### SEMESTER I

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS8151</td>
<td>Technical English - I</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>MA8151</td>
<td>Mathematics I</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>PH8151</td>
<td>Engineering Physics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CY8151</td>
<td>Engineering Chemistry</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>GE8151</td>
<td>Computing Techniques</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>GE8152</td>
<td>Engineering Graphics</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

**PRACTICAL**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>PH8161</td>
<td>Physics Laboratory</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>CY8161</td>
<td>Chemistry Laboratory</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>GE8161</td>
<td>Computer Practices Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>GE8162</td>
<td>Engineering Practices Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL** 17 2 13 27

### SEMESTER II

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>HS8251</td>
<td>Technical English - II</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>MA8251</td>
<td>Mathematics - II</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>PH8253</td>
<td>Physics for Information Science</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CH8202</td>
<td>Chemistry for Information Science</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8201</td>
<td>Information Technology Essentials</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8202</td>
<td>Programming and Data Structures I</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**PRACTICALS**

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT8211</td>
<td>Information Technology Essentials Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8212</td>
<td>Programming and Data Structures I Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL** 18 2 6 24
## SEMESTER III

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THEORY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA8354</td>
<td>Probability and Queueing Theory</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>GE8351</td>
<td>Environmental Science &amp; Engineering **</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8301</td>
<td>Computer Organisation</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>IT8302</td>
<td>Database Systems Concepts</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8303</td>
<td>Programming and Data Structures II</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>PRACTICALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT8311</td>
<td>Database Systems Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8312</td>
<td>Digital and Computer Organisation Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8313</td>
<td>Programming and Data Structures II Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>15</td>
<td>2</td>
<td>9</td>
<td>23</td>
</tr>
</tbody>
</table>

## SEMESTER IV

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THEORY</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MA8451</td>
<td>Discrete Mathematics</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>CS8451</td>
<td>Operating Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CS8452</td>
<td>Software Engineering</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8401</td>
<td>Algorithmics</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>IT8402</td>
<td>Formal Languages and Automata</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8451</td>
<td>Web Technology</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>PRACTICALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CS8461</td>
<td>Operating Systems Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8411</td>
<td>Web Technology Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>18</td>
<td>1</td>
<td>8</td>
<td>24</td>
</tr>
</tbody>
</table>
### SEMESTER V

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS8551</td>
<td>Object Oriented Analysis and Design</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8501</td>
<td>Computer Networks</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>IT8502</td>
<td>Distributed Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8503</td>
<td>Graphics and Multimedia</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8504</td>
<td>Integrated Programming</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>E1</td>
<td>Elective I</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>PRACTICALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IT8511</td>
<td>Computer Networks Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8512</td>
<td>Graphics and Multimedia Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8513</td>
<td>Socially Relevant Project</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>17</td>
<td>0</td>
<td>8</td>
<td>24</td>
</tr>
</tbody>
</table>

### SEMESTER VI

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT8601</td>
<td>Embedded Systems</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8602</td>
<td>Information Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8603</td>
<td>Mobile Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E2</td>
<td>Elective II</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E3</td>
<td>Elective III</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>PRACTICALS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HS8561</td>
<td>Employability Skills</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>IT8611</td>
<td>Creative and Innovation Project</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8612</td>
<td>Embedded System Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8613</td>
<td>Mobile Computing Laboratory</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>12</td>
<td>0</td>
<td>11</td>
<td>22</td>
</tr>
</tbody>
</table>

Attested
Director
### SEMESTER VII

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT8701</td>
<td>Data Analytics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8702</td>
<td>Information Security</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8703</td>
<td>Principles of Human Computer Interaction</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E4</td>
<td>Elective IV</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E5</td>
<td>Elective V</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E6</td>
<td>Elective VI</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>PRACTICALS</strong></td>
<td><strong>Human Computer Interaction Laboratory</strong></td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>IT8712</td>
<td>Industrial Training</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>2</td>
</tr>
</tbody>
</table>

**TOTAL** 18 0 6 22

### SEMESTER VIII

<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>E7</td>
<td>Elective VII</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>E8</td>
<td>Elective VIII</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td><strong>PRACTICALS</strong></td>
<td><strong>Project Work</strong></td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>6</td>
</tr>
</tbody>
</table>

