

## BCA Curriculum Scheme and Structure (Semester Wise)

### Semester-I V

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Course Code	Course Title	Marks		
		Internal	External	Total
BCA-SIV-01	Operating Systems			100
BCA-SIV-02	Database systems			100
BCA-SIV-03	Multimedia Systems			100
BCA-SIV-04	Statistical Techniques			100
BCA-SIV-05	Lab-I Data Base Systems	25	25	50
BCA-SIV-06	Lab-II Multimedia Systems	25	25	50

Proposed Semester based syllabus for BCA to be effective from 2015

## BCA 4<sup>th</sup> Semester

**Course Code:** BCA-SIV-01

**Course Title:** Operating Systems

### Unit-I

Overview of an Operating System, Resource Management. Operating System Interface, Process Management Concepts, Inter-process Communication, Process Scheduling, Synchronization, Deadlocks.

### Unit-II

Memory Management, Linking, Loading, Memory Allocation, Design Issues and Problems, Virtual Memory, Fragmentation, Implementing Virtual Memory, Paging, Segmentation, Virtual memory Design Techniques, Buffering Techniques, Spooling.

### Unit-III

File Management – File Systems & I/O. Device Driver, Access Strategies, File Systems, File System Organization, Design Techniques.

Multiprocessor Systems, Multiprocessor Interconnections Types of Multiprocessor, Operating Systems, Functions and Requirements, Design and Implementation Issues.

### Unit-IV

Case Studies, Unix/Linux Operating Systems, Users View, Design Principles, Implementation, Process Management, Memory Management, File System, I/O System, Windows NT.

## Reference Books:

1. Dietel, H.M. "An introduction to operating System" Addison Wesley, Publishing Company, 1984.
2. Milenkovic. M. "An Operating System – Concepts & Design". McGraw Hill International Education Computer Science Series 1992.
3. Peterson. J.L. Abharam Silberschatz. "Operating System Concepts". Addison Wesley Publishing Company 1989.
4. Tananbum, A.S. "Modern Operating System", Prentice Hall Of India, New Delhi,1995. Karnetkar, "Unix Shell Programming", BPB

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**Course code: BCA-SIV-02**

**Course Title:** Database systems

### **Unit- I**

Database & Database Users: Concepts, Characteristics of Database, Database System Vs File System. Introduction to DBMS, Advantages, Disadvantages of DBMS, Database Users.

Database System Concepts & Architecture: Data Models, Schemas and Instances, DBMS Architecture & Data Independence, Data Modeling using ER-Approach (Concepts, ER-Notations, Entities, Attributes, Relationships Keys concepts)

### **Unit-II**

Relational Data Model: Concepts, Relational model Constraints (Entity Integrity, Referential Integrity, Key Constraints, Domain Constraints), CODD'S Rules, Relational Algebra (Fundamental Operations).

Relational Database Design & Normalization: Functional dependencies, Normalization of relational database, Norm Forms (1NF, 2NF, 4NF, BCNF), Multivalued dependencies, Join dependencies.

### **Unit-III**

Conventional Data Models & Systems: Network Data Model Concept, Hierarchical Model Concept. File Organizations Like Indexed Sequential Access, Clustering Indexes, Secondary Indexes, Direct File Organization, Multikey Organization.

Introduction to SQL – (a relational database language): Concepts, Characteristics of SQL, Advantages of SQL, Data definition in SQL, Literals, Operators, Specifying Constraints in SQL, Data manipulation in SQL, Views & Queries, Insert, Update & Delete Operations, Create users, Grant and revoke object privileges. Data Control Language: Rollback, Commit.

### **Unit-IV**

Introduction to PL/SQL Constructs in PL/SQL, Basic Programs in PL/SQL, Cursors and its types in PL/SQL, Triggers and its types in PL/SQL, Stored Procedures, Functions and Packages in PL/SQL.

