

**Chhattisgarh Swami Vivekanand Technical University, Bilai**

**Scheme of Teaching and Examination**

**M.Tech. (Software Engineering)**

**Semester - III**

S.N	Board of Study	Subject Code	Subject Name	Periods per week			Scheme of Exam			Total Marks	Credit L+(T+P)/2
				L	T	P	Theory/Practical				
							ESE	CT	TA		
1	Computer Sc. & Engg	568311 (22)	Data Warehousing and Mining Techniques	3	1	-	100	20	20	140	4
2	Computer Sc. & Engg	Elective –III		3	1	-	100	20	20	140	4
3	Computer Sc. & Engg.	568321(22)	Preliminary Work on Dissertation	-	-	28	100	-	100	200	14
4	Computer Sc. & Engg.	568322(22)	Seminar based on Dissertation	-	-	3	-	-	20	20	2
<b>Total</b>				6	2	31	300	40	160	500	24

L-Lecture, T- Tutorial, P - Practical, ESE- End Semester Examination, CT- Class Test, TA- Teacher's Assessment  
 Note : Duration of all theory papers will be of Three Hours.

<b>Elective –III</b>			
S.N.	Board of Study	Code	Subject Name
1	Computer Science & Engineering	522333 (22)	Enterprise Resource Planning
2	Computer Science & Engineering	568331 (22)	Distributed Computing
3	Computer Science & Engineering	568332 (22)	Wireless and Mobile Computing

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

**Semester: M. Tech. III Sem.**  
**Subject: Data Warehousing and Mining Techniques**  
**Total Theory Periods: 40**  
**Total Marks in End Semester Exam: 100**  
**Minimum number of class tests to be conducted: 02**

**Branch: Software Engineering**  
**Code 568311(22)**  
**Total Tut. Periods: 12**

## **Unit- I**

### **Introduction of Data Warehousing and Data Mining**

Data warehouse, A multi-dimensional data model, Data Warehouse Architecture, Data Warehouse Implementation, Further Development of Data Cube Technology, From data Warehousing to Data Mining.

Data Pre-Process, Data Cleaning, Data Integration and Transformation, Data Reduction, Discrimination and Concept Hierarchy Generation, Data Mining Primitive, Data Mining Query Language, Architecture of Data Mining System.

## **Unit-II**

### **Association Rule Mining in Large Databases**

Association Rule Mining, Mining Single-Dimensional Boolean Association Rules from Transactional Databases, Mining Multilevel Association Rules from Transactional Databases, Mining Multidimensional Association Rules From Transactional Databases and Data Warehouse, from Association Mining to Correlation Analysis, Constraint-Based Association Mining. Business Application of Association Rule Mining.

## **Unit-III**

### **Classification and Cluster Analysis**

Issues Regarding Classification and Prediction, Classification by Decision Tree Induction, Bayesian Classification, Classification by Back Propagation, Classification based on Concepts from Association Rule Mining, Prediction, Classification Accuracy.

Cluster Analysis: Partitioning Methods, Hierarchical Methods, Density-Based Methods, Grid-Based Methods, Model-Based Clustering Methods, Outlier Analysis.

## **Unit-IV**

### **Mining Complex Types of Data & Applications and Trends in Data Mining-**

Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Mining Spatial Databases, Mining Multimedia Databases, Mining Time-Series and Sequence Data, Mining Text Databases, Mining the World-Wide Web, Data Mining Applications, Data Mining System Products and Research Prototypes, Additional Themes on Data Mining, Social Impact of Data Mining, Trends in Data Mining.

## **Unit-V**

### **Privacy in Data Mining**

Privacy-Preserving Data Mining Models and Algorithms: Introduction, The randomization Method, Group Based Anonymization, Distributed privacy-preserving Data Mining, Privacy-preserving of Application Results, Limitations of privacy, Applications of privacy –preserving DM.

## **Text Books**

1. J. Han and M. Kamber, "Data Mining: Concepts and Techniques," 2nd ed. Morgan Kaufmann, 2006, ISBN 1-55860-901-6.
2. Margaret H. Dunham, "Data Mining: Introductory and Advanced Topics", Prentice Hall of India.
3. Charu C. Agrawal and Philips. Yu." Privacy-preserving Data Mining: Models and Algorithms", Springer.

