

Chhattisgarh Swami Vivekanand Technical University, Bhilai

Scheme of Teaching and Examination

**M. Tech (Computer Science & Engineering)
III Semester**

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	522311 (22)	Data Warehousing & Data Mining	3	1	-	100	20	20	140	4
2	Refer Table –III		Elective–III	3	1	-	100	20	20	140	4
3	Computer Sc. Engg	522321 (22)	Preliminary work on Dissertation	-	-	28	100	-	100	200	14
4	Computer Sc. Engg	522322 (22)	Seminar based on Dissertation	-	-	3	-	-	20	20	2
Total				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

Table – III			
Elective –III			
S.No.	Board of Study	Code	Subject
1	Computer Science Engineering	522331 (22)	Embedded Systems
2	Computer Science Engineering	522332 (22)	Object Oriented Software Engineering
3	Computer Science Engineering	522333 (22)	Enterprise Resource Planning
4	Computer Science Engineering	522334 (22)	Mobile Computing
5	Computer Science Engineering	522335 (22)	Multimedia and Wireless Technology

Note (1) – 1/4th of total strength of students subject to minimum of twenty students is required to offer an elective in the college in a Particular academic session .

Note (2) – Choice of elective course once made for an examination cannot be changed in future examinations.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, Bhilai

Semester: M.E. III Sem.

Subject: Data Warehousing & Data Mining

Total Theory Periods: 40

Total Marks in end Semester Exam.: 100

Minimum number of class tests to be conducted: 02

Branch: Computer Science & Engg.

Code: 522311 (22)

Total Tut Periods: 12

Unit - I

Data Warehousing:

Introduction to Data Warehousing: Evolution of Data Warehousing, Data Warehousing concepts, Benefits of Data Warehousing, Comparison of OLTP and Data Warehousing, Problems of Data Warehousing.

Data Warehousing Architecture

Architecture: Operational Data and Datastore, Load Manager, Warehouse Manager, Query Manager, Detailed Data, Lightly and Highly summarized Data, Archive/Backup Data, Meta-Data, architecture model, 2-tier, 3-tier and 4-tier data warehouse, End user Access tools.

Unit - II

Data Warehousing Tools and Technology

Tools and Technologies: Extraction, cleaning and Transformation tools, Data Warehouse DBMS, Data Warehouse Meta-Data, Administration and management tools, operational vs. information systems. OLAP & DSS support in data warehouse.

Unit-3

Types of Data Warehouses & Data Warehouse Design

Host based, single stage, LAN based, Multistage, stationary distributed & virtual data-warehouses. Data warehousing Design: Designing Data warehouse Database, Database Design Methodology for Data Warehouses, Data Warehousing design Using Oracle.

Unit-4

Data Mining

Basic Data Mining tasks, Knowledge discovery in databases, Issues, OLTP systems, Fuzzy sets and Fuzzy logic, Information Retrieval, Dimensional Modeling, OLAP, Web search engines, Data Mining Techniques

Unit-5

Classification

Statistical based algorithms, Distance based algorithms

Clustering

Minimum Spanning tree, K-means clustering, Nearest neighbor algorithm

Association Rules

Large items sets, Basic Algorithms

Web Mining

Text Books:

1. "Building the Data Warehouse", W.H.Inmon, 3rd Edition, John Wiley & Sons.
2. "Developing the Data Warehouse", W.H.Inmon, C.Kelly, John Wiley & Sons.
3. Thomas Connolly, Carolyn Begg-"Database Systems-A practical approach to Design, Implementation and management" 3rd Edition Pearson Education
4. "Data Mining- Introductory and Advanced Topics", Margaret H. Dunham, Pearson Education

References:

1. W.H.Inmon, C.L.Gassey, "Managing the Data Warehouse", John Wiley & Sons.
2. Fayyad, Usama M. et. al., "Advances in knowledge discovery & Data Mining", MIT Press.
3. Arun K. Pujari, Data Mining Techniques , University press (India) Pvt. Ltd. ,Hyderabad

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, Bilai

Semester: M.E. III Sem.
Subject: Embedded Systems
Total Theory Periods: 40
Total Marks in end Semester Exam.: 100
Minimum number of class tests to be conducted: 02

Branch: Computer Science & Engg.
Code: 522331 (22)
Total Tut Periods: 12

Unit - I

Software and hardware aspects of Embedded system

The concepts of embedded system design, Embedded microcontroller cores, embedded memories, examples of embedded systems.

Technological aspects of embedded system: interfacing between analog and digital blocks, signal conditioning, Digital signal processing, subsystem interfacing, interfacing with external systems, user interfacing, Design tradeoffs due to process compatibility, Thermal consideration etc.

