



AHMEDABAD UNIVERSITY

AES INSTITUTE OF COMPUTER STUDIES

Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Second Year MCA

Trimester V

Subject Code: MCA 251

Subject: Web Development using ASP.NET

Lectures per week	: 2 Lectures + 1 Tutorial
Practical Sessions per Week	: 4
Internal Assessment	: 50
External Assessment	: 50 Theory + 50 Practical
Total Credit	: 8

Prerequisite:

Awareness of Object-oriented programming concept and VB.NET

Aim:

The course is aimed to introduce the web based application development using ASP.NET.

Objectives:

- (1) To understand the concept of web based application development using ASP.NET and code behind VB.NET.
- (2) To develop web applications more efficiently.
- (3) To make students familiar with RAD like Visual Studio 2010.
- (4) To provide knowledge of database based web application development.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Introduction to ASP.NET Overview of ASP.NET - ASP.NET page lifecycle - understanding IDE components - Types of projects - Code sharing - Application directory structure Working with web form and controls Standard controls : Label, Textbox - Button - Image - ImageButton - Listbox - DropDownList - Hyperlink - LinkButton - CheckBox - RadioButton - Calendar - AdRotator – FileUpload. Navigation controls : Treeview – Menu	9	15
Unit II	Introduction to ASP.NET AJAX and control tool kit : Timer - ScriptManager - UpdatePanel - CalendarExtender - CollapsiblePanelExtender - FilterTextboxExtender - ValidatorCalloutExtender - PasswordStrengthExtender – AutoCompleteExtender	9	10



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Validation controls :

RequirefieldValidator - RangeValidator - Regular
ExpressionValidator - CompareValidator - Custom
Validator – ValidationSummary

Unit III	Working with data Data objects : Connection - Command - DataAdapter - Dataset - DataReader Data Controls : Gridview - Formview Using States and Global.asax file Introduction to LINQ Exception handling and debugging Design Issues : Master pages - Themes and skins	9	15
Unit IV	Security - Login controls : Login control - LoginView - LoginStatus - LoginName - PasswordRecovery - CreateUserWizard - ChangePassword Working with Custom Controls. Embedding crystal reports in ASP.NET	9	10
	Total	28	50

Outcomes:

Upon the completion of this course, the student will be able to:

- (1) Develop web based application using object-oriented programming concepts.
- (2) Access and manipulate data by using Microsoft ADO.NET.
- (3) Resolve syntax, run-time, and logic errors by using the debugger and exception handling.
- (5) Work with AJAX control toolkit.
- (6) Create and use Crystal Reports.
- (7) Create consistently designed applications using Master Pages and Themes.

Reference Books:

- (1) ASP.NET 3.5 Black Book – Kogent Solutions. Inc – Dreamtech Press, New Delhi.
- (2) Beginning ASP.NET 3.5 in c# and VB – Imar Spaanjaars - Wiley Publication, New Delhi

Additional Reference Books:

- (1) Microsoft ASP.NET 3.5 – George Shepherd – Prentice Hall of India, New Delhi.
- (2) Using business objects Crystal Reports XI – Neil FitzGerald, Kelly Byrne - Techmedia Publication.



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Topics to be covered in Practical Sessions

Total Marks: 50

Sr. No.	Topics to be Covered	No. of Practicals
1.0	Controls	14
	1.1 Standard Controls	
	1.1.1 Label, TextBox, Button and LinkButton	
	1.1.2 Image and ImageButton	
	1.1.3 ListBox, DropDownList and HyperLink	
	1.1.4 CheckBox and RadioButton	
	1.1.5 Calendar, AdRotator and FileUpload	
	1.2 Navigation Controls	
	1.2.1 TreeView	
	1.2.2 Menu	
	1.3 Validation Controls	
	1.3.1 RequiredFieldValidator	
	1.3.2 RangeValidator	
	1.3.3 RegularExpressionValidator	
	1.3.4 CompareValidator	
	1.3.5 CustomValidator	
	1.3.6 ValidationSummary	
	1.4 AJAX Controls	
	1.4.1 Timer	
	1.4.2 ScriptManager and UpdatePanel	
	1.4.3 CalendarExtender	
	1.4.4 CollapsiblePanelExtender	
	1.4.5 FilterTextboxExtender	
	1.4.6 ValidatorCalloutExtender	
	1.4.7 PasswordStrengthExtender	
	1.4.8 AutoCompleteExtender	
2.0	ADO.NET and Exception Handling	10
	2.1 Data objects :	
	2.1.1 Connection and Command	
	2.1.2 DataAdapter	
	2.1.3 Dataset and DataReader	
	2.2 Data Controls :	
	2.2.1 Gridview	
	2.2.2 Formview	
	2.3 Exception handling and debugging	



