ASB/41

Proposed syllabus for B.A. Programme Discipline course in Computer Applications

Semester	Title of Paper	L	T	P#	Theory marks	Practical marks
Semester I	Computer Fundamentals	4	1	4	60	40
Semester II	Database Management System	4	1	4	60	40
Semester III	System Administration And Maintenance	2	1	6	-	100
Semester IV	Multimedia Applications	2	1	6	-	100
Semester V	Elective 1A : Visual Programming – I Elective 2A : Internet Technologies - I Elective 3A : Software Testing	4	1	4	60	40
Semester VI	Elective 1B : Visual Programming - II Elective 2B : Internet Technologies - II Elective 3B : Information Security	4	1	4	60	40

Nuruber of practical classes per student per week

Maximum marks for each course shall be 100.

Practical Examination Duration: Four hours
Theory Examination Duration: 3 hours

Note:

1. Medium of instruction and examination shall be English.
2. **Infrastructure Required:** Networked lab with Internet facility on at least 20 nodes. LCD projection systems should be provided in class room/ lab.
3. Batch Size: Every lab session should be supervised by a teacher and the batch size should be restricted to 20 For a class of more than 20 students, additional groups should be formed for every 20 students.

9/3/11

Semester-I : Computer Fundamentals

Introduction: Introduction to logical organization of computers,

Data Representation : Number systems and character representation

Human Computer Interface: Operating system as user interface, system tools, control panel settings

Devices: Input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, bar code reader, web camera, monitor, printer, plotter

Memory : Primary, secondary, auxiliary memory, RAM, ROM, cache memory, hard disks, optical disks

Computer Networks : Introduction to computer network, classification of networks, LAN, MAN, WAN, wireless LAN, internet, intranet and extranet.

Internet Applications : Evolution of internet, internet browsers, use of www, telnet, ftp, SMTP and similar protocols, e-mail, online tutorials, online banking, secure transactions etc, search engines and their usage.

Reference Books :

1. *A. Goel*, Computer Fundamentals, Pearson Education, 2010.
2. *P. Aksoy, L. DeNardis*, Introduction to Information Technology, Cengage Learning, 2006
3. *P. K.Sinha, P. Sinha, Fundamentals of Computers, BPB Publishers, 2007*

Practical :

Practical exercises based on Open Office tools using document preparation and spreadsheet handling packages.

Semester – II : Database Management System

Database: Introduction to database, relational data model, DBMS architecture and data independence.

E-R Modeling: Entity types, entity set, attribute and key, relationships, relation types, E-R diagrams, database design using ER diagrams

Relational Data Model: Relational model concepts, relational constraints, primary and foreign key, normalization

Structured Query Language : SQL queries, create a database table, create relationships between database tables, modify and manage tables, queries, forms, reports, modify, filter and view data.

MySQL may be used for SQL demonstration

Reference Books :

1. *P. Rob, C. Coronel,* Database System Concepts by, Cengage Learning India, 2008
2. R. Elmsasri,S. Navathe Fundamentals of Database Systems, Pearson Education, Fifth Edition, 2007
3. MySQL : Reference Manual

Practical :

Practical exercises based on concepts listed in theory using spreadsheet as a database and MySQL.

Semester-III : System Administration and Maintenance

Operating System Administration : Installation, configuration,maintenance (service packs, patches, etc.) disk formatting/partitioning, installing Windows/Linux, regular user v. superuser, controlling processes, user management, server administration and management, user and group management, backup management, security management

Operating System Maintenance : Linux distributions, Windows versions, PC hardware, BIOS, devices and drivers, system monitoring, kernel configuration and building, applications installation, configuration, maintenance (service packs, patches, etc.),server services (database, web, network services, etc.), client services.

Network System Maintenance : Network configuration, network services (file printing on network, DHCP, DNS, FTP, HTTP, mail, SNMP, telnet)

Reference Books :

1. E. Siever, S. Figgins, Linux in a Nutshell, O'Reilly, Sixth Edition 2009
2. T. Bautts, T. Dawson, G.N. Purdy, Linux Network Administrator's Guide, O'Reilly, Third Edition, 2005
3. A. Basta, W.Halton, Computer Security: Concepts, Issues and Implementation, Cengage Learning India, 2008
4. Linux Handbooks

Practical:

Practical exercises based on concepts listed in theory on Windows / Linux Machines.

Semester IV : Multimedia Applications

Multimedia : Introduction to multimedia, multimedia in internet technology, introduction to multimedia software.

Animation : Introduction to animation, 2D animation, basic animation using open office tools.

Multimedia Input/Output Devices: Scanner, camera, microphone, speaker, monitors, printers.

Multimedia Storage Devices : CD ROMs, DVDs, Blue ray disk.

Multimedia Tools : Sound editor, video editor, animator, authoring tools.

