2012

B.A. Curriculum

(Computer Applications)

DEPARTMENT OF COMPUTER SCIENCE

Recommended (BOS, April 04, 2012)-Adapted (BOS, May 14, 2012)

PROGRAMME STRUCTURE

Year : Semester	Course	Course Title	L-T-P	Max. Marks
II: Sem-III	BCA3.1	Computer Fundamentals	2-0-2	100
II: Sem IV	BCA4.1	Multimedia Applications	2-0-2	100
III: Sem-V	BCA5.1	Introduction to DBMS	2-0-2	100
III: Sem-VI	BCA6.1	Website Design and Management	2-0-2	100
			Total Marks	**400**

Note: L-T-P stands for Lecture-Tutorial-Practical respectively and prescribes minimum contact periods /week for respective courses.

DETAILED SYLLABI

BCA3.1: COMPUTER FUNDAMENTALS

OBJECTIVES :

- *To inculcate the basic understanding of computer organization and internal operations.*
- *To apprise of the information management scenario, scope and computer' utility for it.*
- *To equip with necessary MS Office skills for office management practices.*

1. **Introduction:** Layers of A Computing Systems; Abstraction; History of Computing Hardware and Software; Computers as a Tool and a Discipline; Computers, IT and Real World; IT as Driving Force for Innovations: Grater Miniaturization, Speed and Portability, Greater Connectivity and Convergence of Computing and Communication Technologies, Digitization and Multimedia, Ethical Issues; Digital Divide; Data Representation: Binary Values and Number Systems; Numbers and Computing; Positional Systems; Binary, Octal and Hexadecimal System; Arithmetic in Order Bases; Power of 2 Number Systems; Conversion from Base 10 to Other Bases; Binary Values and Computers. Data and Computers; Analog and Digital Data; Binary Representation.

2. **Digital Circuit Organization:** Computers and Electricity; Logic Gates; Transistors; Integrated Circuits; CPU Chips. Computer Components; Von Neumann Architecture; the Fetch-Execute Cycle; Input-Output Devices; Memory Hierarchy: Registers, Cache, ROM, RAM, Secondary, Tertiary Storage Devices, and their Relative Characteristics; CBS, Information Management: Data Vs Information; Information Systems and Technologies; Database Management System; File Systems; File Types; File Operations and Directories.

3. **Understanding Systems:** Information as Organizational Resource; Managing Information; Types of Information Systems - transaction, Office Automation, Knowledge-Based, DSS, Expert and Computer Supported Collaborative Work Systems; Integrating Technologies for Systems - Ecommerce and Web Systems, Enterprise Resource Planning systems; Systems for Wirelesss and Handheld Devices; System and Models; Need for Framework and Models; Relationship between Work Systems and Information Systems; Balanced View of a System; Business Operation Through Systems; SDLC: Need and significance for Systems Analysis and Design; System development cycle; Systems Analyst - Role, Expertise, qualities and Responsibilities.

- *Lab Skills: MS Office - Windows OS, MS Word,, MS Excel & MS FrontPage applications*

Text Resources

- Rajaraman (2008): Fundamentals of Computers, 4th ed, Prentice Hall India
- Alter Steven (2009): Information Systems - The Foundations of E-Business, 4th Ed, Pearson Education, india.
- Dale & Lewis (2007): Computer Science Illuminated, 3rd ed, Narosa Publishing House, India

BCA4.1 MULTIMEDIA APPLICATIONS

OBJECTIVES

- *To inculcate the basic understanding of digital multimedia infrastructure and building blocks.*
- *To apprise of the various effective and usage-worthy multimedia representation techniques.*
- *To equip with necessary MX Flash skills for developing multimedia applications.*

