

## M.C.A. Commerce (Semester V)

### 501 : Advanced Web Programming

Prefer :- .NET framework using C#

Objectives :-

1. To study how to create web applications using ASP.Net.
2. To study how to access data with ADO.Net.
3. To study different Ajax Controls.

Unit No.	Topic	No. of Lectures	Reference Book
1.	<b>Introduction to C#</b>  1.1 Language features 1.1.1 Variables and Expressions, type conversion 1.1.2 Flow Control 1.1.3 Debugging and error handling, exception handling ( System Defined and User Defined) 1.2. Object Oriented Concepts 1.2.1 Defining classes, class members, 1.2.2 Interfaces, properties, Access modifiers, 1.2.3 Implementation of class, interface and properties 1.3 Concept of hiding base class methods, Overriding 1.4 Defining and using collections, Indexers, iterators 1.5 Type comparison, Value Comparison 1.6 Overloading Conversion operators, as operator 1.7 Functions, Delegates	10	2
2	<b>Creating Web Forms Applications</b>  2.1 Creating an ASP.NET Web Application Project 2.2 Responding to Events 2.3 Event Handling 2.3 Where Does Processing Occur? 2.4 Namespace Fundamentals 2.5 Maintaining State Information	8	3,4,5
3	<b>Creating a User Interface</b>  3.1 Using Controls 3.2 Validating Data 3.3 Navigating Between Forms 3.4 Navigation between Pages	8	3,4,5

4	<b>Storing and Retrieving Data with ADO.NET</b> 4.1 Accessing Data with ADO.NET 4.2 Using Data Sets on Web Forms 4.3 Processing Transactions 4.4 Crystal Reports using wizard and without wizard	8	3,4,5
5	<b>Web Services</b> 5.1 Creating Web Services 5.2 Discovering Web Services 5.3 Instantiating and Invoking Web Services 5.4 Building a Web Application 5.5 Deploying a Web Application 5.6 Creating an Installation Program	6	3,4,5
6	<b>Use of Ajax on the web forms</b> 6.1 Introduction to Ajax Controls 6.2 Using Ajax controls on web forms 6.3 JSON – Array, object, mixing literals, syntax, encoding/decoding, JSON versus XML, server-side JSON tools	8	1
<b>Total no. of Lectures</b>		<b>48</b>	

**Reference Books :**

1. Professional AJAX, Nicholas C Zakas et al, 2nd Edition, Wrox publications,2007.
2. Inside C#, by Tom Archer ISBN: 0735612889 Microsoft Press © 2001, 403 pages
3. Microsoft ASP.NET 4.0 Step by Step - George Shepherd, Microsoft Press
4. ASP.net – The Complete Reference- Tata McGraw Hill
5. ASP.NET Programming – Murach

**M.C.A. Commerce (Semester V)**

**502 : Data Centre Technology**

**Objectives:-**

- 1. To know the basics of data center technology**
- 2. To learn data center clusters.**

<b>Unit No.</b>	<b>Topic</b>	<b>No. of lectures</b>	<b>Books</b>
1	<p><b>Data Center Basics and Requirements</b></p> <p><b>Data Center Basics :</b></p> <p>1.1 What is Data Center?</p> <p>1.2 No Time for Downtime</p> <p>    1.2.1 Causes of Downtime</p> <p>    1.2.2 Cost of Downtime</p> <p>1.3 The High-Availability Continuum</p> <p>    1.3.1 High-Availability Metrics</p> <p>    1.3.2 Availability Choices: How Much Availability is Enough?</p> <p>    1.3.3 Commercial Cluster Management Software</p> <p><b>Data Center Requirements:</b></p> <p>1.4 Data Center Prerequisites</p> <p>1.5 Budget Constraints</p> <p>1.6 Selecting a Geographic Location</p> <p>    1.6.1 Safe from Natural Hazards and Man-Made Disasters</p> <p>    1.6.2 Availability of Local Technical Talent</p> <p>    1.6.3 Abundant and Inexpensive Utilities Such as Power and Water</p>	8	2
2	<p><b>Data Center Design</b></p> <p>2.1 Characteristics of an Outstanding Design</p> <p>2.2 Guidelines for Planning a Data Center</p> <p>2.3 Data Center Structures</p> <p>2.4 Best Practices</p> <p>2.5 Data-Center Design Case Studies</p> <p>    2.5.1 Celebrity Travels</p> <p>    2.5.2 Designer Dresses</p> <p>2.6 Network Infrastructure in a Data Center</p> <p>    2.6.1 Modular Cabling Design</p> <p>    2.6.2 Points of Distribution (PODs)</p> <p>    2.6.3 Internet Access</p> <p>        2.6.3.1 ISP Network Infrastructure</p> <p>        2.6.3.2 ISPWAN Links</p> <p>    2.6.4 Best Practices</p>	8	2