### **Reference Books**

1. I. Witten and E. Frank, "Data Mining: Practical Machine Learning Tools and Techniques," 2<sup>nd</sup> Edition, Morgan Kaufmann, 2005. ISBN: 0-12-088407-0.
2. W.H. Inman, "Building Data warehouse", John Wiley & Sons.
3. F. Giannotti and D. Pedreschi , "Mobility, Data Mining and Privacy - Geographic Knowledge Discovery ", Spriger Verlag publication 2007 ISBN 978-3-540-75176-2
4. N. Andrienko and G. Andrienko. "Exploratory Analysis of Spatial and Temporal Data- A Systematic Approach", Springer-Verlag, 2005, ISBN 3-540-25994-5
5. Hui-Huang Hsu, "Advanced Data Mining Technologies in Bioinformatics", Idea Group Publishing, 2006, ISBN 1591408636.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

**Semester: M.Tech. III Sem.**

**Subject: Enterprise Resource Planning**

**Total Theory Periods: 40**

**Total Marks in End Semester Exam: 100**

**Minimum number of class tests to be conducted: 02**

**Branch: Software Engineering**

**Code: 522333 (22)**

**Total Tut.Periods:12**

## UNIT - I

**Introduction to ERP:** Evolution, What is ERP? Reasons for the Growth of ERP Market, the advantages of ERP. Enterprise – An overview: Integrated Management Information, Business Modeling, Integrated Data Model.

## UNIT - II

**ERP & Related Technologies:** BPR, MIS, DSS, EIS, Data Warehousing, Data Mining, OLAP, SCM.

**ERP – A Manufacturing Perspective:** MRP, BOM, MRP- II, DRP, JIT and Kanban, CAD/CAM, PDM, MTO, MTS, ATO, ETO, CTO.

## UNIT - III

**ERP Modules:** Finance, Plant Maintenance, Quality Management, Materials Management, Benefits of ERP.

**ERP Markets:** SAP AG, Baan Company, Oracle Corporation, PeopleSoft, JD Edwards, SSA , QAD.

## UNIT - IV

**ERP Implementation Lifecycle:** Pre-evaluation screening, Package evaluation, Project Planning Phase, Gap Analysis, Reengineering, Configuration, Training, Testing, Going Live, Post implementation; Vendors, Consultants and Users.

## UNIT - V

**Future Directions in ERP:** New Markets, New channels, Faster Implementation Methodologies, Business models and BAPIs, convergence on Windows NT, Application platforms, New Business Segments, Web Enabling, Market Snapshots, ERP case studies.

## Text Books

1. Alexis Leon, “Enterprise Resource Planning”, Tata McGraw Hill.
2. Vinod Kumar Garg and N.K.Venkitakrishnan, “Enterprise Resource Planning: Concepts and Practice”, Prentice Hall of India.
3. Alexis Leon, “ERP DEMYSTIFIED”, Tata McGraw Hill.

## Reference Book

1. Thomson, Monk and Brady, “Concepts in ERP”, Vikas Publication.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

**Semester: M. Tech. III Sem.**

**Subject: Distributed Computing**

**Total Theory Periods: 40**

**Total Marks in End Semester Exam: 100**

**Minimum number of class tests to be conducted: 02**

**Branch: Software Engineering**

**Code: 568331 (22)**

**Total Tut. Periods: 12**

## Unit – I

### **Fundamentals of Distributed Computing**

Architectural Models for Distributed and Mobile Computing Systems. Basic Concepts in Distributed Computing such as Clocks, Message Ordering, Consistent Global States, and Consensus.

## Unit- II

### **Basic Algorithms in Message**

Parsing Systems, Leader Election in Rings, and Mutual Exclusion in Shared Memory, Fault-Tolerant Consensus, Causality and Time.

## Unit- III

### **Distributed Operating Systems**

OS and Network Operating Systems, Distributed File systems. Middleware, Client/Server model for computing, common layer application protocols (RPC, RMI, streams), Distributed processes, Network naming, Distributed synchronization and Distributed object-based systems.

## Unit- IV

### **Simulation**

A Formal Model for Simulations, Broadcast and Multicast, Distributed Shared Memory, Fault-Tolerant Simulations of Read/Write Objects Simulating Synchrony, Improving the Fault Tolerance of Algorithms, Fault-Tolerant Clock Synchronization.