**TOTAL** 6 0 12 12

**TOTAL NO OF CREDITS: 178**
<table>
<thead>
<tr>
<th>COURSE CODE</th>
<th>COURSE TITLE</th>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA8351</td>
<td>Algebra Number Theory</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>CS8651</td>
<td>Digital Signal Processing – Algorithms And Application</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8001</td>
<td>Advanced Database Technology</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8002</td>
<td>Advanced Networks</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8003</td>
<td>Agent Based Intelligent System</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8004</td>
<td>C# And .Net Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8005</td>
<td>Cloud Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8006</td>
<td>Computational Linguistics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8007</td>
<td>Graph Theory</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8008</td>
<td>Heterogeneous Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8009</td>
<td>Intellectual Property Rights</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8010</td>
<td>Knowledge Engineering</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8011</td>
<td>Mobile Application Development</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8012</td>
<td>Network Programming and Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8013</td>
<td>Principles of Compiler Design</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8014</td>
<td>Service Oriented Architecture</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8015</td>
<td>Social Network Analysis</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8016</td>
<td>Soft Computing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8017</td>
<td>Software Project Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8018</td>
<td>Software Testing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8019</td>
<td>Wireless Sensor and Mesh Networks</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8071</td>
<td>Digital Image Processing</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8072</td>
<td>Free and Open Source Software</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>IT8073</td>
<td>TCP/IP Design and Implementation</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>MA8353</td>
<td>Numerical Methods</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>MG8654</td>
<td>Total Quality Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CS8071</td>
<td>Cyber Forensics</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CS8072</td>
<td>Game Programming</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CS8073</td>
<td>Semantic Web</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CS8074</td>
<td>Unix Internals</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>CS8075</td>
<td>Foundation Skills in Integrated Product Development</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>GE8072</td>
<td>Disaster Management</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>GE8073</td>
<td>Human Rights</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
OBJECTIVES:

- To enable all students of engineering and technology develop their basic communication skills in English.
- To give special emphasis to the development of speaking skills amongst the students of engineering and technology.
- To ensure that students use the electronic media such as internet and supplement the learning materials used in the classroom.
- To inculcate the habit of reading for pleasure.

UNIT I

Listening - Introducing learners to GIE - Types of listening - Listening to audio (verbal & sounds); Speaking - Speaking about one's place, important festivals etc. - Introducing oneself, one's family / friend; Reading - Skimming a reading passage - Scanning for specific information - Note-making; Writing - Free writing on any given topic (My favourite place / Hobbies / School life, etc.) - Sentence completion - Autobiographical writing (writing about one's leisure time activities, hometown, etc.); Grammar - Prepositions - Reference words - Wh-questions - Tenses (Simple); Vocabulary - Word formation - Word expansion (root words / etymology); E-materials - Interactive exercises for Grammar & Vocabulary - Reading comprehension exercises - Listening to audio files and answering questions.

UNIT II

Listening - Listening and responding to video lectures / talks; Speaking - Describing a simple process (filling a form, etc.) - Asking & answering questions - Telephone skills - Telephone etiquette; Reading - Critical reading - Finding key information in a given text - Sifting facts from opinions; Writing - Biographical writing (place, people) - Lab descriptions (general/specific description of laboratory experiments) - Definitions - Recommendations; Grammar - Use of imperatives - Subject-verb agreement; Vocabulary - Compound words - Word Association; E-materials - Interactive exercises for Grammar and Vocabulary - Listening exercises with sample telephone conversations / lectures - Picture-based activities.

UNIT III

Listening - Listening to specific task - focused audio tracks; Speaking - Role-play - Simulation - Group interaction - Speaking in formal situations (teachers, officials, foreigners); Reading - Reading and interpreting visual material; Writing - Jumbled sentences - Coherence and cohesion in writing - Channel conversion (flowchart into process) - Types of paragraph (cause & effect / compare & contrast / narrative / analytical) - Informal writing (letter/e-mail/blogs) - Paraphrasing; Grammar - Tenses (Past) - Use of sequence words - Adjectives; Vocabulary - Different forms and uses of words, Cause and effect words; E-materials - Interactive exercises for Grammar and Vocabulary - Excerpts from films related to the theme and follow up exercises - Pictures of flow charts and tables for interpretations.
UNIT IV
Listening - Watching videos / documentaries and responding to questions based on them; Speaking - Responding to questions - Different forms of interviews - Speaking at different types of interviews; Reading - Making inference from the reading passage - Predicting the content of a reading passage; Writing - Interpreting visual materials (line graphs, pie charts etc.) - Essay writing – Different types of essays; Grammar - Adverbs – Tenses – future time reference; Vocabulary - Single word substitutes - Use of abbreviations & acronyms; E-materials - Interactive exercises for Grammar and Vocabulary - Sample interviews - film scenes - dialogue writing.