## **Reference Books:**

1. Elmars, Navathe "Fundamentals of database Systems", 4th Ed., Pearson Education.
2. Korth, Silbebschatz, Sudarshsn "Database System Concepts", 4th Ed., TMH.
3. Leon "Database Management Systems", Vikas Pub.
4. C.J. Date "An Introduction to Database Systems", Pearson education.
5. Bipin C. Desai "An introduction to Database Systems", A.S. Ed., Golgotia pub.
6. S.K. Singh, "Database Systems" , Pearson education

Proposed Semester based syllabus for BCA to be effective from 2015

**Course Code:** BCA-SIV-03

**Course Title:** Multimedia Systems

**Unit-I**

Introduction to Multimedia, applications of multimedia, multimedia design considerations, Multimedia building blocks/ Components – Text, Images/Graphics, Sounds, video, and animation. Stages of Multimedia Design: Planning, Content Analysis, Instructional Design, Preparation of Media Elements, Integration of Media Elements, Authoring, Evolution, Tools for Multimedia Design – Logic flow charts, Story board

**Unit-II**

Hardware requirements of multimedia systems, hardware components & configuration of a multimedia system, working of multimedia sound and video. Files Formats- BMP, DIB, EPS, CIF, PEX, PIC, TGA and TIF Formats. The Windows Meta Files Formats, File Formats Conversion, Data Digitization techniques of Multimedia

**Unit-III**

Vector and Raster Graphics, Attributes of image – Resolution, Pixel Depth, Color, Color Palates, File Compression Techniques and its effects on Quality and Storage Size, Graphics Acquisition: Scanning Basics, Saving and Exporting Graphics, Integrating Graphics into Multimedia Application

**Unit-IV**

Principles of Animation and its Use in Multimedia, Types of Animation, Introduction to Animation Software's, Steps for Creating and Generating Animation,. Concepts of key Frame, Tracing and Path, 2D Animation Techniques: Tweening, Color Cycling, Walk Cycle, Rotation, 3D Animation Techniques: Lighting, Inverse Kinematics, Morphing, Software Tool for Creating Animation – Flash. Adobe Photoshop

**Reference Books:**

1. Vaughan Tay, "Multimedia- Making it work", 4th Edition, TMH.
2. James E. Shuman, "Multimedia in Action", Vikas Publishing.
3. Norman Desmarasis, "Multimedia on the PC", TMH

Proposed Semester based syllabus for BCA to be effective from 2015

**Course Code:** BCA-SIV-04

**Course Title:** Statistical Techniques

**Unit-I:**

Definition and scope of Statistics, Concept of Population and Sample With Illustration, Raw Data, Attributes and Variables, Classification, Frequency Distribution, Cumulative frequency distribution

**Unit-II:**

Measure of central Tendency, Preparing frequency distribution table, Mean: Arithmetic mean, Geometric mean for grouped and ungrouped data, Harmonic mean median, mode, Measure of dispersion .Skewness and Kurtosis Ranges, Mean Deviation. Standard deviation, co-efficiency of Variation, Moments Skew ness Kurtosis.

**Unit-III:**

Experiments and Random Experiments. Ideas of Deterministic and Non Deterministic experiments. Definition – of Sample Space, Discrete Sample Space, Events. Types of Events, Union and Intersection of two or more events, mutually exclusive events, Complementary events, Exhaustive events.

Classical Definition of Probability, Addition theorem of Probability without proof (up to three events are expected), Definition of Conditional Probability, Definition of Independence of two events, simple Numerical problems.

**Unit-IV:**

Statistical Quality Control methods (Introduction, Control limits, specification limits, tolerance limits, process and product control, control charts for X and R, control charts for number of defective (np-chart), control charts for number of defects (c-chart)).

**Reference Books:**

1. S.C.Gupta : Fundamentals of Statistics – Sultan Chand & Sons, Delhi
2. Montgomery D.C. – Statistical Quality Control – John Wiley and sons.
3. Hogg R.V and Craig R.G. – Introduction to Mathematical Statistics – Macmillan Pub. Co.New York.