### **Distributed Environments (case study)**

Current systems and developments (CORBA).

## Unit-V

### **Advanced Topics**

Randomization, Wait-Free Simulations of Arbitrary Objects, Problems Solvable in Asynchronous Systems, Solving Consensus in Eventually Stable Systems, High Performance Computing-HPF, Distributed and mobile multimedia systems. Adaptability in Mobile Computing. Grid Computing and applications. Fault tolerant Computing Systems.

## Text Books

1. Hagit Attiya, Jennifer Welch, “Distributed Computing: Fundamentals, Simulations, and Advanced Topics”, 2nd Edition, March 2004.
2. Mullendar S, “Distributed Systems”, 2nd Ed. Addison, Wesley 1994.
3. Tannenbaum, “A. Distributed Operating Systems”, Prentice Hall 1995.
4. George Coulouris, Jean Dollimore and Tim Kindberg, “Distributed Systems: Concepts and Design”, *Third Edition*, Addison-Wesley, Pearson Education, 2001.

## Reference Books

1. Helal, Abdelsalam A. *et al.* Anytime, “Anywhere Computing: Mobile Computing Concepts and Technology”, Kluwer Academic Publishers 1999.
2. Cay S Horstmann and Gary Cornell, “Java 2”, Vol. I and II-Sun Micro Systems-2001.

# CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, BHILAI

**Semester: M. Tech. III Sem.**

**Subject: Wireless and Mobile Computing**

**Total Theory Periods: 40**

**Total Marks in End Semester Exam: 100**

**Minimum number of class tests to be conducted: 02**

**Branch: Software Engineering**

**Code: 568332 (22)**

**Total Tut. Periods: 12**

## **Unit I**

### **Introduction**

Introduction to Mobile Communication-Short history of Wireless Communication-Applications-Vehicles, Emergencies, Business, Replacement of Wired Network, Location Dependent Services, Mobile and Wireless Devices- A Simplified Reference Model-Open Research Topics in Mobile Communication.

## **Unit II**

### **Wireless Communication Fundamentals**

Wireless Transmission – Frequencies for Radio Transmission – Signals – Antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum – Medium access control – SDMA, FDMA, TDMA, CDMA – Cellular Wireless Networks.

## **Unit III**

### **Telecommunication Networks**

Telecommunication Systems – GSM, GPRS, DECT, UMTS, IMT-2000 – Satellite Networks – History, Basics – GEO, LEO, MEO – Routing, Localization, Handover - Broadcast Systems -DAB and DVB.

## **Unit IV**

### **Wireless Lan**

Wireless LAN – IEEE 802.11 – Architecture, Services, Physical Layer – MAC Layer, IEEE 802.11a, 802.11b – HIPERLAN – Blue Tooth – Architecture, Radio Layer, Baseband Layer, Link Manager Protocol, L2CAP, Security, SDP, Profile.

## **Unit V**

### **Mobile Communication Systems**

Mobile IP – Requirements, Entities and Terminology, IP Packet Delivery, Agent Discovery, Registration, Tunneling and Encapsulation - IPV6 – MANET – Characteristics, Applications, Routing - Need for Routing - Routing Classification – Table Driven Routing Protocol – DSDV- WRP - Source initiated On-Demand Routing – AODV – DSR - ZRP.

## **Text Books**

1. Jochen H. Schiller, “Mobile Communication”, Pearson Education Publication.
2. D. P. Agrawal and Qing-An Zing, “Introduction to Wireless and Mobile Systems”, Vikas Publishing House.
3. William Stallings, “Wireless Communications and Networks”, PHI/Pearson Education.

## **Reference Books**

1. Stojmenovic and Cacute, “Handbook of Wireless Networks and Mobile Computing”, Wiley, 2002, ISBN 0471419028.

2. Reza Behravanfar, "Mobile Computing Principles: Designing and Developing Mobile Applications with UML and XML", ISBN: 0521817331, Cambridge University Press.
3. C. M. Cordeiro and D. P. Agrawal, "Ad hoc and Sensor Networks: Theory and Applications", World Scientific Publishing.
4. U. Hansmann, L. Merk, M. S. Nicklous and T. Stober, "Principles of Mobile Computing", Springer International Edition, Second Edition, 2005.