1. Multimedia Primer: Basic Concepts, Multimedia Storage Devices, Multimedia Highway, Multimedia Applications; Stages in Multimedia Development; Multimedia Development Requirements, Multimedia Skills Development and Expertise Requirements; Multimedia Text and Sound: Text-Power and Meaning, Fonts and Faces, Using Text in Multimedia; Computers and Text, Font Editing and Design Tools, Hypermedia and Hypertext; Sound-Power of Sound, Multimedia Systems Sound, Digital Audio, Making MIDI Audio, Audio File Formats, MIDI vs Digital Audio, Sound in Multimedia Applications, Music CDs and Audio Production Guidelines.
2. Multimedia Images, Animation and Video: Still Images and Vector Graphic, Bitmaps, Vector Drawings, 3-D Drawing and Rendering, Color and Image File Formats; Animation-Power, Principles, Techniques, File Formats, Devoping Animation; Video-Using Video, Working of Videos, Analog Standards, NTSC, PAL, SECAM and ATSC DTV; Digital Display Standards; Digital Video, Video recording etc; Shooting, Editing Video; Storyboarding, Platform, Lighting, Chroma Keys etc; and Optimizing Video File Storages; Multimedia Hardware and Software: Multimedia Platforms, Connections- SCSI,IDE,USB and Firewire; Multimedia Storage Devices, MM Input-Output Devices, Multimedia Communication Devices; Multimedia Software Tools – Text, Editing and WP tools, OCR Software, Drawing and Painting Tools, 3-D Modeling and Animation Tools; Image and Sound Editing Tools; Animation, Video and Digital Movie Tools; and Multimedia Accessories.
3. Multimedia Authoring and Integration: Developing Multimedia Applications, Types of Authoring Systems: Object Based, Icon Based, Page based, Card-based, Stages of Authoring, Editing, Organizing, Interactivity, Performance Tuning, Cross Platform Features, Cross Platform Authoring Notes; Authoring Notes; Introduction to MX Flash MX / Director MX; Multimedia for WWW: Internet, Internetworking, Bandwidth Issue, Internet Services, WWW and HTML, Web Pages, Dynamic WebPages and XML; Multimedia Web; Web Servers, Browsers and Search Engines; Web Page Makers and Site Builders, Plug-in and Delivery Vehicles; Beyond HTML, 3D Worlds; Multimedia on the Web- Workspace, Nibbling, HTML and multimedia; Text for Web, Images for the web – GIF, PNG Images, JPEG, Image Maps; Sound and Animation on the Web. Miscellaneous topics and supplements

Lab Skills: Flash MX Organization: Graphic Symbols, Timeline and its Control, Motion Tweening, Library, Basic Action Scripting, Some Animation Examples, GIF Animations, Swf Animations.

Text Resources

- Parekh (2007): Principles of Multimedia, 6th ed, Tata McGraw Hill
- Rao (2002): Multimedia Communication Systems – Techniques, Standards and Networks, 2nd ed, Narosa
- Vaughon (2004): Multimedia – Making it Work, 3rd ed, Tata McGraw Hill

BCA5.1: INTRODUCTION TO DBMS

OBJECTIVES

- *To introduce the basic database concepts, types, dimensions and applications.*
- *To apprise of the RDBMS techniques, scope, design and applications.*
- *To introduce DBMS tools include Oracle and MS Access.*
- *To equip with necessary MS ACCESS skills for designing databases and utilities.*

1. **Database Concepts:** Data, Database and Database Management System (DBMS); Database vs.Traditional File System Approach; Three Schema Architecture of DBMS and DataIndependence; Classification of Database Management Systems – Hierarchical, Network and Relational Database Systems; Centralized and Client-Server Architectures for DBMSs ,Database Languages and Interfaces; Database Users; **Database Models:** Introduction, Categories of Database Models: High-level or Conceptual Data Models, Representational or Implementation Data Models, Low-level or Physical Data Models, Object Data Models. Entity relationship (ER) Model: Basic Concepts and their representations – Entity, Entity Type and Entity Set, Attributes and Keys, Relationships, Relationship Types, and Structural Constraints, Weak Entity, Naming Conventions & Design Issues in ER Model. ER Diagrams.
2. **Relational Database Model:** Structure of Relational Model; Domains, Attributes, Tuples, and Relations; Characteristics of Relations; Relational Constraints – Domain Constraints, Key Constraints, Entity Integrity, and Referential Integrity Constraints; Relational Database Schema; Relational Algebra Operations – Select, Project, Rename, Union, Intersection, Set Difference, Join, and Division Operations; Aggregate Functions and Groupings; Functional Dependencies and Normalization: Informal Design Guidelines for Relation Schemas; Functional Dependencies; Inference Rules for Functional Dependencies; Normalization using Functional Dependencies - First Normal Form (INF), Second Normal Form (2NF), Third Normal Form (3NF), and Boyce-Codd Normal Form (BCNF);
3. **Oracle Fundamentals:** Features of Oracle; Form Design; Schema and Table Creation; Schema and Table Deletion; Table Modification; Insert, Delete, and Update Statements; SELECT-FROM-WHERE Structure; Renaming Attributes; Nested Queries and Set Comparisons; EXISTS and UNIQUE Functions; Aggregate Functions; Creating and Updating Views; PL/SQL: Introduction to PL/SQL, Handling Data in PL/SQL Blocks; PL/SQL Processing; Programming Constructs, Procedures, Functions, Exception handling, PL/SQL Packages; Database Triggers; Oracle-Supplied Packages.