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3.0	LINQ	4
	Designing Themes, Skins and Master Pages	
4.0	Security, Custom controls and Crystal reports	8
	3.1 Login controls :	
	3.1.1 Login control	
	3.1.2 LoginView, LoginStatus and LoginName	
	3.1.3 PasswordRecovery and ChangePassword	
	3.1.4 CreateUserWizard	
	3.2 Creating and using Custom controls	
	3.3 Creating crystal reports in ASP.NET	
	Total	36



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Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Second Year MCA

Trimester V

Subject Code: MCA252 Subject: Object Oriented Analysis and Design using UML

Lectures per week	: 3 Lectures + 1 Tutorial
Practical Sessions per Week	: 2
Internal Assessment	: 50 Marks
External Assessment	: 50 Theory + 50 Practical Marks
Total Credit	: 6

Prerequisite: Object Oriented Programming with C++

Aim:

To learn and apply object oriented analysis and design using UML to model object oriented software systems.

Objectives:

1. To learn fundamental principles of object oriented analysis and design using UML language.
2. To learn software modeling concepts and understand benefits of creating visual models of a system with UML.
3. To apply UML language to create different views of a system with different diagrams in UML using CASE tools like [IBM Rational Software Architect \(RSA\)](#).

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Introduction to UML Introduction to modeling, types of models, advantages of models, abstraction in modeling, overview of the UML, conceptual model of UML, building blocks of the UML, rules of the UML, common mechanisms in the UML, Modeling a System's Architecture, Software development life cycle, Iterative development and unified process Relationships Different types of Relationships in UML (Dependency, Generalization, Association , Aggregation, Realization)	9	09
Unit II	Common Mechanisms Stereotypes, Tagged values, Constraints	9	15



Diagrams

Types of UML Diagrams, Structural diagrams, Behavioral diagrams, modeling different views of a system,

Class diagram

Classes, attributes, operations, class responsibilities, interfaces, collaborations, drawing class diagrams, identifying attributes and operations, multiplicity of relationship among classes

Class modeling concepts: association class, role names, ordering, aggregation v/s composition, generalization v/s specialization

Advanced Structural modeling

Visibility (public, private and protected attributes), static variables, abstract class, root, leaf classes, multiple inheritance, constraints, Classifiers, Special Properties of attributes, Operations, subsystem, forward and reverse engineering,

Design Patterns

Introduction to design patterns, Types of design patterns: creational, structural, behavioral and their advantages, Representing design patterns with UML class diagram

Unit III	Modeling the requirements of a system using Use cases and use case diagram	9	14
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Use cases , Use cases and Actors, Use cases and flow of events, Use cases and Scenarios, Use cases and Collaborations, Organizing Use cases using relationships, Use case Diagrams, common uses, modeling the context of a system, Forward and Reverse Engineering.

Behavioral modeling

Interactions, Links, Messages, Sequencing, Object creation, modification and destruction, Interaction diagrams (sequence diagram, collaboration diagram),

Sequence Diagram

Object lifeline, focus of control, modeling the workflow a system using sequence diagram, modeling flow of control by time ordering



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Unit IV	Collaboration Diagram	9	12
	Path stereotype, sequencing of messages, common uses, modeling the flow of control by organization, forward and reverse engineering.		
	Activity Diagram		
	Action states and activity states, transitions, branching, forking and joining, swim lanes, object flow, drawing activity diagrams, common uses		
	UML Case Study		
	Understanding and documenting the requirement's of a system, problem definition, Use case driven architecture, preparing the different UML diagrams of the system using IBM RSA		
	Total	36	50

Outcomes:

Upon the completion of this course, the student will be able to:

1. Apply object-oriented modeling concepts in analyzing and designing a software system.
2. Understand how to implement basic structural modeling and behavioral modeling of a real-life application.
3. Draw different types of UML diagrams using IBM Rational Software Architect as CASE tool.

Deleted: IBM Rational Rose/

Reference Books:

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, Ivar Jacobson, Pearson Education, 2nd Edition, 2005.
2. Object-Oriented Modeling and Design with UML by Michael Blaha, James Rumbaugh, Pearson Education Publication, 2nd Edition.
3. Essentials of Visual Modeling with UML 2.0, Student Manual, IBM Rational University, 2007.

