

SEMESTER III
Core Paper - X
ADVANCED OPERATING SYSTEM

Instructional Hrs. : 60

**Sub. Code : 15CAPC309/
15CSPC104**

Max. Marks : CIA -25; ESE -75

Credits: 4

Objective : To understand the important concepts of distributed operating system with UNIX operating system.

UNIT I

15Hrs.

Fundamentals: What is a Distributed Computing System? Distributed Computing System Models – What is Distributed Operating System- *Issues in Designing a Distributed Operating System* – Introduction to Distributed Computing Environment. Remote Procedure Calls: Introduction- The RPC Model – Transparency of RPC – Implementing RPC Mechanism – Stub Generation – RPC Messages – Server Management – Parameter passing semantics – Call Semantics – Communication Protocols for RPCs.

UNIT II

15Hrs.

Distributed Shared Memory: Introduction – General Architecture of DSM Systems – Design and Implementation Issues of DSM – Granularity – Structure of Shared Memory Space – Consistency Models – Replacement Strategy – Thrashing – Advantages of DSM.
Synchronization: Introduction – clock synchronization – Event Ordering – Mutual Exclusion – Deadlock.

UNIT III

15Hrs.

Resource Management: Introduction – Desirable Features of a Good Global Scheduling Algorithm – Task Assignment Approach – Load Balancing Approach – Load Sharing Approach.
Process Management: Introduction – Process Migration – Threads.

Distributed File System : Introduction – Desirable Features of a Good Distributed File System – File Models- *File Accessing Models* – File Sharing Semantics – File Caching Schemes – File Replication.

UNIT IV

15 Hrs.

Introduction to the Kernel: Architecture of the Unix operating system – introduction to system concepts – kernel data structures. Internal Representation of Files : Inodes – structure of a regular file – directories – conversion of a path name to an inode – superblock – inode assignment to a new file – *allocation of disk blocks*. The structure of processes: process states and transitions – layout of system memory – the context of a process.

UNIT V

15Hrs.

Process Control: Process Creation – process termination – awaiting process termination – invoking other programs – system boot and the init process. Process scheduling and time: Process scheduling – *system calls for time*.

Note : *Italics* denotes **Topics for Self Study**

TEXT BOOKS

1. **Dhamdhare D.M**, *Systems Programming and Operating Systems*, TMH Publishing Company Ltd., New Delhi, 2nd Edition, 1997. (Units I , II & III)
2. **William Stallings**, *Operating Systems*, 2nd Edition, PHI, 2001 - (Unit III, IV & V)

REFERENCE BOOKS

1. **Andrew S. Tanenbaum**, *Modern operating System* – Pearson Education, Asia, 2nd Edition, Indian reprint, 2002.
2. **Crowley**, *Design of Operating System*, TMH, New Delhi, 1999.
3. **Harvey M.Deitel**, *An Introduction to Operating System*, Addison Wesley Publishing, New Delhi, 2nd Edition, 1990.
4. **Silberschatz, Galvin, Gagne**, *Operating System Concepts*, Addison Wesley Publishing, New Delhi, 6th Edition.

SEMESTER III
Core Paper - XI
SOFTWARE ENGINEERING

Instructional Hrs. : 60

Sub. Code : 15CAPC311

Max. Marks : CIA -25; ESE -75

Credits: 4

Objective : To make the students understand the concepts software engineering

UNIT I

12Hrs.

The Product: The Evolving role of Software – Software Crisis – Software Myths – The Process: Layered Technology – Software Process – Software Process Models – Linear Sequential Model – Prototyping Model – *RAD Model* – Evolutionary Software Process Model – Component Based Development – Formal Methods Model – 4G Techniques.

UNIT II

12Hrs.

Software Project Planning – Observations on Estimating – Project Planning Objectives – *Software Scope* – Resources – Software Project Estimation – Decomposition Techniques – Empirical Estimation Models – The Make/Buy Decision – Automated Estimation Tools.

UNIT III

12Hrs.

Software Configuration Management: The SCM Process – Identification of Objects in the Software Configuration – *Version Control* – Change Control – Configuration Audit – Status Reporting – SCM Standards. **Analysis Concepts and Principles:** Requirement Analysis – Analysis Principles – Software Prototyping – Specification.