3	<p><b>Data Center – other considerations</b></p> <ul style="list-style-type: none"> <li>3.1 Data Center Maintenance <ul style="list-style-type: none"> <li>3.1.1 Network Operations Center (NOC)</li> <li>3.1.2 Network Monitoring</li> <li>3.1.3 Monitoring Requirements</li> <li>3.1.4 In-Band and Out-of-Band Monitoring</li> <li>3.1.5 Data-Center Physical Security</li> <li>3.1.6 Data-Center Logical Security</li> </ul> </li> <li>3.2 Power Distribution in a Data Center <ul style="list-style-type: none"> <li>3.2.1 Estimating Your Power Needs</li> <li>3.2.2 Uninterruptible Power Supply (UPS)</li> <li>3.2.3 Generators</li> <li>3.2.4 Power Conditioning</li> <li>3.2.5 Single-Phase and Three-Phase Power</li> <li>3.2.6 Power Distribution Units (PDUs)</li> <li>3.2.7 Electrostatic Discharge (ESD)</li> </ul> </li> <li>3.3 Data Center HVAC <ul style="list-style-type: none"> <li>3.3.1 Reasons for Strict Environmental Requirements</li> <li>3.3.2 Need for Energy-Efficient HVAC Systems</li> <li>3.3.3 Air-Conditioning Systems</li> <li>3.3.4 Placement of Hardware Racks</li> <li>3.3.5 Best Practices</li> </ul> </li> </ul>	8	2
4	<p><b>Server Security and Administration</b></p> <ul style="list-style-type: none"> <li>4.1 Server Security <ul style="list-style-type: none"> <li>4.1.1 General Host Security Guidelines</li> <li>4.1.2 UNIX Security Guidelines</li> <li>4.1.3 Internet Security Issues</li> <li>4.1.4 Sources of Information on Security</li> </ul> </li> <li>4.2 Server Administration <ul style="list-style-type: none"> <li>4.2.1 Best Practices for System Administration</li> <li>4.2.2 System Administration Work Automation <ul style="list-style-type: none"> <li>4.2.2.1 What Should Be Automated?</li> <li>4.2.2.2 Types of Automation</li> <li>4.2.2.3 Automation Guidelines</li> <li>4.2.2.4 Common Automation Tools</li> <li>4.2.2.5 Examples of Automation</li> </ul> </li> </ul> </li> </ul>	8	2
5	<p><b>Load Balancing and Data Center Clusters</b></p> <ul style="list-style-type: none"> <li>5.1 Load-Balancing Terminology</li> <li>5.2 Advantages <ul style="list-style-type: none"> <li>5.2.1 Fault Tolerance</li> <li>5.2.2 Service Availability</li> <li>5.2.3 Performance</li> </ul> </li> </ul>	16	2

	5.2.4 Scalability 5.2.5 Flexibility 5.2.6 Cost Savings 5.2.7 Security 5.3 Types of Load Balancing 5.3.1 Software-Based Methods 5.3.2 Hardware-Based Methods <b>Data Center Clusters</b> 5.4 Cluster Architecture 5.4.1 Asymmetric Two-Node Clusters 5.4.2 Symmetric Two-Node Clusters 5.4.3 Complex Cluster Configurations 5.4.4 Many-to-One Failover Model 5.4.5 One-to-Many Failover Model 5.4.6 Any-to-Any Failover Model 5.5 Cluster Requirements 5.5.1 Required Hardware Cluster Components Servers 5.5.2 Private (Heartbeat) Networks 5.5.3 Administrative (Maintenance) Network 5.5.4 Public or Service Network 5.5.5 Shared Disks 5.5.6 Adapter SCSI ID Requirements 5.5.7 Local Disks		
	<b>Total No. of Lectures</b>	<b>48</b>	