Additional Reference Books and Resources:

1. Learning UML, S S Alhir, Shroff Publishers, 1st Edition, 2003.
2. UML 2 and the Unified Process, J Arlow and I Neustad), Pearson Education Limited, 2nd edition, 2007.
3. Visual Modeling with IBM Rational Software Architect and UML: developerWorks Series, Terry Quatrani and Jim Palistrant, IBM Press, 2006.
4. Applying UML and Patterns by Craig Larman, Pearson Education, 3rd Edition.
5. Design Patterns: Elements of Reusable Object-Oriented Software by ErichGamma, RichardHelm, RalphJohnson, and JohnVlissides, Pearson Higher Education, 1st edition.
6. UML Bible, Tom Pender, Wiley Publications, 1st Edition, 2003.
7. Object Modeling Group (OMG) UML current version (UML 2.3) specifications available at <http://www.omg.org/spec/UML>



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Subject Code: MCA 252 Subject: Object Oriented Analysis and Design using UML

Practical Sessions per Week : 2

Topics to be covered in Practical Sessions

Total Marks: 50

Sr. No.	Topics to be Covered in Practical	No. of Practicals
1.0	Basic Introduction to CASE tools for OOAD Introduction to IBM Rational Suite and IBM Rational Software Architect, features, different view of RSA, Rational Unified Process, RSA GUI and parts of screen	4
2.0	Analysis Modeling Use Case Diagrams Basic flows and alternative flows Activity Diagram	5
3.0	Structural Modeling Diagrams Class Diagram Object Diagram Code generation using IBM RSA	4
4.0	Behavioral Modeling Diagrams Sequence Diagrams Collaboration Diagrams (Communication diagram)	5
	Total	18



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Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

Second Year MCA :

Trimester V

Subject Code: MCA 253 Subject: Managerial Economics

Lectures per week (hours) : 4 Lectures
Practicals per week (hours) : 0
Internal Assessment : 50 Marks
External Assessment : 50 Marks
Total Credits : 4

Aim:

The course is aimed to provide basic understanding of economic concepts and methodologies and the economic environment influencing managerial decisions of a firm. I

Objectives:

- (1) To introduce student to the important categories of decision problems for which managerial economics is useful.
- (2) To understand the determinants of demand and the skills of market forecasting.
- (3) To acquaint the students with the concept of relevant costs in the context of decision making in organizations.
- (4) To represent an important area of decision making in the firm.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Definition, Nature and Scope of Managerial Economics Theory of Demand Definition, Demand Schedule, Demand Function, Law of Demand, Classification of Goods with reference to Demand, Elasticity of Demand Demand Forecasting / Sales Forecasting Purpose of Short Term and Long Term Forecasting, Method of Forecasting – Survey of Buyer’s Intentions, Delphi Method, Collective Opinion, Analysis of Time Series and Trend Projections	9	12
Unit II	Production Function Definition, Laws of Returns, IsoQuants, ISO Product Map, ISO Cost Line, Least Cost Combination Cost Analysis Cost Concepts, Cost Function, Short Run Cost, Average Fixed Cost, Average Variable Cost, Marginal Cost, Long Run Average Cost Curves	9	13



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	Market Structure and Pricing		
	Market Concepts, Types of Markets – Perfect Competition, Imperfect Competition – Monopolistic Competition, Oligopoly and Monopoly.		
Unit III	Theory of Money and Interest	9	12
	Definition, Barter System, Functions and Dangers of Money		
	Banking		
	Classification of Banks, Functions of Commercial Banks, Central Bank, Methods of Credit Control		
	Theory of Inflation		
	Definition, Characteristics, Types of Inflation on Base of Speed, Anticipation, Cause, Time, Causes of Inflation, Effects of Inflation, Various Policy to Control Inflation		
Unit IV	National Income	9	13
	Concept of National Income, Measurement of National Income		
	Theory of International Trade		
	Difference between Internal and International Trade, Balance of Payments, Equilibrium, Dis-Equilibrium and Adjustment of Balance of Payment		
	Trade and Business Cycle		
	Trade Cycle, Phases of trade cycle and Characteristics of Trade Cycle.		
	Total	36	50

Outcomes:

Upon the completion of this course, the student will be able to:

- (1) Understand the economic concepts applicable to a firm and its operations under the effect of macro-economic environment
- (2) Apply the micro-economic concepts to organizational decision making to maximize the profitability

Reference Books:

- (1) Managerial Economics, Concepts and Cases V L Mote, Samuel Paul and G S Gupta, Tata McGraw-Hill Publishing Company, New Delhi, 1st Edition.
- (2) Managerial Economics, Dwivedi D N, Vikas Publishing House Pvt Ltd, 7th Edition.

Additional Reference Books:

- (1) Managerial Economics - Varshney and Maheshwari, S. Chand and Company Limited, 2nd Edition.
- (2) Indian Economics – K K Dewett, S. Chand and Company Limited, 1st Edition.
- (3) Domnick Salvatore: Managerial Economics In a Global Economy, 4th Edition.



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Master of Computer Applications (M.C.A.) – W.E.F. – June, 2011

First Year MCA :

Trimester V

Subject Code: MCA 254 Subject: Data Communication and Networking

Lectures per week (hours) : 3 Lectures + 1 Tutorial
Practicals per week (hours) : 4
Internal Assessment : 50 Marks
External Assessment : 50 Theory + 50 Practical Marks
Total Credits : 8

Prerequisite: Introduction to Programming using C, Linux.

