay Glynn Wrox Publications , 2006.

Reference

Dietel&Dietel , “VB.NET , How to Program”,Pearson Education.

Visual Basic.Net by John Sharp & John Jagger, PHI, New Delhi.

Visual Studio .Net by Francisco, Microsoft Publication.

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Course No: MCA14607EA

Course Title: Advanced Java Programming

Unit I

Java EE Overview, • Distributed Multi tiered Applications, Business Components, Containers – services & types, Application Assembly & Deployment – Packaging Applications, Java EE modules, Getting Started with Web Applications, • Model View Controller (MVC)2 Architecture & Packaging EJB Module, Web application development and deployment Steps, Configuring Web application – Web application deployment descriptor (web.xml file), Web Application Archive (*.WAR file) – *.WAR directory structure, • Building & Deploying Applications, Ant build tool

Unit II

Servlet Overview, • Life cycle of Servlet, Handling Client HTTP Request & Server HTTP Response, Initializing Parameters & ServletContext, Initializing a Servlet, ServletContext initialization Parameters, ServletContext Attributes (Context binder, Session Management, Request Dispatcher & Redirecting, Overview of JSP, JSP Architecture & life cycle, Components of Java Server Pages, Implicit Objects & Standard JSP Tags, Scope of JSP objects, • JDBC Overview & Architecture, • Step By Step Usage of JDBC API, • Connecting to MySQL Database in Java, Prepared Statement & JDBC Transactions Developing Web Application with MySQL Database by implementing Java Beans, DAO's & MVC2 Architecture

Unit III

EJB 3.0 overview & Architecture, Features of EJB 3.0, About Session Beans, EJB 3.0 Persistence Programming Model, • Java EE Application Assembly and Deployment – Anatomy of EJB Module & Packaging, • Java Persistence API, • Designing a Java Enterprise Application, Developing EJB Module using Stateless, Stateful Session Beans & Entity Beans. And creating an Enterprise Application Project using Eclipse Indigo 3.7.1 + JBOSS v5.0 + MySQL 5.0

Unit IV

Struts2 Basics & Architecture, Struts Request Handling Life Cycle, Struts2 Configuration, Struts2 Actions, Struts2 Interceptors, Struts2 Results,, Struts2 Value Stack/OGNL, Struts2 Tag Libraries, Struts2 XML Based Validations , Practical (Building Struts2 XML based Validation Application), Struts2 Database Access, Introduction to Hibernate, ORM Overview, Hibernate Environment, Hibernate Architecture & API, Hibernate Configuration, Hibernate Sessions, Persistent Class & Mapping Files, Building Hibernate application, Hibernate Query Language (HQL), Hibernate O/R Mappings – Collection & Association Mappings, Hibernate Annotations, Introduction to Spring Framework Architecture

Reference Books:

1. Core Servlets and Java Server Pages
By- Marty Hall & Larry Brown vol-1 Low price edition
2. The Complete reference Struts
By James Holmes

Additional Reference Books:

[The Java Handbook](#) by Patrick Naughton, Michael Morrison Publisher: Osborne/McGraw-Hill
[Web Developer's Guide to JavaBeans](#) by Jalal Feghhi Publisher: Coriolis Group
[Special Edition Using Enterprise Java](#) , by Jeff Schneider, Rajeev Arora Publisher: Que
[Teach Yourself Java Database Programming with JDBC in 21 Days](#) , by Ashton Hobbs , Publisher: SAMS.net

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[Java Web Magic](#) , by Joseph Sinclair, Lee Callister , Publisher: Hayden

[Mastering Java](#) by Laurence Vanhelsuwe, Andre Yee, Ivan Phillips, Goang-Tay Hsu ,Publisher:
Sybex

[Java Developer's Guide](#) , by Jamie Jaworski , Cary Jardin , Publisher: SAMS.net

Expert One-on-One J2EE Design and Development, [Rod Johnson](#) , Wrox Publications

Professional Java Server Programming J2EE, 1.3 Edition by Ramesh Nagappan, Wrox Publications

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Course No: MCA14608EA

Course Title: Organization Behaviour and Personal Management

Unit – I

Basic Concepts of Management, Definition, Need and Scope, Different schools of management – Behavioral Scientific System, Contingency.

