Chhattisgarh Swami Vivekanand Technical University, Bhilai

Scheme of Teaching and Examination

M. Tech (Computer Science & Engineering)

III Semester

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Board of Study</th>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Periods per week</th>
<th>Scheme of Exam</th>
<th>Total Marks</th>
<th>Credit</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td>L</td>
<td>T</td>
<td>P</td>
<td>ESE</td>
</tr>
<tr>
<td>1</td>
<td>Computer Sc. Engg</td>
<td>522311 (22)</td>
<td>Data Warehousing &amp; Data Mining</td>
<td>3</td>
<td>1</td>
<td>-</td>
<td>100</td>
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<tr>
<td>2</td>
<td>Refer Table –III</td>
<td>Elective–III</td>
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<td>Computer Sc. Engg</td>
<td>522321 (22)</td>
<td>Preliminary work on Dissertation</td>
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<td>Computer Sc. Engg</td>
<td>522322 (22)</td>
<td>Seminar based on Dissertation</td>
<td>-</td>
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</tbody>
</table>

L-Lecture, T- Tutorial, P- Practical, ESE- End Semester Examination, CT- Class Test, TA- Teacher’s Assessment

Table – III

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Board of Study</th>
<th>Code</th>
<th>Subject</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Computer Science Engg</td>
<td>522331 (22)</td>
<td>Embedded Systems</td>
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<tr>
<td>2</td>
<td>Computer Science Engg</td>
<td>522332 (22)</td>
<td>Object Oriented Software Engineering</td>
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<tr>
<td>3</td>
<td>Computer Science Engg</td>
<td>522333 (22)</td>
<td>Enterprise Resource Planning</td>
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<tr>
<td>4</td>
<td>Computer Science Engg</td>
<td>522334 (22)</td>
<td>Mobile Computing</td>
</tr>
<tr>
<td>5</td>
<td>Computer Science Engg</td>
<td>522335 (22)</td>
<td>Multimedia and Wireless Technology</td>
</tr>
</tbody>
</table>

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.
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:
4. "Data Mining- Introductory and Advanced Topics", Margaret H. Dunham, Pearson Education

References:
3. Arun K. Pujari, Data Mining Techniques , University press (India) Pvt. Ltd. ,Hyderabad
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

Unit-IV
Embedded system development

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:

References:
Unit-1
Introduction to Software Engineering:

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:
Unit-1
Introduction to ERP: Evolution, What is ERP? Reasons for the growth of ERP market, the advantages of ERP;

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:

References:
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

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
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
Vocoders: 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 Primer on the Control Plane of Existing Multimedia Standards, ITU Protocols for
Videoconferencing on Packet-switched Networks, IETF Multimedia Internetworking Protocols, Control
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, Bluetooth 1 (IEEE 802.15.1), The Bluetooth 1
Protocol Stack, Physical Layer Details, Description of Bluetooth 1 Links and Packets, Link Manager,
Secret Discovery and Connection Establishment, TXOP Limit vs. Medium Accessing, Bluetooth 1
Security, Application Areas, Coexistence with Wireless LANs (IEEE 802.15.2), Overview of 802.11 Standard,
802.11b and Bluetooth 1 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