# BATCH - 2014 SEMESTER – I MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE PCS701S

### UNIT-I

**Set Theory :** Introduction-Sets-Notations and Descriptions of Sets-Subsets-Operations on Sets-Properties of Set Operations-Verification of the Basic Laws of Algebra-Cartesian product of two sets-Relations-Representation of a Relation-Operations on Relations-Equivalence Relations-Partition and Equivalence Classes-Functions-One-to-one and Onto Functions-Special types of Functions-Invertible Functions-Composition of Functions.

# Chapter 1:1 to 4, 6 to 8, Chapter 2:1 to 5, 7, Chapter 3:1 to 5, [18 HRS] UNIT-II

Logic: Introduction-TF Statements- Connectives-Compound Statements-Truth Table of a Formula-Tautology-Tautology Implications and Equivalence of Formulae-Normal Forms-

Principles of Normal Forms-Theory of Inference, simple problems . Chapter 9:1 to 4, 6 to 8, 11 to 13 [18 HRS]

### UNIT-III

Finite Automata-Definition of an Automaton- Representation of Finite Automaton-Acceptability of a string by a Finite Automaton-Languages accepted by a Finite automaton – Nondeterministic Finite automata - Acceptability of a string by Nondeterministic Finite Automata. **Chapter 12:1** to 8 [18 HRS]

### **UNIT-IV**

Equivalence of FA and NFA- Procedure for finding an FA equivalent to a given NFA –Phase-<br/>structure Grammars . Chapter 12:9, 10, 16[18 HRS]

### UNIT-V

Pushdown Automata-Definition of a Pushdown Automaton – Instantaneous Descriptions of a PDA- Important properties of move relation - Acceptance by PDA – Equivalence of two types of a Acceptance by PDA. Chapter 12: 23 to 28 [18 HRS] **Text Book:** Discrete Mathematics-Venkatraman M.K, ,Sridharan.N, Chandrasekaran.N , The National Publishing Company, Chennai, 2000.

### **Reference Books:**

1. Theory of Computer Science- K.L.P Mishra and N. Chandrasekaran ,Prentice Hall of India, Pvt Ltd

2. Discrete Mathematical Structures applications toComputerScience, Trembly &Manohar, Tata McGraw.

3. Introduction to Automata Theory, Languages and Computions, Hopcraft and Ullman, 2<sup>nd</sup> Edition, Pearson Education.

4. Discrete Mathematical Structures with Applications to Combinatorics, RamaswamyV, UnivPress, 2006.

5. Veerarajan T, " Discrete Mathematics with graph theory and combinatorics", TMG, 2007.

# SEMESTER – I OBJECT ORIENTED ANALYSIS AND - PCS702S **DESIGN AND UML**

## **Objective:**

To enable the students to learn the Software development methods and tools related with Object Oriented Technology.

UNIT – I:

(12 Hrs) OVERVIEW OF OOSD: Introduction - Methodology - OBJECT BASICS: Objects-Attributes- Encapsulation and Information Hiding – Class Hierarchy – Polymorphism-Object Relationships and Associations-OOSDLC – The Software Development Process.

### UNIT – II:

**OBJECT ORIENTED METHODOLOGIES:** Introduction – Rumbaugh et al.'s Object Modeling Technique - The Booch Technology - Jacobson et al. Methodologies - Patterns -Frameworks – The Unified Approach.

### UNIT – III:

(11 Hrs) **UNIFIED MODELING LANGUAGE:** Introduction – UML Diagrams – UML Class Diagram - Use Case Diagram - UML DynamicModeling - UML Extensibility - UML Meta model.

UNIT – IV: (**12** Hrs) **OBJECT ORIENTED ANALYSIS:** Introduction – Use Case Model – Developing Effective Documentation

OBJECT ORIENTED DESIGN: Introduction – Axioms – Corollaries – Design Patterns.

### UNIT – V:

SOFTWARE QUALITY ASSURANCE: Introduction-Quality Assurance tests - Testing Strategies - Impact of Object Orientation on Testing - Test Cases - Test Plan - Continuous Testing – Myer's Debugging Principles

### **Text Books:**

Ali Bahrami - "Object Oriented Systems Development" - Irwin-McGraw Hill, New Delhi, International editions, 1999.