- **Lab Skills:** Oracle/MS Access Design, Applications and Operations

Text Resources

- Date (2007): An Introduction to Database Systems, 8th Ed., Addison-Wesley
- Elmasri & Navathe (2009): Fundamentals of Database Systems, 5th Ed., Pearson Education
- Ivan Bayross (2006): SQL, Pl/SQL – The Programming Language of Oracle, 3rd Ed., BPB Pub.
- Rosenzweig and Silvestrova (2004): Oracle PL/SQL by Example, 3rd Ed., Pearson Education

BCA6.1: WEBSITE DESIGN & MANAGEMENT

OBJECTIVES

- *To introduce the website components, architecture, design issues/patterns & Management.*
- *To introduce website development tools design tools include Oracle and MS Access.*
- *To equip with necessary skills for developing and managing small websites.*

1. **Introduction to Web Sites:** Overview; Technical Infrastructure; Information Sharing; Types of Web Sites; Website Architecture – 2-Tiered and n-Tiered Architecture, Website Design Issues; Introduction to Web Site Editors. Web Site Design Process – Analysis, Design, Development, Implementation, Evaluation and Maintenance, and Promotion; Factors Influencing Web Site Design; Elements of Web Site Design, Web Page Design and Layout; Protocols - HTTP, FTP, SMTP; DNS; Web Page Design: Introduction; Components of a Web Page – Typography (Fonts and Styles), Developing Web Site Using Dreamweaver, Testing a Web Site, Deploying a Website – FTP, cPanel.
2. **Hyper Text Mark-up Language (HTML):** HTML Document Structure – HTML, HEAD, and BODY; HTML Tags and their Functions; Creating Web Pages Using HTML. Dynamic HTML (DHTML): Introduction, DHTML Features – Dynamic Content, Dynamic Style, Dynamic Positioning, Data Binding; Components of DHTML – Cascading Style Sheets (CSS); DHTML Filters and Transitions; Event Model – Keyboard Events, Mouse Events; Introduction to XML;
3. **Introduction to JavaScript:** Introduction to Scripting; Obtaining User Input with Prompt Dialogs, Memory Concepts, Arithmetic; Control Statements – If-Else Statement, While Statement, Switch Statement, Do-While Statement, Break and Continue Statements, Labelled Break and Continue Statements. Functions – Programmer Defined Functions, Function Definition, Scope Rules, Types of Objects – Math, String, Date, Boolean, and Window Objects; Web Servers: Introduction to IIS, HTTP Request Types, System Architecture, Client-Side Scripting versus Server-Side Scripting, Accessing Web Servers; Apache Web Server; Introduction to XHTML/ASP.NET/Perl/PHP/Python.

- **Lab Skills:** Development of website using HTML/ DHTML/ JavaScript.

Text Resources

- *Deitel (2003): Internet & World Wide Web: How to Program, 3rd ed, PHI*
- *Michael & Glass (2008): Beginning PHP, Apache, MySQL Web Development, 5 th ed, Wrox*
- *Steven Holzner (1009): HTML Black Book, 2nd ed, DreamTech Press*
- *Web Resource: http://www.w3schools.com*