**Reference Books:-**

1. Foundation of Green IT: Consolidation, Virtualization, Efficiency, and ROI in the Data Center – by Marty Poniatowski (Author)
2. Administering Data Centers: Servers, Storage And Voice over IP - Kailash Jayaswal  
( open ebboks.com and then type this link  
<http://libro.eb20.net/Reader/rdr.aspx?b=240936>)
3. <http://www.datacenter.tv/>
4. <http://datacenterjournal.com/index.php>
5. <http://www.flipkart.com/administering-data-centers-kailash-jayaswal/8126506881-ou23fy0q5d>

## M.C.A. Commerce (Semester V)

### 503 : Information System Audit

#### Objectives -:

1. To know the basics of Information system audit.
2. To learn system audit related to information.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Concepts of Governance and Management of information System</b>  1.1 Introduction 1.2 Information Technology and Governance 1.3 Key concept of Governance 1.4 Corporate Governance and IT Governance 1.5 IT Governance-Scope and Benefit 1.6 COBIT %5 -A GEIT framework	5	1
2	<b>Information System Concept</b>  2.1 Introduction 2.2 Overview of information system and practical aspects of their application in enterprises processes 2.2.1 System 2.2.2 Classification of System 2.2.3 Information System & it's Components 2.2.4 Information System Control & Audit 2.3 Various types of business applications 2.4 Overview of IT technology	5	2
3	<b>Protection of Information System</b>  3.1 Introduction 3.2 Need for Protection of Information System 3.3 Information System Security 3.4 Information System Control & it's Techniques 3.5 Data Processing Environment Controls 3.6 Cyber Frauds	4	1

4	<p><b>Auditing of Information Systems</b></p> <p>4.1 Introduction</p> <p>4.2 Control and audit</p> <p>    4.2.1 Need for Audit &amp; information Technology</p> <p>    4.2.2 Effects of Computers an Audit</p> <p>4.3 The IS Audit</p> <p>    4.3.1 Responsibility of IS Audit</p> <p>    4.3.2 Functions of IS Audit</p> <p>4.4 Performing IS Audit</p> <p>4.5 IS Audit and Audit Evidence</p> <p>4.6 General Controls</p> <p>4.7 Audit of Application Security Controls</p>	7	4
5	<p><b>Business Continuity Planning and Disaster Recovery Planning</b></p> <p>5.1 Introduction</p> <p>5.2 Need of Business Continuity Management(BCM)</p> <p>    5.2.1 BCP Manual</p> <p>    5.2.2 Scope Of Business Continuity</p> <p>5.3 BCM Policy</p> <p>5.4 Business Continuity Planning</p> <p>5.5 Developing a Business Continuity Plan</p> <p>5.6 BCM Management Process</p> <p>5.7 BCM Information Collection Process</p> <p>5.8 BCM development and Implementation process</p> <p>5.9 BCM Testing and Maintenance process</p> <p>    5.9.1 BCM Testing</p> <p>    5.9.2 BCM Mentenence</p> <p>5.10 Types of Plan</p> <p>    5.10.1 Emregancy Plan</p> <p>    5.10.2 Back-up Plan</p> <p>    5.10.3 Recovery Plan</p> <p>5.11 Disaster Recovery Procedural Plan</p> <p>5.12 Audit of BCP/DRP</p>	8	1
6	<p><b>Acquisition, Development and Implementation of Information System</b></p> <p>6.1 Introduction</p> <p>6.2 Business Process Design</p>	5	2

	6.3 System Development 6.4 System Development Methodology 6.5 System Development Life Cycle(SDLC) 6.6 Auditor's Role in SDLC		
7	<b>Information Technology Regulatory Issues</b>  7.1 The IT Act and its Objectives 7.2 Key Definitions 7.3 Digital Signatures and Electronic Signature 7.4 Electronic Governance 7.5 Penalties and Adjudication 7.6 Offences under IT Act 7.7 Miscellaneous 7.8 Requirements of various Authorities for System Control and Audit 7.9 Security Standards	8	3
8	<b>Emerging Technologies</b>  8.1 Introduction 8.2 Cloud Computing 8.2.1 Cloud Vs Grid Computing 8.2.2 Goals Of Cloud Computing 8.3 Mobile Computing 8.3.1 Mobile Computing Services 8.3.2 Mobile Computing Benefits 8.4 BYOD 8.5 Green IT	6	4
	<b>Total No. of Lectures</b>	48	