### **Reference Book(s):**

- 1. Grady Booch "Object -Oriented analysis and Design with Applications" Pearson Education-Ninth Indian Reprint 2002.
- 2. Grady Booch, James Rumbaugh and Ivar Jacobson "The Unified Modeling Languages User Guide" - Addison Wesley – Fourth Indian Reprinting 2000.

(13 Hrs)

# SEMESTER – I ADVANCED JAVA PROGRAMMING - PCS703S UNIT I (11 Hrs)

**INTRODUCTION TO JAVA** : Introduction to Java – Features of Java - Data types – Variables –operators-Arrays – Classes – Objects – Constructors - Overloading method - String class – Inheritance - Overriding Method – Using super - Abstract class - Packages – Access protection.

## UNIT-II

MULTITHREADING: **PACKAGES**- Accessprotection- Importingpackages – Interfaces – Exception handling –Throw and throws - Thread – Multithreading.

# UNIT-III

**JAVA DATABASE**: Working with windows using AWT Classes – AWT Controls – Layout Managers and menus- Swing- Introduction to Swing- Swing Architecture- Examples for Swing-JDBC/ODBC driver-MSACCESS connection-A complete example.

# UNIT-IV

**NETWORKING:** Sockets - Inet Address - IP Address - Port number - Client/Server computing - TCP/IP - TCP client – server handling multiple clients -UDP-UDP Server-UDP Client-Multithreaded clients.

### UNIT V

**SERVLETS AND RMI:** Servlet architecture-HTML support - Servlet Installation - Servlet API Distributed computing – RMI architecture - paramter in RMI - RMI Client side callbacks - Installing RMI systems - serializing remote objects.

# **Text Books:**

Deitel & Deitel "JAVA: How to program", third edition Prentice Hall of India, 1999.

# (10 Hrs)

# (11 Hrs)

# (15 Hrs)

(13 Hrs)

# SEMESTER – I LINUX OPERATING SYSTEM - PCS704

### UNIT - I:

Introduction – Operating System – Functions - Types – Linux Operating System: History – Architecture – Linux compared to UNIX – Shells available – Managing File and Directories in Linux – Types of Editor – Vi Editor

### UNIT - II:

Window Manager – Configuring Services: SMTP - FTP – Apache Server

### UNIT - III:

Arguments, Options and the Environment - User level memory management - File and File I/O

### UNIT - IV:

Automating Tasks using Shell Script - Variables - Control Structures - Library Interfaces

### UNIT - V:

Programming in Linux: Shell Programming - Gawk programming - Network Programming - C and C++ Programming

### **Text Books:**

- 1. Richard Peterson "Linux: The Complete Reference" Tata McGraw Hill, Fourth Edition, 2006
- 2. David Pitts, Bill Ball, et al "Red Hat Linux 6" Techmedia Publication 1999
- 3. Arnold Robbins "Linux Programming by Examples: The Fundamentals" Pearsons Education 2006, Edition I
- 4. Mark G. Sobell "A Practical Guide to Red Hat Linux 8" Addison Wesley Techmedia, 2003

5. Michael Jang – "Mastering Red Hat Enterprise Linux 3" - BPB Publication 2005, Edition I **Reference Book(s):** 

- 1. Neil Mathew, Richard Stones "Beginning Linux Programming" Ed. 3 Wiley, 2006
- 2. Jon Masters, Richard Blum "Professional Linux programming" Wiley, 2007
- 3. NIIT "Operating System Linux" Prentice Hall India, 2003

### (12 Hrs)

(12 Hrs)

### (10 Hrs)

(12 Hrs)

