Scheme and Syllabus of Master of Technology (Computer Science Engineering) Batch 2015

By Board of Studies CSE/IT/AMT
## Semester –I

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
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<th>P</th>
<th>Marks Distribution</th>
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<td>MTCS-101</td>
<td>Advanced Software Engineering</td>
<td>3</td>
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<td>Advanced Computer Architecture</td>
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MTCS-101 Advanced Software Engineering

Section- A

Formal Methods: Basic concepts, mathematical preliminaries, Applying mathematical notions for formal specification, Formal specification languages, using Z to represent an example software component, the ten commandments Of formal methods, Formal methods- the road ahead.

Section- B
Component-Based Software Engineering: CBSE process, Domain engineering, Component-based development, Classifying and retrieving components and economics of CBSE.

Client/Server Software Engineering: Structure of client/server systems, Software engineering for Client/Server systems, Analysis modeling issues, Design for Client/Server systems, Testing issues

Section- C
Web Engineering: Attributes Of web-based applications, the WebE process, a framework for WebE. Formulating, Analysing web-based systems, design and testing for web-based applications, Management issues.

Reengineering: Business process reengineering, Software reengineering, Reverse reengineering, Restructuring, Forward reengineering, economics of reengineering.

Section- D

Computer-Aided Software Engineering: Building Blocks for CASE, taxonomy Of CASE tools, integrated CASE environments, Integration architecture, and CASE repository

Recommended Books
MTCS-102 ADVANCED COMPUTER ARCHITECTURE

Section-A

**Fundamentals of Processors:** Instruction set architecture; single cycle processors, hardwired and micro-coded FSM processors; pipelined processors, multi-core processors; resolving structural, data, control and name hazards; analyzing processor performance.

Section-B

**Fundamentals of Memories:** memory technology; direct-mapped, associative cache; write-through and write-back caches; single-cycle, FSM, pipe-lined cache; Analyzing memory performance.

Section-C

**Advanced Processors:** Superscalar execution, out-of-order execution, register renaming, memory disambiguation, dynamic instruction scheduling, branch prediction, speculative execution; multi-threaded, VLIW and SIMD processors.

Section-D

**Advanced Memories:** non-blocking cache memories; memory protection, translation and virtualization; memory synchronization, consistency and coherence.

**Recommended Books:**

MTCS-103 INFORMATION SECURITY

Section -A

Section-B

Section-C

Internet Security Protocols: SSL, TLS, IPSEC, S/ MIME.

Section-D


Suggested Readings
MTCS-104 Advanced Database Systems

Section A


Advanced Transaction Processing and Concurrency Control:

Transaction Concepts, Concurrency Control: Locking Methods, Timestamping Methods, Optimistic Methods for Concurrency Control, Concurrency Control in Distributed Systems.

Section B

Query Compiler: Introduction, parsing, generating logical query plan from parse tree.


Query Evaluation: Introduction, Approaches to QE, Transformation of relational expressions in Query optimization, heuristic optimization, cost estimation for various operations, transformation rule.

Section C

Distributed Database

Centralized DBMS and Distributed DBMS, functions and architecture of a DDBMS, Distributed Data Storage, Transparency issues in DDBMS, Query Processing DDBMS, Distributed transaction Management and Protocols, Distributed Concurrency Control and Deadlock Management.

Object Oriented Database

Limitations of RDBMS, Need of Complex Datatype, Data Definition, ODBMS Fundamentals, issues in OODBMS, Object-oriented database design.Comparison of ORDBMS and OODBMS.

Section D

Emerging Database Models, Technologies and Applications

Multimedia database-Emergence, difference from other data types, structure, deductive databases, GIS and spatial databases, Knowledge database, Information Visualization, Wireless Networks and databases, Personal database, Digital libraries, web databases, case studies.

References
1. Advanced database management system by Rini Chkrabarti and Shibhadra Dasgupta, Dreamtech.
2. Distributed Databases by Ozu and Valduriez ,Pearson Education.
3. Fundamentals of Database Systems by Ramez Elmasri, Shamkant Navathe, Pearson Education
Section-A


Section-B


**Image Enhancement :** Spatial Domain Methods, Frequency Domain Methods, Some Simple Intensity Transformations, Histogram Processing, Image Subtraction, Image Averaging, Background, Smoothing Filters, Sharpening Filters, Lowpass Filtering, Highpass Filtering, Generation of Spatial Masks from Frequency Domain Specifications.

Section-C


Section-D

**Image Segmentation:** Edge Detection - Line Detection - Curve Detection - Edge Linking And Boundary Extraction, Boundary Representation, Region Representation And Segmentation, Morphology-Dilation, Erosion, Opening And Closing. Hit And Miss Algorithms Feature Analysis

**Color and multispectral Image processing:** Color Image-Processing Fundamentals, RGB Models, HSI Models, Relationship Between Different Models. Multispectral Image Analysis - Color Image Processing Three Dimensional Image Processing-Computerized Axial Tomography-Stereometry-Stereoscopic Image Display-Shaded Surface Display.

Text Book:

**Reference Books:**