Aim:

The course is aimed to introduce the digital data communication and network model.

Objectives:

- (1) To understand the concept of data communication.
- (2) To learn the concepts of network security.
- (3) To make students familiar to data transmission through simulation.

Unit No.	Topics to be Covered	No. of Lectures	Marks per Unit
Unit I	Introduction to Computer Networks Network Hardware and Software, Uses of Computer networks, Reference models, Examples. The Physical Layer Guided transmission media, Wireless transmission, Mobile telephone system and Cable television, layer- 3 switch	9	10
Unit II	The Data Link Layer Design issues, Error detection and corrections, Elementary data link protocols, Sliding window protocols The Medium Access Control Sub layer The Channel allocation problem, Multiple Access protocols, Ethernet, Wireless LANs, Broadband Wireless	9	15
Unit III	Network Layer. Design issues, Routing algorithms, Congestion control algorithms	9	15



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The Transport Layer

Transport services, elements of transport protocols

Unit IV	The Application Layer DNS and Electronic Mail	9	10
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Network Security

Cryptography, Symmetric-Key algorithms and Public-Key algorithms

Total		36	50
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Outcomes:

Upon the completion of this course, the student will be able to:

1. Develop network applications efficiently.
2. Scrutinize & solve network related problems.
3. Design and setup network.

Reference Books:

- (1) Computer Networks, Andrew S. Tanenbaum, PHI , 4th Edition.
- (2) Computer Networking, James F. Kurose and Keith W. Ross, Pearson Education.

Additional Reference Books:

- (1) Data Communication and Networking, Behrouz A Forouzan, Tata Mc-Graw Hill 4th Edition.
- (2) Data Communications- Fred Halsall-Widjaja, Tata Mc-Graw Hill, 5th Edition.

Subject Code: MCA 254

Subject: Data Communication and Networking

Practicals per week (hours) : 4

Total Marks (Practical Exam) : 50

Topics to be covered in Practical Sessions

Sr. No.	Topics to be Covered	No. of Practicals
1.0	Programs on implementation of Data Transparency techniques (Character count, byte stuffing and bit stuffing)	8
2.0	Programs on implementation of all 6 data-link layer protocols	10
3.0	Programs on implementation of various Error detection and Error Correction techniques	8
4.0	Programs on implementation of various cryptography methods.	10
	Total	36



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Second Year MCA :

Trimester V

Subject Code: MCA 255

Subject: Seminar and Professional Skills Development

Lectures per week (hours) : 3 Lectures

Practicals per week (hours) : 0

Internal Assessment : 25 Marks

External Assessment : 75 Marks

Total Credits : 3

Prerequisite: Basic Knowledge of Information Technology

Aim:

The course is aimed to increase the knowledge of students in various areas, to build up their confidence level with professional presentation skills, and to make them aware about current trends and technologies in the market.

Objectives:

- (1) To provide a platform for discussing issues, exchanging ideas and experience and promoting better understanding on various topics
- (2) Cultivation of innovative mind and development of effective communication and presentation skills.
- (3) To prepare professional resume.
- (4) To prepare students for Mock, HR and Technical interviews.
- (5) To develop group discussion, presentation, communication and soft skills.
- (6) To develop behavior, manners and etiquettes in professional work environment.

Outcomes:

Upon the completion of this course, the student will be able to:

- (1) Student will be able to use library resources effectively to achieve all the objectives.
 - (2) Do significant independent research and study of a particular topic.
 - (3) Competently discuss and present ideas about various topics.
 - (4) Face the individual universe with other world-views..
- Identify and apply basic tools and planning concepts to prepare a seminar.



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If You Can

*If you can keep your head when all about you
Are losing theirs and blaming it on you.
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;

If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or being hated, don't give way to hating,
And yet don't look too good, nor talk too wise:

If you can dream and not make dreams your master;
If you can think - and not make thoughts your aim;
If you can meet with Triumph and Disaster
And treat these two impostors just the same;

If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools:

If you can make one heap of all your winnings
And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breathe a word about your loss;

If you can force your heart and nerve and sinew
To serve your turn long after they are gone,
And so hold on when there is nothing in you
Except the Will which says to them: 'Hold on!'

If you can talk with crowds and keep your virtue,
Or walk with Kings - nor lose the common touch,
If neither foes nor loving friends can hurt you,
If all men count with you, but none too much;

If you can fill the unforgiving minute
With sixty seconds' worth of distance run,
Yours is the Earth and everything that's in it,
And - which is more - you'll be a Man, my son!*

“The man who has confidence in himself gains the confidence of others.”