Software aspects of embedded systems: real time programming languages and operating systems.

Unit- II

Introduction, CPU architecture, registers, instruction sets addressing modes Loop timing, timers, Interrupts, Interrupt timing, I/o Expansion, I2C Bus Operation Serial EEPROM, Analog to digital converter, UART Baud Rate-Data Handling-Initialisation, Special Features - serial Programming-Parallel Slave Port.

Unit-III

Motorola MC68H11 Family Architecture Registers, Addressing modes Programs. Interfacing methods parallel I/o interface, Parallel Port interfaces, Memory Interfacing, High Speed I/o Interfacing, Interrupts-interrupt service routine-features of interrupts-Interrupt vector and Priority, timing generation and measurements, Input capture, Output compare, Frequency Measurement, Serial I/o devices RS.232, RS.485. Analog Interfacing, Applications. ARM processors.

Unit-IV

Embedded system development

Embedded system evolution trends. Round - Robin, robin with Interrupts, function-One-Scheduling Architecture, Algorithms. Introduction to-assembler-compiler-cross compilers and Integrated Development Environment (IDE). Object Oriented Interfacing, Recursion, Debugging strategies, Simulators.

Unit-V

RTOS & its overview:

Real Time Operating System: Task and Task States, tasks and data, semaphores and shared Data Operating system Services-Message queues-Timer Function-Events-Memory Management, Interrupt Routines in an RTOS environment, basic design Using RTOS.

Text Books:

1. David E Simon, " An embedded software primer ", Pearson education Asia, 2001.
2. John B Peat man " Design with Microcontroller ", Pearson education Asia, 1998.
3. Jonarthan W. Valvano Brooks/cole " Embedded Micro computer Systems. Real time Interfacing ", Thomson learning 2001.

References:

1. Burns, Alan and Wellings, Andy, " Real-Time Systems and Programming Languages", Second Edition. Harlow: Addison-Wesley-Longman, 1997.
2. Raymond J.A. Bhur and Donald L.Biale, " An Introduction to real time systems: Design to networking with C/C++ ", Prentice Hall Inc. New Jersey, 1999.
3. Grehan Moore, and Cyliax, " Real time Programming: A guide to 32 Bit Embedded Development. Reading " Addison-Wesley-Longman, 1998.
4. Heath, Steve, " Embedded Systems Design ", Newnes 1997.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, Bilai

Semester: M.E. III Sem.
Subject: Object Oriented Software Engineering
Total Theory Periods: 40
Total Marks in end Semester Exam: 100
Minimum number of class tests to be conducted: 02

Branch: Computer Science & Engg.
Code: 522332 (22)
Total Tut Periods: 12

Unit-1

Introduction to Software Engineering:

Software Engineering Development, Software Life Cycle Models, Standards for developing life cycle models.

Unit-2

Object Methodology & Requirement Elicitation:

Introduction to Object Oriented Methodology, Overview of Requirements Elicitation, Requirements Model-Action & Use cases, Requirements Elicitation Activities, Managing Requirements Elicitation

Unit-3

Architecture:

Model Architecture, Requirements Model, Analysis Model, Design Model, Implementation Model, Test Model

Modeling with UML:

Basic Building Blocks of UML, A Conceptual Model of UML, Basic Structural Modeling, UML Diagrams

Unit-4

System Analysis:

Analysis Model, Dynamic Modeling & Testing

System Design:

Design concepts & activities, Design models, Block design, Testing

Unit-5

Component Based Computing

Fundamentals: Definition and nature of components, components and interfaces, Interfaces as contracts, the benefits of components.

Basic Techniques: component design and assembly, Relationship with the client-server model and with patterns, Use of objects and object lifecycle services, use of object brokers

Text/Reference Books:

1. Stephen R. Scach, "Classical & Object Oriented Software Engineering with UML and Java", McGraw Hill, 1999.
2. Ivar Jacobson, Magnus Christerson, et. al. "Object Oriented Software Engineering: A use Case Driven approach" Addison wisely, 1992

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, Bhilai

Semester: **M.E. 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: **Computer Science & Engg**

Code: **522333 (22)**

Total Tut Periods: **12**

Unit-1

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-2

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-3

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-4

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-5

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. Enterprise Resource Planning, Alexis Leon, Tata McGraw Hill.
2. Enterprise Resource Planning Concepts & Practice, 2nd Edition, Vinod Kumar Garg, N.K.VenkitaKrishan.

