

# **SEMESTER 5**

## **BCA501 : COMPUTER NETWORKS**

### **UNIT -1:**

Need of network. Network classifications-LAN, MAN , WAN, wireless networks & Internet. Data and signals-analog and digital, periodic analog signals, digital signals, bit rate, baud rate, bandwidth . Transmission impairments- attenuation distortion and noise. Data communication protocols and standards, Network models - OSI model-layers and their functions. TCP/IP protocol suite.

### **UNIT-2**

Bandwidth utilization Multiplexing: FDM, TDM, spread spectrum. Transmission Media- guided media and unguided media. Switching: message, Circuit and packet switched networks, datagram networks, virtual- circuit networks.

### **UNIT-3**

Hop to Hop Delivery. Error Detection and Correction Type of Errors, Redundancy, Detection ,Correction, Forward Error and Retransmission. Coding -Block Coding(Parity Chek Code and Hamming Code) and Cyclic Codes. Framing, flow and error control, Protocols - Noiseless channels (Simplest , Stop and Wait) and Noisy channels(Stop and Wait and Piggy Backing) .

### **UNIT-4**

Multiple Access Protocols . Random Access-ALOHA, CSMA. Wired LANs-IEEE standards, standard Ethernet, wireless LANs-Bluetooth, Wireless Lan- Cellular Telephony-Frequency Reuse Principle ,Transmitting, Receiving, Handoff, Hard Hand off, Soft Hand off, Roaming . Cellular Telephony Generations First, Second and Third generations. Satellite Networks Geo, Meo, Leo.

### **UNIT-5**

Host- To-Host Communication . Network Level Logical addressing-IPv4 addresses, IPv6 addresses, Internet protocol-IPv4 andIPv6, Process to Process Delivery Connectionless and Connection Oriented Service : UDP, TCP. Congestion control, quality of service. Client Server Programs. Name space, domain name space, Remote logging, Electronic mail, file transfer.

**Book of study** : Data communication and Networking (fourth edition)-B. A. Forouzan

## **BCA 502 : Operating Systems**

### **Unit 1:**

**Introduction:** OS Definition, Functions, OS as a resource manager, types of OS Evolution of OS, Operating System Operations, Operating System Services, User Operating System Interface, System Calls, Types of System Calls.

### **Unit 2:**

**Process:** Basic Concepts, Process Scheduling, Operations on Processes, Inter process communication, Process Scheduling - Scheduling Criteria, Scheduling Algorithms, Multiple Processor Scheduling.

### **Unit 3:**

**Process Coordination** : Synchronization - The Critical Section problem, Synchronization Hardware, Semaphores, Classic Problems of Synchronization, Monitors. Dead Locks : System Model, Dead Lock Characterization, Methods of Handling Dead Locks, Dead Lock Prevention, Dead Lock Avoidance, Dead Lock Detection, Recovery from Dead Lock.

### **Unit 4:**

**Memory Management:** Memory Management Strategies -Swapping, Contiguous memory allocation, Paging, Segmentation. Virtual Memory Management- Demand paging, Page Replacement

### **Unit 5:**

**Storage Management** :-File System :- File Concept, Access Methods, Directory Structure, protection , Implementing File Systems :-File System Structure, Directory Implementation, Allocation Methods, Free Space Management, Efficiency and Performance, Recovery.

## **Book of study :**

Operating System Principles, Seventh Edition, Abraham Silberschatz, Peter Galvin and Greg Gagne, John Wiley

Operating Systems- By William Stallings

**Reference:**

Operating Systems- By Milan Kovic (TMH )

**BCA 503: Java Programming**

**Unit 1:**

Object oriented programming-Encapsulation-Inheritance-Polymorphism-Genesis of Java-characteristics of java- program structure-identifiers-operators-variables-literals-data types-Arrays. Control Statements-selection statements-iterative statements-jump statements - Loops- while loop-do while loop- for loop

**Unit 2:**

Classes-declaration object references-instantiation- method declaration-method calling this operator- constructor- method overloading-constructor overloading-method overriding-inheritance-super class-dynamic method dispatch-final-static-abstract classes String Handling.

**Unit 3:**

Packages - creating packages-using packages-Interfaces-Exception Handling Techniques-try-catch-throw-throws-finally -Multithreading- creation of multithreaded program-Thread class-Runnable interface- thread priorities.

**Unit 4:**

Event Handling-Delegation Event Model-Event Classes-Sources of Events-Event Listeners- AWT: Frame Class-AWT Controls: Label-Button-Checkbox-List-Choice control-Text Field-Text Area- Lay out Managers.

**Unit 5**

Applet Fundamentals -applet tag-applet life cycle-passing parameters to applets-working with graphics Line-Rectangle-Oval Arc- color setting-I/O Streams: DataInputStream-DataOutputStream-BufferedReader-BufferedWriter classes

***Book of study :***

Java2 The Complete Reference Seventh Edition: Patrick Naughton

**Reference:**

1. Programming with java .E. Balagurusamy

2. Core Java Volume 1- Fundamentals eighth edition Cay S Horstmann & Gary Cornell
3. Java 6 Programming Black Book 2007 Edition Dreamtech press-

### **BCA504: OPEN COURSE**

### **BCA505: Software Lab V**

Part I

Applet Programs : Graphics- AWT controls- Event Handling

Part II (using class and read inputs from keyboard)

Java Programs: MethodOverloading- MethodOverriding-inheritance-abstract class interfaces- packages-Exception Handling-Multithreading.

### **BCA506: SOFTWARE DEVELOPMENT LAB I ( Mini Project)**

Mini project shall be a small complete project, to make the student confident in designing a system based on *System Analysis & Design* course, using **VB** and **SQL Server/ ORACLE**..