UNIT V
Listening - Listening to different accents, Listening to Speeches / Presentations, Listening to broadcast & telecast from Radio & TV; Speaking - Giving impromptu talks, Making presentations on given topics; Reading - Email communication - Reading the attachment files having a poem/joke/proverb - Sending their responses through email Writing - Creative writing, Poster making; Grammar - Direct and indirect speech; Vocabulary - Lexical items (fixed / semi fixed expressions); E-materials - Interactive exercises for Grammar & Vocabulary - Sending emails with attachment – Audio / video excerpts of different accents, - Interpreting posters

TOTAL : 60 PERIODS

OUTCOMES:
Learners should be able to:
• Speak clearly, confidently, comprehensibly, and communicate with one or many listeners using appropriate communicative strategies.
• Write cohesively and coherently and flawlessly avoiding grammatical errors, using a wide vocabulary range, organizing their ideas logically on a topic.
• Read different genres of texts adopting various reading strategies.
• Listen/view and comprehend different spoken discourses/excerpts in different accents.

TEXT BOOKS:

REFERENCE BOOKS:
EXTENSIVE READERS:


WEBSITE RESOURCES:

1. www.uefap.com
2. www.eslcafe.com
3. www.listen-to-english.com
4. www.owl.english.purdue.edu
5. www.chompchomp.com

MA8151 MATHEMATICS – I
(Common to all branches of B.E. / B.Tech. Programmes in I Semester) 3 10 4

OBJECTIVES:

- To develop the use of matrix algebra techniques this is needed by engineers for practical applications.
- To make the student knowledgeable in the area of infinite series and their convergence so that he/she will be familiar with limitations of using infinite series approximations for solutions arising in mathematical modeling.
- To familiarize the student with functions of several variables. This is needed in many branches of engineering.
- To introduce the concepts of improper integrals, Gamma, Beta and Error functions which are needed in engineering applications.
- To acquaint the student with mathematical tools needed in evaluating multiple integrals and their usage.

UNIT I MATRICES


UNIT II INFINITE SERIES

OUTCOMES:

- This course equips students to have basic knowledge and understanding in one field of materials, integral and differential calculus.

TEXT BOOKS:


REFERENCES:


PH8151 ENGINEERING PHYSICS
(Common to ALL Branches of B.E./B.Tech. Programmes) 3 0 0 3

OBJECTIVE:

To introduce the basic physics concepts relevant to different branches of Engineering and Technology.

UNIT I PROPERTIES OF MATTER 9

UNIT II  ACOUSTICS AND ULTRASONICS

UNIT III  THERMAL PHYSICS

UNIT IV  APPLIED OPTICS
Interference - Michelson interferometer: construction, working, determination of wave length and thickness - anti-reflection coating - air wedge and its application - Lasers - Einstein's coefficients - CO₂, Nd.YAG and semiconductor lasers - homo junction and hetero junction - construction and working - applications - Optical fibres - classification (index & mode based) - principle and propagation of light in optical fibres - acceptance angle and numerical aperture - fibre optic communication system - active and passive sensors.

UNIT V  SOLID STATE PHYSICS
Nature of bonding - growth of single crystals (qualitative) - crystal systems - crystal planes and directions - expressions for interplanar distance - coordination number and packing factor for simple structures: SC, BCC, FCC and HCP - structure and significance of NaCl, ZnS, diamond and graphite - crystal imperfections: point defects, dislocations and stacking faults - unit cell, Bravais space lattices - miller indices.

