# SCHEME OF INSTRUCTION & EXAMINATION
## B.E. III YEAR (COMPUTER SCIENCE & ENGINEERING)

With effect from the Academic year 2013-2014

## SEMESTER - I

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Syllabus Ref. No.</th>
<th>SUBJECT</th>
<th>Scheme of Instruction</th>
<th>Scheme of Examination</th>
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<td></td>
<td>Periods per Week</td>
<td>Duration in Hours</td>
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<tr>
<td>1</td>
<td>CS301 UE</td>
<td>Database Management Systems</td>
<td>4</td>
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<tr>
<td>2</td>
<td>CS310 UE</td>
<td>Data Communications</td>
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<td>3</td>
<td>CS303 UE</td>
<td>Computer Graphics</td>
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<td>CS304 UE</td>
<td>Operating Systems</td>
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<td>5</td>
<td>CS305 UE</td>
<td>Automata, Languages &amp; Computation</td>
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|**PRACTICALS**|                  |         |     |     |          |          |            |         |
| 1      | CS331 UE          | DBMS Lab | - | 3 | 3 | 50 | 25 | 2 |
| 2      | CS332 UE          | Computer Graphics Lab | - | 3 | 3 | 50 | 25 | 2 |
| 3      | CS333 UE          | Operating Systems Lab | - | 3 | 3 | 50 | 25 | 2 |
|        | **TOTAL**         |         | 20 | 9 |      | 525 | 200 | 26 |
CS 301 UE

DATABASE MANAGEMENT SYSTEMS

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks
Sessional 25 Marks
Credits 4

UNIT – I

UNIT – II
Structured Query Language: Data Definition, Basic Structure of SQL Queries, Set Operations, Aggregate Functions, Null Values, Nested Sub-queries, Complex Queries, Views, Modification of the Database, Joined Relations.

UNIT – III

UNIT - IV
Indexing and Hashing: Basic Concepts, Ordered Indices, B*-tree Index Files, B-tree Index Files, Multiple-Key Access, Static Hashing, Dynamic Hashing, Comparison of Ordered Indexing and Hashing, Bitmap Indices.

UNIT – V
Suggested Reading:

With effect from Academic Year 2013-2014

CS 310 UE

DATA COMMUNICATIONS

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks
Sessional 25 Marks
Credits 4

Objectives:
- To learn about Data Communications in this introductory course in networking technology.
- To gain a practical understanding of relevant terminology, concepts and other information necessary to be knowledgeable in Data Communications.

Outcomes: This course enables the student to develop and demonstrate the following:
- Ability to understand the fundamentals and the framework necessary to keep pace with changes in networking technologies.
- Ability to make intelligent decisions about the appropriate design, integration and use of Data Communications equipment and systems.

UNIT-I
Data Communication and Networking Overview, Protocol Architectures: OSI, TCP/IP and ATM.
Data transmission, Guided and Wireless transmission.

UNIT–II
Multiplexing, Circuit switching and Packet switching, Digital Data Communication Techniques, Asynchronous and Synchronous transmission, DSL and ADSL.

UNIT-III
Data Link Control: Error detection techniques, Interfacing.
Line configurations, Flow control, Error control, Data link control protocols, Protocol verification.

UNIT-IV

UNIT-V
Wireless LANs, 802.11 Broadband wireless, 802.16 Bluetooth, Bridge, Spanning Tree Bridge, Source Routing Bridge, Repeaters, Hubs, Switches, Routers and Gateways, Virtual LANs.

Suggested Reading:
**CS 303 UE**

**COMPUTER GRAPHICS**

<table>
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**UNIT-I**


**UNIT-II**


**UNIT-III**


**UNIT-IV**


**UNIT-V**

Modeling & Hierarchy: Hierarchal models, Trees and traversal, Use of tree data structure, Animation, Graphical objects, Scene graphs, Simple scene graph API, Open Scene graph, Other tree structures. Curves & Surfaces: Representation of curves and surfaces, Design criteria, Bezier curves and surfaces, Cubic B-splines, General B-splines, Rendering curves and surfaces, Curves and surfaces in OpenGL.

**Suggested Reading:**

OPERATING SYSTEMS

Instruction 4 Periods per week
Duration of University Examination 3 Hours
University Examination 75 Marks
Sessional 25 Marks
Credits 4

UNIT-I

UNIT-II

UNIT-III

UNIT-IV
Device Management: Disk scheduling methods, Disk management, Device drivers and interfaces, CPU- Device interactions, I/O optimization.

UNIT-V

Suggested Reading:
AUTOMATA, LANGUAGES AND COMPUTATION

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UNIT-I

UNIT-II

UNIT-III
Properties of CFLs–Normal forms for CFGs, Pumping Lemma, Closure properties, Decision algorithms, Deterministic Context Free Languages, Predicting machines, Decision properties, LR(0) grammars, LR(0) and DPDA, LR(k) grammars.

UNIT-IV
Turing Machines–Introduction, Computational Languages and Functions, Techniques for construction of Turing machines. Modifications of TM, TM as enumerator, Restricted TM.

UNIT-V

Suggested Reading:
1. John E. Hopcroft, Jeffrey D. Ullman, Introduction to Automata Theory, Languages and Computation, Narosa, 1979
2. Zvi Kohavi, Switching and Finite Automata Theory, TMH, 1976
CS 331UE

DBMS LAB

Instruction 3 Periods per week
Duration of University Examination 3 Hours
University Examination 50 Marks
Sessional 25 Marks
Credits 2

1. Creation of database (exercising the commands for creation).
2. Simple to Complex condition query creation using SQL Plus.
3. Usage of Triggers and Stored Procedures.
4. Creation of Forms for Student information, Library information, Pay roll etc.
5. Writing PL/SQL procedures for data validation.
7. Creating password and security features for applications.
8. Usage of File locking, Table locking facilities in applications.
9. Creation of small full-fledged database application spreading over 3 sessions.

Note: The creation of sample database for the purpose of the experiments is expected to be pre-decided by the instructor.
CS 332 UE

COMPUTER GRAPHICS LAB

Instruction 3 Periods per week
Duration of University Examination 3 Hours
University Examination 50 Marks
Sessional 25 Marks
Credits 2

1. Program to draw simple 2-D images using basic OpenGL functions.
2. Program to draw simple 3-D shapes using polygonal approximations.
3. Program to demonstrate the usage of display lists.
4. Create a simple game with interactive graphics programming.
5. Program to demonstrate animation effect using transformations and double buffering.
6. Create a simple walk through program.
7. Program using projections in OpenGL.
8. Program with light sources and shading.
9. Program that defines and renders a scene graph using Open Scene Graph API.
With effect from Academic Year 2013-2014

CS 333 UE

OPERATING SYSTEMS LAB

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1-3. Memory Management Algorithms
4-5. Examples of Multithreading
6. Producer & Consumer problem using Semaphores and Shared memory
7-8. Processor Scheduling algorithms
9. Dining Philosophers problem using Semaphores
10. Readers and Writers problem using Semaphores
11. Shell-programming exercises