# (14 Hrs)

# **SEMESTER – I ADVANCED COMPUTER ARCHITECTURE -EPCS705Q**

# SEMESTER – I ADVANCED JAVA PROGRAMMING - PCSP101T PRACTICAL - 1

### **Objectives:**

- \* This provides an in-depth knowledge of Advanced Java language and programming
- Gain an in-depth understanding of database programming in Java using JDBC.
- Learn how to do distributed programming in Java using RMI and CORBA.
- 1. Write a java program to find area perimeter using BufferedReader class.
- 2. Write a java program to implement Multithreading concepts.
- 3. Write a java program to implement an application for File Stream using Sequential file.
- 4. Write a program to print the port, protocol, host, and file name from the given URL.
- 5. Write a program to implement Client and Server application using TCP/IP.
- 6. Write a program to display the IP Address of a given Host Machine.
- 7. Write a program for Remote Command Execution using TCP/IP.
- 8. Write a program for Storing and Retrieving Email Addresses using JDBC.
- 9. Write a program to print student details using JDBC.
- 10. Working with Frames and Various Controls.
- 11. Incorporating Graphics
- 12. Font animation using Applets Interface.
- 13. Write a program to implement addition operation using RMI.

# SEMESTER – I LINUX PROGRAMMING - PCSP102 PRACTICAL -II

### **Objective:**

- ✤ To enable the students to acquire skill in LINUX programming.
- 1. Working with Basic Linux Commands
- 2. Implementing Control Structures in shell script Sorting
- 3. Process Management using Pipes Message Passing
- 4. Shell Programming Menu driven Program
- 5. Shell Programming Fibonacci Series
- 6. Gwak Programming nCr
- 7. Searching for a substring
- 8. Matrix addition and Subtraction
- 9. Menu driven program for complex number manipulation

## **SEMESTER – II SOFTWARE TESTING - PCS806S**

**UNIT-I:** Introduction: Purpose of Software Testing- Is Complete Testing Possible- The Consequence of Bugs -Taxonomy of Bugs.

**UNIT-II : Principles of Testing:** Software Development Life Cycle Models-Phases of Software Project - Quality – Assurance – Control –Testing - Verification- Life Cycle Model - Waterfall Model - Rapid Application Development Models - Spiral Model-V Model.

**UNIT- III: Types of Testing:** White Box Testing-Static Testing-Structural Testing-Black Box Testing-Integration Testing- Phase of Testing- Scenario Testing-Defect Bash-System and Acceptance Testing –Functional System Testing-Non Functional Testing-Regression Testing-Internalization testing-Ad hoc testing.

**UNIT-IV: Test of Object Oriented Systems:** Usability and Accessibility Testing-Approach-Quality Factors-Tools for Usability-Test rules for usability-Common Path issues-Comparison between Testing and Development Functions-Role of Echo system.

**UNIT-V: Organizations Structures for Testing Teams:** Dimension-Structure-Single Product Company - Multi product companies - Effects of Globalization - Testing service Organization-Test Management and Automation -Test planning -Test Management -Test Process-Test Reporting-Best Practices.

### **Text Books:**

1. Software Testing Principles and Practices-2006 Edition

Author: Srinivasan Desikan, Gopalswamy Ramesh

Publishers: Pearson Education

2. The Craft of Software testing including Object Based and Object-Oriented Testing

Author: Brain Marik

Publishers: Prentice-Hall,1195.

# SEMESTER – II DOT NET TECHNOLOGY - PCS807S

### UNIT - I:

Introduction to DotNet Technology - Dot Net Framework Overview - Activities of CLR -DotNet Applications – Introduction to Visual Studio IDE – Types of Dotnet Languages.

### UNIT - II:

**INTRODUCTION TO C#**: Introduction to C# - data types in C# - conditional statement, if...else – looping statement, while.../for loop – properties in C# - namespaces in C#.

### UNIT - III:

INTRODUCTION TO ASP.NET : Introduction to ASP.NET - architecture of ASP.NET difference between asp and ASP.NET - page events in ASP.NET - controls in ASP.NET(server side controls and html controls) - the code behind web forms (separation of content & business logic) – life cycle of a web forms page – stages in web forms page – web forms event model.

### UNIT - IV:

INTRODUCTION TO ADO.NET: Introduction to ADO.net -ADO.net Architecture -Connection - data reader - command Class.