OUTCOMES:
- The students will have knowledge on the basics of physics related to properties of matter, Optics, acoustics etc., and they will apply these fundamental principles to solve practical problems related to materials used for engineering applications

TOTAL : 45 PERIODS

TEXT BOOKS:

REFERENCES:
OBJECTIVES:

- To make the students acquire sound knowledge of second law of thermodynamics and second law based derivations of importance in engineering applications in all disciplines.
- To make the students conversant with basics of polymer chemistry.
- To make the students understand the concepts of Kinetics and Catalysis.
- To acquaint the student with concepts of important photophysical and photochemical processes and spectroscopy.
- To acquaint the students with the basics of nano materials, their properties and applications.

UNIT I  CHEMICAL THERMODYNAMICS  9
Second law: Entropy - entropy change for an ideal gas, reversible and irreversible processes; entropy of phase transitions; Clausius inequality. Free energy and work function: Helmholtz and Gibbs free energy functions; Criteria of spontaneity; Gibbs-Helmholtz equation; Clausius-Clapeyron equation; Maxwell relations – Van’t Hoff isotherm and isochore. Chemical potential; Gibbs-Duhem equation – variation of chemical potential with temperature and pressure.

UNIT II  POLYMER CHEMISTRY  9
Introduction: Classification of polymers – Natural and Synthetic; Thermoplastic and Thermosetting. Functionality – Degree of polymerisation. Types and mechanism of polymerisation: Addition (Free Radical, cationic, anionic and living); condensation and copolymerisation. Properties of polymers: Tg, Tacticity, Molecular weight – weight average, number average and polydispersity index. Techniques of polymerisation: Bulk, emulsion, solution and suspension.

UNIT III  KINETICS AND CATALYSIS  9

UNIT IV  PHOTOCHEMISTRY AND SPECTROSCOPY  9
UNIT V NANOCHEMISTRY

TOTAL :45 PERIODS

OUTCOMES:
• The knowledge gained on polymer chemistry, thermodynamics, spectroscopy, Kinetics and Catalysis and nano materials will provide a strong platform to understand the concepts on these subjects for further learning.

TEXT BOOKS:

REFERENCES:

GE8151 COMPUTING TECHNIQUES
3 0 0 3

OBJECTIVES:
The students should be made to:
• Learn the organization of a digital computer.
• Be exposed to the number systems.
• Learn to think logically and write pseudo code or draw flow charts for problems.
• Be exposed to the syntax of C.
• Be familiar with programming in C.
• Learn to use arrays, strings, functions, pointers, structures and unions in C.

UNIT I INTRODUCTION
UNIT II    C PROGRAMMING BASICS  10
Problem formulation – Problem Solving - Introduction to ‘C’ programming –
fundamentals – structure of a ‘C’ program – compilation and linking processes –
Constants, Variables – Data Types – Expressions using operators in ‘C’ – Managing
Input and Output operations – Decision Making and Branching – Looping statements –
solving simple scientific and statistical problems.

UNIT III    ARRAYS AND STRINGS  9
Arrays – Initialization – Declaration – One dimensional and Two dimensional arrays.
String- String operations – String Arrays. Simple programs- sorting- searching – matrix
operations.

UNIT IV    FUNCTIONS AND POINTERS  9
Function – definition of function – Declaration of function – Pass by value – Pass by
reference – Recursion – Pointers - Definition – Initialization – Pointers arithmetic –
Pointers and arrays- Example Problems.

UNIT V    STRUCTURES AND UNIONS  9
Introduction – need for structure data type – structure definition – Structure declaration –
Structure within a structure - Union - Programs using structures and Unions – Storage
classes, Pre-processor directives.

TOTAL :45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
• Design C Programs for problems.
• Write and execute C programs for simple applications

TEXTBOOKS:

REFERENCES:
Pearson Education, 2006
3. R.G. Dromey, “How to Solve it by Computer”, Pearson Education, Fourth Reprint,
2007
OBJECTIVES:

To develop in students, graphic skills for communication of concepts, ideas and design of engineering products and expose them to existing national standards related to technical drawings.

Concepts and conventions (Not for Examination)

- Importance of graphics in engineering applications – Use of drafting instruments – BIS conventions and specifications – Size, layout and folding of drawing sheets – Lettering and dimensioning.