UNIT IV

12Hrs.

Design Concepts and Principles: The Design Process – Design Principles – Design Concepts – Effective Modular Design. **User Interface Design:** The Golden Rules – *User Interface Design* –

Task Analysis and Modeling – Interface Design Activities – Implementation Tools – Design Evaluation.

UNIT V

12Hrs.

Software Testing Strategies: A Strategic Approach to Software Testing – Strategic Issues – *Unit Testing* – Integration Testing – Validation Testing – System Testing – Arts of Debugging.

Note : *Italics* denotes Topics for Self Study

TEXT BOOK

1. **Roger S. Pressman**, *Software Engineering a Practitioner's Approach*, Fifth Edition, McGraw-Hill, 2001.

REFERENCE BOOKS

1. **Richard Fairly**, *Software Engineering Concepts*, TMH Publication, New Delhi, 2000.
2. **Somerville**, *Software Engineering*, Pearson Education, New Delhi, 6th Edition, 2002.
3. **Wanman S. Jawadkee**, *Software Engineering Principles and Practice*, TMH, New Delhi, 2004.

SEMESTER III
Practical - V
ADVANCED JAVA LAB

Instructional Hrs. : 75

Sub. Code : 15CAPCP05

Max. Marks : CIA -40; ESE -60

Credits: 3

Objective : To make the students understand the programming in advanced Java

1. Classes and objects
2. Inheritance
3. Packages
4. Interfaces
5. Multithreading
6. Applets
7. AWT controls
8. Event handling
9. Menus
10. Layout Managers
11. Swing controls
12. Trees in Swing

DATAMINING TECHNIQUES

Instructional Hrs. : 60

Sub. Code : 15CAPC413

Max. Marks : CIA -25; ESE -75

Credits:4

Objective : To understand the basic concepts and techniques of data mining.

UNIT I

12Hrs.

Basic Data Mining Tasks – Data Mining Vs Knowledge Discovery in Databases – Data Mining Issues – Data Mining Metrics – Social Implications of Data Mining – Data Mining from a Database Perspective – Information Retrieval – Decision Support System – Dimension modeling – *Data Warehousing – OLAP.*

UNIT II

12Hrs.

Data Mining Techniques: Introduction – A Statistical Perspective on Data Mining – Similarity Measures – Decision Trees – Neural Networks – Genetic Algorithms.

UNIT III

12Hrs.

Classification: Introduction – Statistical based Algorithms – Distance based Algorithms – Decision Tree based Algorithms – Neural Network based Algorithms – Rule based Algorithms – *Combination Techniques.*

UNIT IV

12Hrs.

Clustering: Introduction – Similarity and *Distance Measures* – Outliers – Hierarchical Algorithms – Partitional Algorithms – Clustering Large Databases.

UNIT V

12Hrs.

Association Rules: Introduction – Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules.

Web Mining: Introduction – **Web Content mining:** Crawlers – Harvest System – Virtual Web View – Personalization – **Web Structure Mining:** PageRank – Clever – **Web Usage Mining:** Preprocessing – Data Structures – Pattern Discovery – Pattern analysis.

Note : Self Study Topics are denoted in *Italics.*

TEXT BOOK

1. Margaret H.Dunham, Data Mining: Introductory and Advanced Topics, Pearson Education, New Delhi, 1st Edition, 2008.

REFERENCE BOOKS

1. Jiawei Han & Micheline Kamber, Data Mining: Concepts and Techniques, Elsevier India Private Limited, 2nd Edition, 2006.
2. Hongbo Du, Data Mining Techniques and Applications : An Introduction, Cengage Learning, Delhi, 1st Edition, 2010.

SEMESTER IV
Practical – VII
DATAMINING LAB

Instructional Hrs: 75

Sub. Code: 15CAPCP07

Max.Marks: CIA-40; ESS-60

Credits: 3

Objective: To understand data mining processes and techniques using data mining tool.

- Data Preprocessing and Visualization
- Attribute Selection
- Association
- Clustering
- Classification