Management theories by - F. W. Taylor, Henry Fayol and Elton Mayo.

Introduction to OB, significance of OB, Emerging challenges, Characteristics historical evolution and competencies of OB. Perception.

Unit - II

Individual Behavior: Managerial implications of Learning, Personality, Motivation and Job Stress. Managerial Skill and Functions - Level of Management- Functions of Management

Unit – III

Personality – Development of personality, Attributes of personality.

Leadership – Definition, Importance, qualities of leaders, types of leaders– autocratic, democratic.

Group Behavior: Group Dynamics and Team Behavior, Organizational Conflict, Communication, Leadership, Managerial Implications of Group Behavior.

Unit – IV

Organizational Behavior: Organizational Structure, Organizational Power and Politics.

Total Quality Management, Case Study.

Organizational Culture, Organizational Change and Development.

Recommended BOOKS:

1. Stephen Robbins, “Organizational Behavior”. Prentice Hall India Pvt. Ltd New Delhi.
 2. Don Hellriegel, John Slocum, Richard Woodman, “Organizational Behavior” South-Western
Thompson Learning.
 3. Fred Luthans, “Organizational Behavior”. McGraw Hill Book Company.
 4. Keith Davis, “Organizational Behavior”, Tata McGraw Hill Publishing Co. Ltd.
 5. Ricky Griffin & Georgy Moorehead, “organizational Behavior”, Hough Co. Boston.
 6. Steven McShane & Van Glinar, “Organizational Behavior”, Tata McGraw Hill Publishing Co. Ltd.
- Stephen R. Covey, “The seven Habits of Highly Effective people”, Simon & Schuster.

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Course No: MCA14609EA

Course Title: Research Methodology

UNIT -I

Research methodology: An Introduction Objectives of Research, Types of Research, Research Methods and Methodology, Defining a Research Problem, Techniques involved in Defining a Problem. Research Design Need for Research Design, Features of Good Design, Different Research Designs, Basic Principles of Experimental Designs, Sampling Design, Steps in Sampling Design, Types of Sampling Design, Sampling Fundamentals, Estimation, Sample size Determination, Random sampling.

UNIT II

Measurement and Scaling Techniques Measurement in Research, Measurement Scales, Sources in Error, Techniques of Developing Measurement Tools, Scaling, Meaning of Scale, Scale Construction Techniques, Methods of Data Collection and Analysis Collection of Primary and Secondary Data, Selection of appropriate method Data Processing Operations, Elements of Analysis, Statistics in Research, Measures of Dispersion, Measures of Skewness, Regression Analysis, Correlation.

UNIT III

Techniques of Hypotheses, Parametric or Standard Tests Basic concepts, Tests for Hypotheses I and II, Important parameters limitations of the tests of Hypotheses, Chi-square Test, Comparing Variance, As a non-parametric Test, Conversion of Chi to Phi, Caution In using Chi-square test.

UNIT IV

Analysis of Variance and Co-variance ANOVA, One way ANOVA, Two Way ANOVA, ANOCOVA Assumptions in ANOCOVA, Multivariate Analysis Technique Classification of Multivariate Analysis, factor Analysis, R-type Q Type factor Analysis, Path Analysis

REFERENCE BOOKS:

1. "Research Methodology", C.R. Kothari, Wiley Eastern.
2. "Formulation of Hypothesis", Willkinson K.P, L Bhandarkar, Himalaya Publication, Bombay.
3. "Research in Education", John W Best and V. Kahn, PHI Publication.
4. "Research Methodology- A step by step guide for beginners", Ranjit Kumar, Pearson Education
5. "Management Research Methodology-Integration of principles, methods and Techniques", K.N. Krishna swami and others, Pearson Education

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Course No: MCA14610EA

Course Title: Research Dissertation

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Syllabus for MCA 1st to 6th semester

Course No: MCA14611EO

Course Title: Open Elective (to be selected from outside department)