B.C.A. Third Year
(Effective from session 2020-21)
BCA-301: JAVA Programming

UNIT-I

Introduction to Java: Bytecode, features of Java, data types, variables and arrays, operators, control statements.
Objects & Classes: Object Oriented Programming, defining classes, static fields and methods, object construction.

UNIT-II

Inheritance: Basics, using super, method overriding, using abstract classes, using final with inheritance.
Packages and Interfaces: Defining a package, importing package, defining an interface, implementing and applying interfaces.

UNIT-III

Exception Handling: Fundamentals, exception types, using try and cache.
Multithreaded Programming: Creating a single and multiple threads, thread priorities, synchronization.

UNIT-IV

Applets: Applets basics, applets architecture, applets skeleton, the html applet tag, passing parameters in applets.
Event Handling: Event classes and event listener interfaces.

UNIT-V

Graphic Programming Introduction to swings.

Recommended Books:
1. The complete reference Java 2, H. Schildt, Tata Mc-Graw Hill.
2. Programming with JAVA - A Primer,E. Balaguruswamy,McGraw-Hill
3. Head First Java: A Brain-Friendly Guide,Kathy Sierra, Bert Bates,"O'Reilly Media.
4. Thinking in Java,Bruce Eckel,Prentice Hall Professional
5. Learning Java: A Bestselling Hands-On Java Tutorial, Patrick Niemeyer, Daniel Leuck,"O'Reilly Media,
6. How to program in Java, Deitel and Dietel

BCA-302 : Information Systems

UNIT I

Information:
Definition, Attributes of Information, Classification of Information Perspectives on Information System: Dimensions of information system, Contemporary Approaches to information system: Technical approach, behavioral approach and socio technical approach

Organizations and Information System: Impact of Information system on organizations: Economic Impact, Organizational and Behavioral Impact, Impact of IT on management

UNIT II

Management Information System:
Introduction, MIS Vs data processing Structure of MIS, System concepts in management information system Planning and Control Process, Management control through reporting MIS Design Approaches: Prototype model or prototyping Life-cycle approach, Project management

UNIT III

Decision Making System and Modeling:
Concepts of decision making, Decision making procedure, Decision making process or phases, Decision support system, Difference between MIS and DSS , Modeling process, Decision making models

UNIT IV

Executive Information and System Support:
Executive information system, Characteristics of executive information systems, Use of EIS in an organization, Hardware and software needs of an executive information system, Integrate DSS and EIS, EIS implementation

UNIT V

Application of Information system:
Electronic Commerce- An Overview, Electronic Commerce – Cutting edge, Electronic Commerce Framework, Evolution of E-commerce, Roadmap of e-commerce in India

e-Commerce Process Models: Introduction, Business Models, E-business Models Based on the Relationship of Transaction Parties, e-commerce Sales Life Cycle (ESLC) Model

Recommended Books
1. Tripathy PC And Reddy PN, "Principles of Management", Tata McGraw-Hill
2. B. P. Singh and T. N. Chabra , Management Concepts and Practices , Dhanpat Rai
3. W. S. Jawedkar: Management Information Systems, Tata McGraw-Hill
4. K. C. Laudon and J. P. Laudon, Management Information Systems, PHI

BCA 303:   Cloud Computing

UNIT I

Introduction Cloud Computing: Definition, Why Clouds, Vision, foundation / Evolution of cloud computing, Cloud and other computing paradigms(Distributed, Cluster, Grid), Essential Features, Characteristics, Advantages, Challenges, Ubiquitous Cloud and the Internet of Things, Ethical Issue in Cloud Computing, Evaluating the Cloud's Business, Current trends and Future of the cloud, research issues in cloud environment.

UNIT II

Cloud Computing Architecture and infrastructure: Cloud Reference Model, Layer and Types of Clouds, Services models, deployment models, Data center Design and interconnection Network.

UNIT III

Virtualization: Definition, Understanding and Benefits of Virtualization, Types of virtualizations (Compute, Network, Storage), Virtualization of Server, Desktop, Network, and data-centers. Types of Hypervisors: VMware, KVM, Xen. Virtual Clusters and Resources Management.

UNIT IV

Cloud Platforms in Industry: Major vendors and their offerings, Introduction to Microsoft Azure, Amazon web services (EC2, S3, Etc.), Google AppEngine, Aneka: Cloud Application Platform - Integration of Private and Public Clouds

Cloud applications: Protein structure prediction, Data Analysis, Satellite Image Processing, CRM and ERP, Social networking. Cloud Application- Scientific Application, Business Application.

UNIT V

Advance Topic in Cloud Computing: Approaches of Migration into Cloud.   Federated Cloud/ InterCloud, Third Party Cloud Services, Service Level Agreement (SLA), Dynamic resource provisioning and management, Server consolidation and placement policies, Energy efficiency in data centers, Elastic Load Balancing and Auto Scaling.