**Reference Books:**

1. "Information System Audit and Control By Ron Weber Pearson Education Edition 2009.
2. "Management Information System" By Kenneth C. Laudon, Jane P. Laudon & Rajan Dass Pearson 11<sup>th</sup> Edition
3. "Accounting Information System" By James A. Hall, South Western College Publishing 7<sup>th</sup> Edition.
4. Sandra Senft and Frederick Gallegos "Information Technology Control and Audit" CRC Press, Third Edition 2009.



## M.C.A. Commerce (Semester V)

### 504 : Content Management System

#### Objectives :-

1. To learn structure and functionality of content.
2. How to create pages, creating navigation.
3. To learn principle of moodle and understanding content management.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Defining Data, Information, and Content</b> 1.1 What is Data? 1.2 Content Is Not Data 1.3 Content Is Information Put to Use 1.4 Content Is Information Plus Data 1.5 From Data to Content and Back	3	1
2	<b>Content Has Format, Structure &amp; Functionality</b> 2.1 Storage Format: Storing Information 2.2 Rendering Format: Presenting Information 2.3 Categorizing Formatting 2.3.1 Formatting for effect 2.3.2 Formatting by method 2.3.3 Formatting by scope 2.4 Structure Is Important 2.5 How to Categorize Structure 2.5.1 Structure by purpose 2.5.2 Structure by type 2.5.3 Structure by scope 2.6 What Is Functionality? 2.7 Monolithic versus Mix-and-Match Functionality	4	1
3	<b>But What Is Content Really?</b> 3.1 Content, Context, and Meaning 3.2 Creating Context Rules 3.3 Content Organization Starts with Purpose 3.4 Content Is Named Information	3	1
4	<b>Introduction to Joomla</b> 4.1 Introduction 4.2 Joomla features 4.3 How joomla works ? 4.4 Joomla ! The platform 4.5 Components, Modules and Plugins	5	1

5	<b>Administering Joomla</b> 5.1 Presentation Administration 5.2 Content Administration 5.3 System Administration	4	2
6	<b>Working with Joomla</b> 6.1 Adding articles 6.2 Adding menus to point to content 6.3 Installing new templates 6.4 Creating templates 6.5 Adding a Module and Component 6.6 Modifying the existing templates 6.7 Creating templates with web editors 6.8 Creating real templates	8	2
7	<b>Understanding Content Management</b> 7.1 Defining Content Management 7.2 CM Is Distributing Business Value 7.3 CM Is a Balance of Organizational Forces 7.4 CM Is the Combination of Content-Related Disciplines 7.5 CM Is Collection, Management, and Publishing 7.6 CM is a Computer Infrastructure 7.6.1 The static Web site 7.6.2 The dynamic Web site 7.6.3 The Web CMS 7.6.4 The full CMS 7.6.5 The enterprise CMS	8	1
8	<b>Introducing the Major Parts of a CMS</b> 8.1 A CMS Overview 8.2 The Collection System 8.2.1 Authoring 8.2.2 Acquiring 8.2.3 Converting 8.2.4 Aggregating 8.2.5 Collection services 8.3 The Management System 8.3.1 The repository 8.3.2 The administration system 8.3.3 The workflow system 8.3.4 Connections 8.4 The Publishing System 8.4.1 Publishing templates 8.4.2 Publishing services 8.4.3 Connections 8.4.4 Web publications 8.4.5 Other Publications	9	1

9	<b>Knowing When You Need a CMS</b> 9.1 Gauging the Amount of Content 9.2 Managing the Size of the Contribution Base 9.3 Anticipating the Amount of Change 9.4 Knowing the Number of Publications	4	1
	<b>Total no. of Lectures</b>	<b>48</b>	

**Reference Books:**

1. Content Management Bible, 2nd Edition- By Bob Boiko
2. .Beginning Joomla – By Dan Rahmel.
- 3 The official Joomla! Book – By Jennifer Marriott , Elin Waring.
4. [www.moodle.org](http://www.moodle.org)