Movie File Formats : AVI, MPEG, SWF, MOV, DAT

Movie Frames : Concept of frame, frame buffer, and frame rate; authoring tools; making animation, embedding audio/video, and embedding on the web page

Multimedia Application : Education, entertainment, edutainment, virtual reality, digital libraries, information kiosks, video on demand, web pages video phone, video conferencing and health care.

Reference Books :

1. Tay Vaughan, Multimedia : Making it work, Tata McGraw Hill, Seventh edition, 2006
2. J. Jeffcoate, Multimedia in Practice, Pearson Education, First Edition, 2007

Practical:

Practical exercises based on concepts listed in theory using presentation Software, animation software and Gimp.

Elective IA : Visual Programming – I

GUI Environment : Introduction to graphical user interface (GUI), programming language (procedural, object oriented, event driven), the GUI environment, compiling, debugging, and running the programs.

Controls : Introduction to controls textboxes, frames, check boxes, option buttons, images, setting borders and styles, the shape control, the line control, working with multiple controls and their properties, designing the user interface, keyboard access, tab controls, default & cancel property, coding for controls.

Operations : Data types, constants, named & intrinsic, declaring variables, scope of variables, val function, arithmetic operations, formatting data.

Decision Making : If statement, comparing strings, compound conditions (and, or, not), nested if statements, case structure,using if statements with option buttons & check boxes, displaying message in message box, testing whether input is valid or not.

Modular programming : Menus, sub-procedures and sub-functions defining / creating and modifying a menu, using common dialog box, creating a new sub-procedure, passing variables to procedures, passing argument by value or by reference, writing a function/ procedure.

Reference Books :

1. Timothy MarshalNichols, Online Material : Getting Started with Gambas, Version 2: A Tutorial Subject: Learning Visual Basic with Linux and Gambas,
2. John W. Rittinghouse, A Beginner's Guide to Gambas: Programming, Infinity Publishing, 2006

Practical:

Practical exercises based on concepts listed in theory.

Semester V : Elective 2A : Internet Technologies - I

Introduction to Web Design: Introduction to hypertext markup language (html) document type definition, creating web pages, graphical elements, lists, hyperlinks, tables, web forms, inserting images, frames.

Customised Features : Cascading style sheets, (css) for text formatting and other manipulations.

GUI Tools : GUI HTML editors (like opensource Dreamweaver), creating web pages and implementing CSS.

JavaScript Fundamentals : Data types and variables, functions, methods and events, controlling program flow, javascript object model, built-in obj,ects, operators.

Reference Books :

1. D.R. Brooks, An Introduction to HTML and Javascript for Scientists and Engineers, Springer
2. W. Willard, HTML A Beginner's Guide, Tata McGraw-Hill Education, 2009
3. *J. A. Ramalho,* Learn Advanced HTML 4.0 with DHTML, BPB Publications, 2007

Practical:

Practical exercises based on concepts listed in theory.

Semester V : Elective 3A : Software Testing

SDLC Concepts: Introduction to SDLC, classical models – waterfall, prototype, spiral, RAD.

Testing Fundamentals : Testing fundamentals, testing as a process, principles of testing, testing maturity models (TMM), TMM levels, defects – design, coding and testing.

Testing Techniques : Black box testing, white box testing, gray box testing, manual vs automated testing, static vs dynamic testing, unit test, system test, integration test, stress test, recovery test, security test

Test Plan : Test goal plans, software test automation, test metrics and measurements.

Testing Tools : Use of software testing tools.

Reference Books :

1. S. Desikan, R. Gopalaswamy; Software Testing : Principles and Practice by, Pearson Education India, 2007
2. E. Dustin, Effective Software Testing : 50 specific ways to improve your testing, Addison-Wesley, 2002
3. Burnstein, Practical Software Testing : A Process Oriented Approach, Springer Professional Computing, 2003

Practical:

Practical exercises based on concepts listed in theory using testing tools.

Semester VI : Elective 1B : Visual Programming - II

Forms Handling : Multiple forms creating, adding, removing forms in project, hide, show method, load, unload statement, me keyword, referring to objects on a different forms

Iteration Handling : Do/loops, for/next loops, using msgbox function, using string function

Arrays and Grouped Data Control : Arrays - 1-dimension arrays, initializing an array using for each, user-defined data types, accessing information with user-defined data types, using list boxes with array, two dimensional arrays. lists, loops and printing list boxes & combo boxes, filling the list using property window / additem method, clear method, list box properties, removing an item from a list, list box/ combo box operations.

Database Connectivity : Database connectivity of forms with back end tool like mysql. populating the data in text boxes, list boxes etc. searching of data in database using forms. updation/editing of data based on a criterion.

Reference Books :

1. Timothy MarshalNichols, **Online Material :** Getting Started with Gambas, Version 2: A Tutorial Subject: Learning Visual Basic with Linux and Gambas,
2. John W. Rittinghouse, A Beginner's Guide to Gambas: Programming, Infinity Publishing, 2006

Practical:

Practical exercises based on concepts listed in theory.

Business Information System : Introduction to three tier business application development, front end, business layer and back end connectivity.