UNIT I  PLANE CURVES AND FREE HAND SKETCHING  14

Basic Geometrical constructions, Curves used in engineering practices


Visualization concepts and Free Hand sketching: Visualization principles – Representation of Three Dimensional objects – Layout of views - Free hand sketching of multiple views from pictorial views of objects

UNIT II  PROJECTION OF POINTS, LINES AND PLANE SURFACES  14

Orthographic projection- principles-Principal planes-First angle projection-Projection of points. Projection of straight lines (only First angle projections) inclined to both the principal planes - Determination of true lengths and true inclinations by rotating line method and trapezoidal method and traces

Projection of planes (polygonal and circular surfaces) inclined to both the principal planes by rotating object method.

UNIT III  PROJECTION OF SOLIDS  14

Projection of simple solids like prisms, pyramids, cylinder, cone and truncated solids when the axis is inclined to one of the principal planes by rotating object method and auxiliary plane method.

UNIT IV  PROJECTION OF SECTIONED SOLIDS AND DEVELOPMENT OF SURFACES  14

Sectioning of above solids in simple vertical position when the cutting plane is inclined to the one of the principal planes and perpendicular to the other – obtaining true shape of section. Development of lateral surfaces of simple and sectioned solids – Prisms, pyramids cylinders and cones. Development of lateral surfaces of solids with cut-outs and holes

UNIT V  ISOMETRIC AND PERSPECTIVE PROJECTIONS  15

Principles of isometric projection – isometric scale – Isometric projections of simple solids and truncated solids - Prisms, pyramids, cylinders, cones- combination of two solid objects in simple vertical positions and miscellaneous problems. Perspective projection of simple solids-Prisms, pyramids and cylinders by visual ray method and vanishing point method.
OUTCOMES:
On Completion of the course the student will be able to:
- Perform free hand sketching of basic geometrical constructions and multiple views of objects.
- Do orthographic projection of lines and plane surfaces.
- Draw projections and solids and development of surfaces.
- Prepare isometric and perspective sections of simple solids.
- Demonstrate computer aided drafting

TEXT BOOK:

REFERENCES:

Publication of Bureau of Indian Standards:

Special points applicable to University Examinations on Engineering Graphics:
1. There will be five questions, each of either or type covering all units of the syllabus.
2. All questions will carry equal marks of 20 each making a total of 100.
3. The answer paper shall consist of drawing sheets of A3 size only. The students will be permitted to use appropriate scale to fit solution within A3 size.
4. The examination will be conducted in appropriate sessions on the same day.
OBJECTIVES:
To introduce different experiments to test basic understanding of physics concepts applied in optics, thermal physics and properties of matter.

TOTAL = 30 PERIODS

OUTCOMES:
The hands on exercises undergone by the students will help them to apply physics principles of optics and thermal physics to evaluate engineering properties of materials.

OBJECTIVES:
• To make the student to acquire practical skills in the determination of water quality parameters through volumetric and instrumental analysis.
• To acquaint the students with the determination of molecular weight of a polymer by vacometry.
OUTCOMES:
The students will be outfitted with hands-on knowledge in the quantitative chemical analysis of water quality related parameters.

OBJECTIVES:
The student should be made to:
- Be familiar with the use of Office software.
- Be exposed to presentation and visualization tools.
- Be exposed to problem solving techniques and flow charts.
- Be familiar with programming in C.
- Learn to use Arrays, strings, functions, structures and unions.

TOTAL: 30 PERIODS

REFERENCE BOOKS:
LIST OF EXPERIMENTS:
1. Search, generate, manipulate data using MS office/ Open Office
2. Presentation and Visualization – graphs, charts, 2D, 3D
3. Problem formulation, Problem Solving and Flowcharts
4. C Programming using Simple statements and expressions
5. Scientific problem solving using decision making and looping.
6. Simple programming for one dimensional and two dimensional arrays.
7. Solving problems using String functions
8. Programs with user defined functions
9. Program using Recursive Function and conversion from given program to flow chart.
10. Program using structures and unions.

TOTAL : 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
- Apply good programming design methods for program development.
- Design and implement C programs for simple applications.
- Develop recursive programs.