References:

1. Concepts in ERP, Vikas Publication, Thomson , Monk & Brady.

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, Bhilai

Semester: M.E. III Sem.
Subject: Mobile Computing
Total Theory Periods: 40
Total Marks in end Semester Exam.: 100
Minimum number of class tests to be conducted: 02

Branch: Computer Science Engg.
Code: 522334 (22)
Total Tut Periods: 12

Unit-1

Issues in Mobile Computing, Overview of wireless Telephony, IEEE 802.11 & Blue Tooth, Wireless Multiple access protocols, channel Allocation in cellular systems.

Unit-2

Data Management Issues, data replication for mobile computers, adaptive Clustering for Mobile Wireless networks.

Unit-3

Distributed location Management, pointer forwarding strategies, Energy Efficient Indexing on air, Energy Indexing for wireless broadcast data, Mobile IP, TCP Over wireless.

Unit-4

Mobile Agents Computing, Security and fault tolerance, transaction processing in Mobile computing environment.

Unit-5

Ad hoc network, Routing Protocol, Global State Routing (GSR), Dynamic State Routing (DSR), Fisheye State Routing (FSR), Ad hoc On-Demand Distance Vector (AODV), Destination Sequenced Distance-Vector Routing (DSDV).

Text Books:

1. Mobile Communication by Jochen Schiller, Prentice Hall

CHHATTISGARH SWAMI VIVEKANAND TECHNICAL UNIVERSITY, Bilai

Semester: M.E. III Sem.
Subject: Multimedia and Wireless Technology
Total Theory Periods: 40
Total Marks in end Semester Exam.: 100
Minimum number of class tests to be conducted: 02

Branch: Computer Science Engg.
Code: 522335 (22)
Total Tut Periods: 12

Unit -1

Multimedia Applications and Quality of Service (QoS)

Multimedia Applications, Applications, Main Protocols, Quality of Service Fundamentals, Introduction QoS Parameters, Multimedia Application Requirements, QoS Services, Realization of QoS Services, QoS Mechanisms Introduction, Classification, Channel Access Mechanism, Packet Scheduling Mechanisms, Traffic Policing , Mechanism, Resource Reservation Signaling Mechanisms, Admission Control

Unit -2

Multimedia Coding Techniques for Wireless Networks

Introduction , Digital Multimedia and the Need for Compression , Standardization Activities Basics of Compression, Entropy, Entropy Reduction and , Entropy Coding , General Compression Scheme , Understanding Speech Characteristics , Speech Generation and Perception , Digital Speech , Speech Modeling and Linear Prediction, General Aspects of Speech Compression , Three Types of Speech Compressors , Waveform Compression , Open-Loop Vocoder: Analysis – Synthesis Coders Closed Loop Coders: Analysis by Synthesis Coding , Speech Coding Standards , Understanding Video Characteristics

Unit -3

Multimedia Transport Protocols for Wireless Networks

Introduction , Networked Multimedia-based Services , Time Relations in Multimedia , Non-Real-time and Real-time Multimedia Services , CBR vs. VBR Encoding for Video , Transmission of VBR Content Over Constant Rate Channels , Classification of Real-time Services, One-Way Streaming , Media on Demand (MoD) Delivery , Conversational Communication , Adaptation at the Video Encoding Level , Non-adaptive Encoding , Adaptive Encoding , Scalable/Layered Encoding , Quality of Service Issues for Real-time Multimedia Services , Bandwidth Availability , Delay and Jitter , Recovering Losses

Unit-4

Multimedia Control Protocols for Wireless Networks

Introduction , A Premier on the Control Plane of Existing Multimedia Standards , ITU Protocols for Videoconferencing on Packet-switched Networks , IETF Multimedia Internetworking Protocols , Control Protocols for Wireless Networks, Protocol for Describing Multimedia Sessions: SDP , The Syntax of SDP Messages , SDP Examples , Control Protocols for Media Streaming , RSTP Operation , RTSP Messages , RTSP Methods , Session Setup: The Session Initiation Protocol (SIP) , Components , SIP Messages , Addresses , Address Resolution , Session Setup , Session Termination and Cancellation , Advanced SIP Features for Wireless Networks

Unit-5

Wireless Multimedia Personal Area Networks

Introduction , Multimedia Information Representation , Bluetooth1 (IEEE 802.15.1) , The Bluetooth1 Protocol Stack , Physical Layer Details , Description of Bluetooth1 Links and Packets , Link Manager , Secret Discovery and Connection Establishment , TXOP Limit vs. Medium Accessing, Bluetooth1 Security
Application Areas , Coexistence with Wireless LANs (IEEE 802.15.2) , Overview of 802.11 Standard , 802.11b and Bluetooth1 Interference Basics , Coexistence Framework, High-Rate WPANs (IEEE 802.15.3) , Physical Layer , Network Architecture Basics , Piconet Formation and Maintenance

Text Books:

- 1) Multimedia Wireless By Ali, Kohen, Willey Eastern