### UNIT - V: (13 Hrs) DISCONNECTED ARCHITECTURE IN ADO.NET: Key components of ADO.net

disconnected –DataSet class– DataAdapter class – Working with data grids in ASP.NET - with

ADO.net

### **Text Books:**

- 1. E. Balagurusamy, "Programming in C#"- Tata Mc Graw Hill, 2002.
- 2. Chris Ullman, John Kauffman "Beginning ASP.NET 1.1 with VB.NET 2003"- Wrox Publication.
- 3. Alex Homer, Dave Sussman "Professional ASP.NET 1.1" Wrox Publication.
- 4. Crouch "ASP.NET and VB.NET web programming" Pearson Education.
- 5. Greg Buczek "ASP.NET Developer's Guide" Tata McGraw Hill 2002.

### **Reference Book(s):**

- 1. Deitel and Deitel "Internet & World Wide Web how to program" PHI, 2003.
- 2. Andrew Troelsen "C# and the .NET platform" A Press, 2001.
- 3. Justin Couch, Daniel H. Steinberg "J2EE Bible" Wiley India (P) Ltd., New Delhi 2002.

# (**10** Hrs)

(12 Hrs)

(13 Hrs)

# **SEMESTER – II MULTIMEDIA AND VIRTUAL REALITY - PCS808T**

# **Objectives:**

To enable the students to learn the concepts of Multimedia.

# UNIT - I:

# (10 Hrs)

**MULTIMEDIA**: Definition and Introduction to Multimedia – **Introduction to Making Multimedia**: Needs of Multimedia – Macintosh and Windows production platforms.

**TEXT:** The power of meaning – About fonts and faces – Using text in multimedia – Computers and Text – Font editing and Design tools – Hypermedia and Hypertext. *UNIT - II:* (13 Hrs)

**SOUND:** The power of sound – Multimedia system sounds – MIDI versus Digital Audio – Digital Audio – Making MIDI audio – Audio, File formats – Working with sound on the Macintosh – Notation Interchange File Format (NIFF) – Adding sound to your multimedia project.

**IMAGES**: Making still Images – Color – Image file formats.

# UNIT - III:

# (12 Hrs)

**ANIMATION:** The Power of Motion – Principles of Animation – Making animations that works.

**VIDEO**: Using Video – Working of Video – Broadcast video standards – Integrating computers and television – Shooting and Editing Video – Video tips – Recording formats – Digital Video.

# UNIT - IV:

# (13 Hrs)

**PLANNING AND COSTING:** Project planning – Estimating – RFPs and Bid Proposals - Designing – Producing.

**MULTIMEDIA PACKAGES:** Cool3d, Photoshop, Sound forge, Windows Movie maker, Flash- a Simple Project for Multimedia using the Multimedia Packages.

# UNIT - V:

# (12 Hrs)

**INTRODUCTION TO VIRTUAL REALITY**: Introduction to virtual reality – goals of virtual reality- Issues in Virtual Reality- Introduction to VRML.

# **Text Books:**

- 1. Tay Vaughan "Multimedia Making it Work" McGraw Hill, 1994, Sixth Edition-2004, Seventh Edition-2008.
- 2. John Hayward Adventures in Virtual Reality, One Publications

# **Reference Book(s):**

Jeffcoate, Judith – "Multimedia in Practice" - Prentice Hall, 2001.

# SEMESTER – II INTERNET PROGRAMMING - PCS809

### UNIT – I:

**BASICS OF INTERNET COMMUNICATION**: Hardware elements associated with internet -Internet Services - Internet Protocols – TCP/IP, UDP, HTTP – Other Protocols – Telnet -Gopher- Mail and its types- FTP - Remote access - Web Indices – Search Engines.

### UNIT – II:

(12 Hrs)

**INTRODUCTION TO HTML** : Tags and Documents - Link documents using Anchor Tags – Images and Pictures – Tables – HTML Forms - Frames – Framesets.

### UNIT – III:

### (12 Hrs)

**INTRODUCTION TO SCRIPTING** : Java Script – Data types – Operators – Variables – Conditional Statements – Functions – Objects – Document object– Window Object – Event Handling – Introduction to VBScript and Perl Script.