GE8162 ENGINEERING PRACTICES LABORATORY
(Common to all Branches of B.E./B.Tech. Programmes) L T P C 0 0 3 2

OBJECTIVE:
To provide exposure to the students with hands-on experience on various basic engineering practices in Civil, Mechanical, Electrical and Electronics Engineering.

GROUP – A (CIVIL & ELECTRICAL)

1. CIVIL ENGINEERING PRACTICE

PLUMBING
Basic pipe connections involving the fittings like valves, taps, coupling, unions, reducers, elbows and other components used in household fittings. Preparation of plumbing line sketches.
Laying pipe connection to the suction side of a pump – inlet.
Laying pipe connection to the delivery side of a pump – outlet.

Practice in mixed pipe connections: Metal, plastic and flexible pipes used in household appliances.

WOOD WORK
Sawing, planning and making common joints: T-Joint, Mortise and Tenon joint, Dovetail joint.

STUDY
Study of joints in door panels, wooden furniture
Study of common industrial trusses using models
2. ELECTRICAL ENGINEERING PRACTICE
Basic household wiring using switches, fuse, indicator – lamp etc.,
Preparation of wiring diagrams
Stair case light wiring
Tube – light wiring
Study of iron-box, fan with regulator, emergency lamp

GROUP – B (MECHANICAL AND ELECTRONICS)  

3. MECHANICAL ENGINEERING PRACTICE

WELDING
Arc welding of butt joints, lap joints, tee joints
Gas welding Practice.
Basic Machining
Simple turning, drilling and tapping operations.
Machine assembly Practice.
Study and assembling the following:
Centrifugal pump, mixies and air conditioners.
Demonstration on
(a) Smithy operations like the production of hexagonal bolt.
(b) Foundry operation like mould preparation for grooved pulley.

4. ELECTRONIC ENGINEERING PRACTICE
Soldering simple electronic circuits and checking continuity.
Assembling electronic components on a small PCB and testing.
Study of Telephone, FM radio, low-voltage power supplies.

TOTAL: 45 PERIODS

OUTCOMES:
- Ability to fabricate carpentry components and pipe connections including plumbing works.
- Ability to use welding equipments to join the structures.
- Ability to fabricate electrical and electronics circuits.
OBJECTIVES

- To make the students acquire listening and speaking skills meant for both formal and informal contexts
- To help them develop their reading skills by exposing them to different types of reading strategies
- To equip them with writing skills needed for academic as well as workplace situations
- To make them acquire language skills at their own pace by using e-materials and language lab component

UNIT I

**Listening** - Listening to informal conversations and participating; **Speaking** - Opening a conversation (greetings, comments on something, weather) - Turn taking - Closing a conversation (excuses, general wish, positive comment, thanks); **Reading** - Developing analytical skills, Deductive and inductive reasoning - Extensive reading; **Writing** - Effective use of SMS for sending short notes and messages - Using ‘emoticons’ as symbols in email messages; **Grammar** - Regular & irregular verbs - Active and passive voice; **Vocabulary** - Homonyms (e.g. ‘can’) - Homophones (e.g. ‘some’, ‘sum’); **E-materials** - Interactive exercise on Grammar and vocabulary – blogging; **Language Lab** - Listening to different types of conversation and answering questions.

UNIT II

**Listening** - Listening to situation based dialogues; **Speaking** - Conversation practice in real life situations, asking for directions (using polite expressions), giving directions (using imperative sentences), Purchasing goods from a shop, Discussing various aspects of a film (they have already seen) or a book (they have already read); **Reading** - Reading a short story or an article from newspaper, Critical reading, Comprehension skills; **Writing** - Writing a review / summary of a story / article, Personal letter (Inviting your friend to a function, congratulating someone for his success, thanking one’s friend / relatives); **Grammar** - modal verbs, Purpose expressions; **Vocabulary** - Phrasal verbs and their meanings, Using phrasal verbs in sentences; **E-materials** - Interactive exercise on Grammar and vocabulary, Extensive reading activity (reading stories / novels from links), Posting reviews in blogs - **Language Lab** - Dialogues (Fill up exercises), Recording students’ dialogues.
UNIT III
Listening - Listening to the conversation - Understanding the structure of conversations; 
Speaking - Conversation skills with a sense of stress, intonation, pronunciation and meaning - Seeking information – expressing feelings (affection, anger, regret etc.); 
Reading - Speed reading – reading passages with the time limit - Skimming; Writing - Minutes of meeting – format and practice in the preparation of minutes - Writing summary after reading the articles from the journals. Format for the journal articles – elements of technical articles (abstract, introduction, methodology, results, discussion, conclusion, appendices, references) - Writing strategies; Grammar - Conditional clauses - Cause and effect expressions; Vocabulary - Words used as nouns and verbs without any change in the spelling (e.g. 'rock', 'train', 'ring'); E-materials - Interactive exercise on Grammar & vocabulary - Speed Reading practice exercises; Language Lab - Intonation practice using EFLU materials – Attending a meeting and writing minutes.