## M.C.A. Commerce (Semester V)

### 506 : Mobile Communication

#### Objectives :-

1. To learn the concept of mobile computing and Networking.
2. To understand the android Technology.

Unit No.	Topic	No. Of Lectures	Reference Books
1	<b>Introduction to Mobile Computing</b> 1.1 Introduction and need for Mobile computing 1.2 Mobility and portability 1.3 Mobile and Wireless devices 1.4 Applications 1.5 Brief History of wireless communication	3	1,4
2	<b>Wireless Transmission</b> 2.1 General Concepts of multiplexing and modulation 2.2 Spread Spectrum 2.3 Cellular Systems 2.4 Medium Access Control Layer 2.4.1 MAC Introduction 2.4.2 hidden and exposed terminals 2.4.3 near and far terminals 2.4.4 General Concepts and comparison of SDMA, FDMA, TDMA , CDMA 2.5 GSM 2.5.1 Mobile Services (Bearer, Tele-and- supplementary services) 2.5.2 GSM System Architecture 2.5.3 Radio subsystem 2.5.4 Network and switching subsystem 2.5.5 Operation subsystem 2.5.6 Protocols 2.5.7 Localization and calling 2.5.8 Handover	15	1,3
3	<b>Mobile IP</b> 3.1 Goals, assumptions and requirements 3.2 Entities and terminologies	12	1

	3.3 Agent Discovery 3.4 Registration 3.5 Tunneling and encapsulation 3.6 Optimization 3.7 Reverse Tunneling 3.8 IPv6		
4	<b>Mobile TCP</b>  4.1 Traditional TCP 4.2 Congestion Control, Slow start, Fast retransmit / 4.3 Fast recovery 4.4 Implications on mobility 4.5 Classical TCP improvements 4.6 Indirect TCP, Snooping TCP, Mobile TCP, Fast retransmit / Fast recovery, 4.7 Transmission / Timeout freezing, Selective Retransmission, Transaction oriented TCP	10	1
5	<b>Android</b>  5.1 Overview and evolution of Android 5.2 Features of Android 5.3 Android architecture 5.4 Components of an Android Application, Manifest file 5.5 Android Activity and Service Lifecycle \ 5.6 Controls(Push Button, Radio Button, Check Box, List Box, Spinner)	10	2
<b>Total no. of Lectures</b>		<b>48</b>	

**Reference Books:**

1. Mobile Communications Jochen Schiller, Pearson Education, 2nd Edition, ISBN : 9780321123817
2. Beginning Android Application Development by Wei-Meng Lee Wiley India ISBN:9788126531066
3. Mobile Networks GSM and HSCSD- Nishit Narang, Sumit Kasera, TataMcGrawHill
4. Mobile Computing: Technology, Applications, and Service Creation by Asoke K.Talukder,

## M.C.A. Commerce (Semester V)

### 507 : System Simulation and Modeling

#### Objectives:-

1. To study how system simulation works.
2. To study different models with case study.

Unit No.	Topic	No. of Lectures	Reference Books
1	<b>Introduction to Simulation</b>  System and System environment, Components of system, Type of systems, Type of models, Steps in simulation study, Advantages and Disadvantages of simulation  <b>Simulation Examples:</b> Simulation of Queuing systems, Other examples of simulation  <b>General Principles:</b> Concepts of discrete event simulation, List processing	8	1
2	<b>Simulation Software</b>  History of simulation software, Desirable software features, General-purpose simulation packages, Object oriented simulation, Trends in simulation software	8	1
3	<b>Simulation Models</b>  <b>Statistical Models in Simulation:</b> Useful statistical model, Discrete distribution, Continuous distribution, Poisson process, Empirical distribution  <b>Queueing Models:</b> Characteristics of Queueing systems, Queueing notations, Long run measures of performance of Queueing systems, Steady state behavior of infinite population Mark ovian models, Steady state behavior finite population model, Network of Queues	12	1,2