Techniques for Big data processing (Google GFS, BigTable, and Map-Reduce Hadoop Distributed File System (HDFS), HIVE).

Recommended Books
1. " Distributed and Cloud Computing " By Kai Hawang , Geofrey C.Fox, Jack J. Dongarra Pub: Elsevier
2. Cloud Computing Bible, Barrie Sosinsky, Wiley-India, 2010
3. Kumar Saurabh, "Cloud Computing" , Wiley Pub
4. Krutz , Vines, "Cloud Security " , Wiley Pub
5. Velte, "Cloud Computing- A Practical Approach" ,TMH Pub

BCA 304: Wireless and Mobile Computing

UNIT –I

Overview of wireless networks:
Cellular concept, GSM: air-interface, channel structure, Mobility management, location management principle and techniques, HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems, CDMA, GPRS.

UNIT- II

Wireless Networking, Wireless LAN Overview: MAC issues, IEEE 802.11, Blue Tooth, Wireless multiple access protocols, TCP over wireless, Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications.

UNIT- III

Mobile computing:
Introduction, Definitions, issues in mobile computing,

Data dissemination and management:
Data dissemination, Overview and challenges, bandwidth allocation for publishing, broadcast disk scheduling, mobile cache maintenance schemes, Mobile Web Caching

Introduction to mobile middleware:
Middleware for application development: adaptation, Mobile agents.

UNIT- IV

Service Discovery Middleware: Service Discovery & standardization Methods (universally Unique Identifiers, Textual Description & using interfaces), unicast Discovery, Multicast Discovery & advertisement, service catalogs, Garbage Collection, Eventing, Mobile IP, Mobile TCP, Database systems in mobile environments
Support for mobility: Andrew, Coda File system, World Wide Web, brief introduction of Wireless Application protocol

UNIT- V

 Operating System for mobile Devices: features of windows CE, Palm OS, Symbian OS, Android OS, IOS.

Recommended Books
1. Frank Adelstein, Sandeep Gupta, Golden Richard III, Loren Schwiebert, Fundamentals of Mobile andPervasive Computing, TMH.
2. Principles of mobile computing Hansmann & Merk., Springer
3. Mobile communications Jochen Schiller , Pearson

BCA 305: Web Technology

UNIT I
HTML
Introduction, Basic structure of an HTML document, Mark up Tags, Heading-Paragraphs, Line Breaks, HTML Tags, Elements of HTML, Working with Text, Working with Lists, Tables and Frames, Working with Hyperlinks, Images and Multimedia, Working with Forms and controls.

UNIT II
CSS
Creating Style Sheet, CSS Properties, CSS Styling(Background, Text Format, Controlling Fonts),Working with block elements and objects, Working with Lists and Tables, CSS Id and Class, Box Model(Introduction, Border properties, Padding Properties, Margin properties) , Introduction to Web Publishing or Hosting

UNIT- III
JavaScript
Variable, Naming Rules Data Types, Expressions and Operators, Flow Control, Objects and Arrays Functions and Methods Pattern Matching with Regular Expressions Managing Web Page Styles using JavaScript and CSS Introduction to Ajax

UNIT –IV
Understanding XML:
SGML, XML, XML and HTML, Modeling XML Data, Styling XML with XSL, XHTML
Request and Response Objects, Cookies, Working with Data - OLEDB connection class, command class, transaction class, data adaptor class, data set class.

UNIT- V
Current trends and Issues
Email, Application Issues, Working with IIS and page Directives, Error handling. Security - Authentication, IP Address, Secure by SSL & Client Certificates.

Recommended Books
1. Harvey M. Dietel, Paul Dietel & Tem R. Nieto, ",Internet & World Wide Web How to Program", Pearson, 2011.
2. Ivan Bayross. "Web enabled commercial application development using HTML, DHTML,JavaScript, PERL-CGI", BPB Publications, 2010
3. Mobile Communications, Jochen Schiller, Addison Wesley Pearson education

BCA 306: Practical I: Java Programming lab

Experiments based on the paper BCA 301.

BCA 307: Practical II: Web and Mobile Technology Lab.

Experiments based on the paper BCA 304 & BCA 305.

BCA 308: PROJECT

In house project must be done by each student on simple applications using any computer language/ RDBMS/ Web design/visual programming etc.

The total work must be of minimum 180 hours per student. The internal guide must schedule the work & evaluate internally from time to time.

The project report must be prepared for the external examination. Monthly report of the students must be taken to monitor progress and must be placed for evaluation by external examiner. Projects submitted by the students shall be evaluated during external evaluation to ensure independent contribution and proficiency acquired by the students.

Note: Students must be allotted projects in the beginning of the session. Candidates submitting readymade projects/copied/projects developed by professionals in the market etc shall be awarded zero marks.

Two copies of the project report and the software developed must be submitted to the external examiner. One copy of the project shall be returned to the student with the signature of external examiner.