### UNIT – IV:

(11 Hrs)XML –  $\Gamma$ 

**INTRODUCTION TO XML**: Well formed XML – CSS – XSL - Valid XML – DTD – XSD - Introduction to DOM and SAX Parsers.

### UNIT – V:

### (13 Hrs)

**INTRODUCTION TO DYNAMIC WEB APPLICATIONS**: Server Side Scripting basics – Server Side Scripting Languages – PHP Scripting - General Syntactic Characteristics – Primitives, operations and expressions – Control Statement – Arrays – Functions – Pattern Matching – Form Handling – Files – Cookies – Session Tracking – Database access with PHP and MYSQL.

### Text Book(s):

- 1. Deitel & Deitel "Internet and WWW How to program? Pearson Education, 2005 (Units I, II and III)
- 2. Robert W Sebesta "Programming the WWW" -Pearson Education (Unit V)
- 3. David Hunter Et al "Beginning XML" Wrox Publications 2000. (Unit IV)

### **Reference Book(s):**

- 1. Daniel C. Lynch, Marshall T. Rose -"Internet Systems Handbook", Addison Wesley 1993.
- 2. Peter Kent "10 Minute Guide to the Internet" Prentice Hall of India, 1996.
- 3. Scott Mitchell and James Atkinson "Teach Yourself XML in 21 days"- Sams Publishing, 1999.

# SEMESTER – II DISTRIBUTED COMPUTING - EPCS810

# UNIT - I:

**INTRODUCTION TO DISTRIBUTED SYSTEMS:** Introduction – Goals - Hardware concept - Software Concepts - Design Issues: Transparency - Flexibility - Reliability - Performance -Scalability.

# UNIT - II:

**COMMUNICATION IN DISTRIBUTED SYSTEMS:** The client –server model –Addressing - Types of Primitives - Implementation - Group communication - Introduction - Design Issues -Group communication in ISIS.

### UNIT - III:

SYNCHRONIZATION IN DISTRIBUTED SYSTEMS: Clock Synchronization – Mutual Exclusion -Election Algorithms -Atomic Transactions- Deadlocks.

## UNIT - IV:

PROCESSES AND PROCESSORS : Processes and Processors in Distributed Systems -Threads - Processor Allocation - scheduling - Fault Tolerance. Distributed File system - Design - Implementation - Trends in Distributed File systems.

## UNIT - V:

DISTRIBUTED SHARED MEMORY : Introduction - shared memory - consistency models page - based distributed shared memory.

### **Text Book(s):**

- 1. Andrew S. Tanenbaum "Modern Operating Systems" Prentice Hall of India Pvt. Limited.
- 2. John A. Sharp "An Introduction to Distributed and Parallel Processing" Blackwell Scientific Publications, 1987.

### **Reference Book(s):**

- Stefans Ceri, Ginseppe Pelagatti "Distributed Databases Principles and systems" McGraw Hill Book Co., New York, 1985.
- 2. George Coulouries & others,"Distributed systems:concepts & Design",Fourth edition, Pearson education pvt ltd.,

(14 Hrs)

(10 Hrs)

(12 Hrs)

## (12 Hrs)

# DOT NET LAB - PCSP203S PRACTICAL - 3

### **Objectives:**

✤ To enable the student to build applications in DOTNET Languages

### C#.NET

1.Splash Screen

2.Notepad Application

3. Student Marksheet program and msaccess.

4.Login Form Creation program and msaccess

### ASP.NET

5. Creating Student Bio-Data.

6. Request and Response Application using C# and msaccess.

7. Chatting using application and session object.

8. Application using Adrotator Control.

9. File uploading and downloading using server object.

10. Telephone Record maintenance and msaccess.

# SEMESTER – II INTERNET PROGRAMMING LAB - PCSP204 PRACTICAL - 4

### **Objectives:**

- ✤ To develop applications using HTML, XML and PHP.
- 1. Create a HTML table with rows and columns and split them using Rowspan and Colspan.
- 2. Create a web page in the format of front page of a news paper using Text links. Align the text with colors.
- 3. Write a HTML program for new email account registration. Validate the input using Java Script.
- 4. Write an XML document to display your bio-data. Write an XSL style sheet and attach that to the XML document. Validate the document using DTD or XSD.
- 5. Write a server side PHP program that displays marks, total, grade of a student in tabular format by accepting user inputs for name, number and marks from a HTML form.
- 6. Write a PHP program to access the data stored in a mysql table.