4	<p><b>Random Number Generation</b></p> <p>Properties of random numbers, Generation of pseudo random numbers, Techniques for generating random numbers, Tests for random numbers</p> <p><b>Random Variate Generation:</b> Inverse transform technique, Convolution method, Acceptance rejection techniques</p> <p><b>Input Modeling:</b> Data Collection, Identifying the Distribution of data, Parameter estimation, Goodness of fit tests, Selection input model without data, Multivariate and Time series input models</p> <p><b>Verification and Validation of Simulation Model:</b> Model building, Verification, and Validation, Verification of simulation models, Calibration and Validation of models</p> <p><b>Output Analysis for a Single Model:</b> Types of simulations with respect to output analysis, Stochastic nature of output data, Measure of performance and their estimation, Output analysis of terminating simulators, Output analysis for steady state simulation</p>	14	1,2,3,4
5	<p><b>Comparison and Evaluation of Alternative System Design</b></p> <p>Comparison of two system design, Comparison of several system design, Meta modeling, Optimization via simulation</p> <p><b>Case Studies:</b> Simulation of manufacturing systems, Simulation of computer systems, Simulation of super market, Simulation of pert network</p>	6	1,2,3,4
<b>Total No. Of Lectures</b>		<b>48</b>	

**Reference Books:**

1. Geffery Gordon, "System Simulation", PHI
2. Bernard Zeigler, Herbert Praehofer, Tag Gon Kim, "Theory of Modeling and Simulation", Academic Press
3. Narsing Deo, "System Simulation with Digital Computer", PHI
4. Donald W. Body, "System Analysis and Modeling", Academic Press Harcourt India
5. W David Kelton, Randall Sadowski, Deborah Sadowski, "Simulation with Arena", McGRAW-HILL.

**M.C.A. Commerce (Semester V)**  
**508 : Business and Professional Skills**

**Objectives:-**

1. **To Build Confidence among the students &enhance Competitiveness by projecting positive image of themselves.**
2. **To learn the etiquette required for meeting business interaction scenario.**

Unit No.	Topic	No. of Lectures	Reference Books
1	<p><b>Effective Communication in Business</b></p> <p>1.1. Concept, Importance &amp; Benefits of Effective Communication.</p> <p><b>1.2. Principles of Non Verbal Communication :</b> Professional Dressing &amp; Body Language, Debates &amp; Quiz, Types of Managerial Speeches:-Speech of Introduction, Speech of Thanks, Occasional Speech, Theme speech.</p>	10	1,2,4,5
2	<p><b>Business Style &amp; Professional Image</b></p> <p>2.1. Dress Code</p> <p>2.2 Guideline for business attire : Differentiate among the dressy casual, semiformal, formal &amp; black tie dress code ,grooming for success, multicultural dressing.</p>	8	6
3	<p><b>Job Application Process</b></p> <p>3.1. Self Assessment</p> <p>3.2. Market Assessment</p> <p>3.3. Resume (Vitae, Qualification brief and Cover Letter to Resume)</p> <p>3.4. Successful Preparation for Job Interview.(Steps to be follow)</p> <p>3.5. Successful Follow-up Message after Interview</p>	10	1
4	<p><b>Business etiquettes</b></p> <p><b>4.1.</b> ABC'S of etiquettes, Developing culture of Excellence , Role of good manners in Business</p> <p><b>4.2. Making Introduction &amp; Greeting people :</b> Greeting component, protocol of shaking hands, introductions, addressing individuals.</p> <p><b>4.3. Meeting &amp; Board Room Protocol :</b> Guidelines for Planning a Meeting, Before the Meeting, On the day of Meeting, Guideline for effective Meeting- For the Chairperson, For Presenters, For Attendees</p>	10	4,6



5	<b>Internal Communication</b> 5.1. Letter Within the Organization. 5.2. Letter to Staff 5.3. Circulars, Memos, Official Notes. 5.4. Representations & Suggestions. 5.5. Motivational Communication 5.6. Reminder & Follow-up.	10	3,7
	<b>Total no. of Lectures</b>	<b>48</b>	

**Reference Books:-**

1. Effective business communication: Herta A.Murphy, Herbert W.Hildebrandt,Jane P.Thomas .
2. Communication by C.S. Rayadu,HPH 8<sup>th</sup> revised Edition 2009.
3. Business correspondence & report writing by R.C.Sharma & Krishna Mohan,Tata McGraw Hill,4<sup>th</sup> Edition 2011.
4. Business communication by Urmila Raj.
5. Business communication by vishwanathan.
6. Business etiquettes by David Robinson,kogan Page.
7. Business communication by R.K.Madhukar.