

# SARDAR PATEL UNIVERSITY

## BCA

### Proposed Syllabus under CBCS

*(effective from June 2010)*

SEMESTER-VI		
	TITLE	NO. OF CREDITS
Core Courses	US06CBCA01 : Server-side Web Programming	4
	US06CBCA02 : Computer Networks	4
	US06CBCA03 : Business Information Systems	4
	US06CBCA04 : Practicals	6
Foundation Courses	US06FBCA01 : Systems Software	4
Elective	US06EBCA01 : Information Security	} 2
	US06EBCA02 : Multimedia Application Development	
<b>Total Credits</b>		<b>24</b>

**Course : US06CBCA01**  
**(Server-side Web Programming)**

**Credits** : 4  
**Lectures per week** : 4

**All units carry equal weightage.**

**1. Introduction**

- ASP.NET – Introduction, overview of ASP.NET framework
- Understanding ASP.NET controls
- Understanding ASP.NET pages
- Advantages of ASP.NET
- Web Servers – introduction and role
- Internet Information Server (IIS) – introduction
- ASP.NET application - introduction
- Creating ASP.NET page, understanding the ASP.NET page execution
- The Page class

**2. ASP.NET Standard Controls and Validation Controls**

- Using standard controls : Label, TextBox, CheckBox, Button, RadioButton, Linkbutton, ImageButton
- Client side validation vs. server side validation
- Overview of the validation controls
- Using RequiredFieldValidator control, RangeValidator control, CompareValidator control, RegularExpressionValidator control, CustomValidator control, ValidationSummary control
- Overview of various rich controls

**3. State Management and Advanced Concepts**

- Introduction
- View State : example, making view state secure, retaining member variables, storing custom objects
- Transferring information, custom cookies, session state, session state configuration, application state
- The Global.asax Application file
- Login Controls
- Site Navigation and Site Maps

**4. Database Processing and Security**

- ADO.NET Architecture - connected and disconnected
- ADO.NET basics – data provider, connection, command, DataReader, DataSet, DataAdapter
- Data Binding
- Introduction to data controls – GridView, DetailsView, FormView, Repeater, DataList
- Website Security

**MAIN REFERENCE BOOKS :**

1. Matthew MacDonald : Beginning ASP.NET 2.0 in VB 2005 by Apress, First Indian Reprint 2006
2. Stephen Walther : ASP.NET 2.0 Unleashed by Sams Publication
3. Scott Mitchell : Teach Yourself ASP.NET 2.0 in 24 Hours by Sams Publication

**BOOKS FOR ADDITIONAL READING :**

1. Steven Holzner : VB.NET Black Book by Dreamtech publication

**Course : US06CBCA02**  
**(Computer Networks)**

**Credits** : 4  
**Lectures per week** : 4

**All units carry equal weightage.**

**1. Introduction**

- Computer networks : definition and advantages
- Classification of computer networks
- Introduction and differences among Local Area Networks (LANs), Metropolitan Area Networks (MANs), Wide Area Networks (WANs)
- Uses of Computer Networks
- Meaning of the basic terms : topology, data rate, modulation rate, spectrum, bandwidth, server, host

**2. Data Communication Fundamentals**

- Various types of transmission media - guided transmission media : magnetic media, twisted pair, coaxial cables, fiber optics
- Introduction to the concept of modulation, types of modulation, serial transmission vs. parallel transmission, synchronous transmission v/s asynchronous transmission, circuit switching, packet switching
- The concept of multiplexing, Frequency Division Multiplexing (FDM) vs. Time Division Multiplexing (TDM)

**3. Layered Protocols and Satellite Communication**

- Protocol significance and hierarchies
- Design issues for the layers
- The OSI Reference model
- Examples of protocols for different layers of the OSI model
- Introduction to wireless networks
- Communication satellites
- Introduction to geosynchronous satellites

**4. Local Area Network Technology and Networking Devices**

- Types and characteristics of Local Area Networks
- LAN Topologies : Bus, Star, Ring, Tree, Complete (Mesh)
- Introduction to Carrier Sense Multiple Access (CSMA) protocol for LAN
- functions of various networking components : modems, amplifiers, repeaters, hubs, switches, bridges, routers, gateway

**MAIN REFERENCE BOOKS :**

1. Behrouz Forouzan, Introduction to Data Communications and Networking, Tata McGraw-Hill Publishing Co. Ltd., New Delhi, 1998.
2. Tanenbaum A. S., Computer Networks, Prentice-Hall of India Pvt. Ltd., New Delhi, 1997.
3. Stallings W., Data and Computer Communications, 3<sup>rd</sup> Edition, Macmillan Pub. Company, New York, 1991.

**Course : US06BCA03**  
**(Business Information Systems)**

**Credits** : 4  
**Lectures per week** : 4

**All units carry equal weightage.**

**1. Introduction to Information Systems and Information Technology**

- Introduction to Information Systems, Information as a Corporate Scenario
- Managerial effectiveness and Information, Information needs and managerial levels, Process of generation of information
- Introduction and meaning of Information Technology
- Role of IT in a Business, IT infrastructure and Resources
- Issues involved in IT Implementation
- Advantages and disadvantages of IT in a business
- Quality of Information

**2. Business Information Systems**

- Introduction
- The evolution and types of Information Systems, Users of Business Information Systems, Components of a Business Information Systems
- IT support at different Organizational Levels
- Managing Information Technology in Organizations