Website Commercials: Pre-requisite for building a website. website vs portal. choosing domain names, acquiring dedicated IP address, getting hosting space. using free web space for blogs e.g. BlogSpot, word press etc.

PHP: Basic PHP knowledge - variables, expressions, operators, functions. simple procedural scripts, processing of form data, use of regular expressions and authentication.

Control Flow : Decision making based on conditions, case structure, loops

Modular Programming : Functions and objects, parameter passing

Forms : Forms and form processing

Connecting PHP & MySQL: Using PHP as front end to connect with MySQL back end.

Reference Books :

1. L. Atkinson, Z. Suraski, Core PHP Programming, Pearson Education, Third edition
2. S. Mitchell, Create Your Own Website, SAMS Pubication, Fourth edition
3. G.W.L. Thompson, Just Enough Web Programming with XHTML, PHP, and MySQL, Cengage Learning, 2008

Practical:

Practical exercises based on concepts listed in theory using PHP and MySQL.

Semester VI : Elective 3 B : Information Security

Course Introduction : Computer network as a threat, hardware vulnerability, software vulnerability, importance of data security.

Digital Crime : Overview of digital crime, criminology of computer crime.

Information Gathering Techniques : Tools of the attacker, information and cyber warfare, scanning and spoofing, password cracking, malicious software, session hijacking

Risk Analysis and Threat : Risk analysis, process, key principles of conventional computer security, security policies, authentication, data protection, access control, internal vs external threat, security assurance, passwords, authentication, and access control, computer forensics and incident response

Hiding Information : Public key cryptography, private key cryptography and steganography (just introduction)

Safety Tools and Issues : Firewalls, logging and intrusion detection systems, Windows and windows XP / NT security, Unix/Linux security, ethics of hacking and cracking

Legal Standards : Policies, standards, procedures, and cyber law

Reference Books :

1. M. Merkow, J. Breithaupt, Information Security Principles and Practices, Pearson Education.
2. *G.R.F. Snyder, T. Pardoe*, Network Security, Cengage Learning, 2010
3. A. Basta, W.Halton, Computer Security: Concepts, Issues and Implementation, Cengage Learning India, 2008

Practical:

Practical exercises based on concepts listed in theory.

Syllabus for B.A. Programme Final year Application course in Computer Applications

(Not for the students studying Discipline course in Computer Applications)

Maximum marks for each course shall be 100.

Theory Section: 60 marks (to be covered in 4 + 1 lectures/week)

Practical Section: 40 marks (to be covered in 4 practical classes per student per week)

Theory Examination Duration: Three Hours
Practical Examination Duration: Four Hours

Note:

1. Medium of instruction and examination shall be English.
2. **Infrastructure Required**: Networked lab with internet facility on at least 20 nodes. LCD projection systems should be provided in class room/ lab.
3. **Batch Size: Every** lab session should be supervised by a teacher and the batch size should be restricted to 20. For a class of more than 20 students, additional groups should be formed for every 20 students.

9/3/11

Application Courses

Computer Applications – I

Introduction : Introduction to logical organization of computer , input and output devices (with connections and practical demo), keyboard, mouse, joystick, scanner, OCR, OMR, monitor, printer, plotter, primary memory , secondary memory, auxiliary memory.

User Interface: Operating system as user interface, system tools, control panel settings

Database : Introduction to database, use of spreadsheet as database, use of functions and database operations in spreadsheet

Networks: Definition of network, classification of network, LAN, MAN, WAN, distinction among the networks

Internet Applications : Internet as a global network, Internet utilities – email, online banking, reservations etc.

Reference Books :

1. *A. Goel*, Computer Fundamentals, Pearson Education, 2010.
2. *P. Aksoy, L. DeNardis*, Introduction to Information Technology, Cengage Learning, 2006
3. *P. K.Sinha, P. Sinha*, Fundamentals of Computers, BPB Publishers, 2007

Practical :

Practical exercises based on Open Office tools using document preparation, spreadsheet handling packages and presentation software.

Computer Applications – II

Web Designing: Concept of website, website as a communication resource. Internet, intranet and extranet, basic concepts related to website designing.

HTML : Introduction to hypertext markup language (html) document type definition. creating web pages, graphical elements, lists, hyperlinks, tables web forms, inserting images, frames.

Multimedia Input/Output Devices: scanner, camera, microphone, speaker, monitors, printers.

Multimedia Storage Devices : CD ROMs, DVDs, Blue ray disk.

Multimedia Tools : Sound editor, video editor, animator, authoring tools.

Image Editing: Applying effects on images

Reference Books :

1. Scott Mitchell , Create your own website , SAMS Publication
2. Tay Vaughan, Multimedia : Making it work, TMH, Seventh edition, 2006
3. J. Jeffcoate, Multimedia in Practice, Pearson Education, First Edition, 2007

Practical :

Practical exercises based on Open Office tools using presentation softwares, web design and development tools and image editing tools (Gimp).