**3. Business Functions and Decision Support Systems (DSS)**

- Basic business functions
- Marketing function and information needs, Finance function and information needs, Production function and information needs, Human resource function and information needs
- Information Management as business function
- Integration of Business functions
- DSS : introduction, objectives, advantages and disadvantages
- Enterprise Decision Support

**4. Advanced Information Systems**

- Group DSS, Global Positioning System (GPS) and Geographical Information System (GIS) Business Portals – introduction, architecture, advantages and disadvantages
- Data visualization technologies
- Knowledge Management and Organizational Knowledge Bases
- Knowledge Discovery and Analysis

**MAIN REFERENCE BOOKS :**

1. James A. O'Brien (Tenth Edition) Tata McGraw Hill Publication
2. Muneesh Kumar : Business Information Systems, Vikas Publishing House Pvt. Ltd., New Delhi
3. Turban, Rainer, Potter, Introduction to Information Technology John Wiley & Sons Inc., 2000

**Course : US06CBCA04**  
**(Practicals)**

**Credits : 6**  
**No. of laboratory hours per week : 12**

**University examination duration : 4 Hours**

Part-I : Weightage-50%

In-house project development

Part-II : Weightage-50%

Practical based on **US06CBCA01** : ASP.NET

**Course : US06FBCA01**  
**(System Software)**

**Credits** : 4  
**Lectures per week** : 4

**All units carry equal weightage.**

**1. Language Processors and Compilers**

- Introduction to language processing
- Language processing activities: program generation, program execution, program interpretation
- Meaning of analysis and synthesis in language processing
- Introduction to compilers
- The analysis-synthesis model of compilation
- The phases of a compiler

**2. Fundamentals of Assembly Language and Assemblers**

- Elements of assembly language programming
- Description of a simple assembly language
- Description of different types of assembly language statements : imperative statements, declaration statements, assembler directives
- Advantages of assembly language
- A simple assembly scheme : design specification of assemblers, phases and data structures
- Design of a two pass assembler

**3. Editors, Linkers and Loaders**

- Editors : line editors, stream editors, screen editors, word processors, structure editors, design of editors
- Translated, linked and load time addresses
- Relocation and linking concepts : program relocation, performing relocation
- The process of linking
- The concept of loading

**4. System Software Tools**

- List of software tools for program development and their description
- Debug monitors
- Producing debug information
- Programming environments
- User interface tools

**MAIN REFERENCE BOOKS :**

1. Dhamdhare, D M : “System programming and Operating system“, 2nd Revised edition, Tata McGraw-Hill Company Limited, 2004.
2. Aho A. V., Sethi R., Ullman J. D. : Compilers - Principles, Techniques and Tools, Addition-Wesley Publishing Company, 1988.

**Course : US06EBCA01**  
**(Network Security)**

**Credits** : 2  
**Lectures per week** : 2

**All units carry equal weightage.**

**1. Introduction**

- Attacks, services and mechanism
- Security attacks
- Security services
- A model for network security

**2. Cryptography**

- Introduction
- Conventional encryption principles
- Basic terms : plaintext, ciphertext, cryptography, cryptanalysis
- Substitution ciphers vs. transposition ciphers
- Types of attack on encrypted messages
- Introduction to public key cryptography
- Applications for public-key cryptosystems

**3. System Security**

- Intruders
- Viruses and related threats : trap doors, logic bombs, trojan horses, viruses, worms, bacteria
- The nature of viruses
- Types of viruses
- Antivirus approaches : detection, identification and removal

**4. Network Security**

- Digital signatures
- Firewalls : introduction, design principles, characteristics, types, configuration

**MAIN REFERENCE BOOKS :**

1. William Stallings: Network Security Essentials (Applications and Standards), Pearson Education India, 2001.
2. Tanenbaum A. S., Computer Networks, Prentice-Hall of India Pvt. Ltd., New Delhi, 1997.

**Course : US06EBCA02**  
**(Multimedia Application Development)**

**Credits** : 2  
**Lectures per week** : 2

**All units carry equal weightage.**

**1. Introduction**

- Multimedia : meaning
- Various facets of multimedia : audio, text, graphics, animation, video
- Classification of multimedia technology
- Multimedia : hardware/software essentials, different categories of multimedia software.

**2. Working with Audio, Text and Graphics**

- Multimedia audio : introduction, digital audio and sound card fundamentals, sound card functionalities, audio jacks, connectors, digital audio playback, audio editing
- Multimedia text : introduction, designing text for multimedia, hypermedia, hypertext
- Multimedia graphics : introduction, basic concepts of colour displays, monitor video modes, colour monitors and their parameters, graphics in multimedia projects

**3. Working with Video and Animation**

- Multimedia video : introduction, video in multimedia projects, digital video fundamental, full motion and full screen videos, digital video files sizes, digital video production techniques – video production in multimedia, shooting the sequences, video capture techniques, video capture boards, video capture software, editing video, embedding sound clips
- Multimedia Animation : introduction, classifications, two- dimensional animation and three dimensional animation technology, animation development process, names of animation software tools for 2D and 3D

**4. Multimedia Project**

- Multimedia project design concepts – introduction, concept and design, various facets, media content design and development, interface design and development process,
- Multimedia authoring : introduction, multimedia programming vs. multimedia authoring, selection between authoring and programming tool, authoring methodologies, characteristics of authoring tools

**MAIN REFERENCE BOOKS :**

1. Multimedia Magic. By S. Gokul, BPB Publications, 1998.
2. Introduction to Multimedia : By Ana Weston Solomon, Tata McGraw-Hill Publishing Company Limited, 2005