UNIT IV
Listening - Listening to a telephone conversation, Viewing a model interview (face-to-face, telephonic and video conferencing) and observing the practices; Speaking - Role play practice in telephone skills - listening and responding, -asking questions, -note taking – passing on messages, Role play and mock interview for grasping the interview skills; Reading - Reading the job advertisements and the profile of the company concerned – scanning; Writing - Applying for a job – cover letter - résumé preparation – vision, mission and goals of the candidate; Grammar - Numerical expressions - Connectives (discourse markers); Vocabulary - Idioms and their meanings – using idioms in sentences; E-materials - Interactive exercises on Grammar & Vocabulary - Different forms of résumés- Filling up a résumé / cover letter; Language Lab - Telephonic interview – recording the responses - e-résumé writing.

UNIT V
Listening - Viewing a model group discussion and reviewing the performance of each participant - Identifying the characteristics of a good listener; Speaking - Group discussion skills – initiating the discussion – exchanging suggestions and proposals – expressing dissent/agreement – assertiveness in expressing opinions – mind mapping technique; Reading - Note making skills – making notes from books, or any form of written materials - Intensive reading Writing - Types of reports – Feasibility / Project report – report format – recommendations / suggestions – interpretation of data (using charts for effective presentation); Grammar - Use of clauses; Vocabulary – Collocation; E-materials - Interactive grammar and vocabulary exercises - Sample GD - Pictures for discussion, Interactive grammar and vocabulary exercises - Pictures for discussion; Language Lab - Different models of group discussion

TOTAL: 60 PERIODS

OUTCOMES:
Learners should be able to
- Speak convincingly, express their opinions clearly, initiate a discussion, negotiate, argue using appropriate communicative strategies.
- Write effectively and persuasively and produce different types of writing such as narration, description, exposition and argument as well as creative, critical, analytical and evaluative writing.
• Read different genres of texts, infer implied meanings and critically analyse and evaluate them for ideas as well as for method of presentation.

Listen/view and comprehend different spoken excerpts critically and infer unspoken and implied meanings

TEXT BOOKS:

REFERENCE BOOKS:

EXTENSIVE READERS:

Web Resources
1. www.esl-lab.com
2. www.englishgrammar.org
3. www.englishclub.com
4. www.mindtools.com
5. www.esl.about.com

MA8251 MATHEMATICS II
(Common to all branches of B.E./B.Tech. Programmes in II Semester)

OBJECTIVES:
• To make the student acquire sound knowledge of techniques in solving ordinary differential equations that model engineering problems.
• To acquaint the student with the concepts of vector calculus, needed for problems in all engineering disciplines.
• To develop an understanding of the standard techniques of complex variable theory so as to enable the student to apply them with confidence, in application areas such as heat conduction, elasticity, fluid dynamics and flow the of electric current.
• To make the student appreciate the purpose of using transforms to create a new domain in which it is easier to handle the problem that is being investigated
UNIT I DIFFERENTIAL EQUATIONS 9+3
Method of variation of parameters – Method of undetermined coefficients – Homogeneous equation of Euler’s and Legendre’s type – System of simultaneous linear differential equations with constant coefficients.

UNIT II VECTOR CALCULUS 9+3
Gradient and directional derivative – Divergence and Curl – Irrotational and Solenoidal vector fields – Line integral over a plane curve – Surface integral and volume integral – Green’s, Gauss divergence and Stoke’s theorems – Verification and application inevaluating line, surface and volume integrals.

UNIT III ANALYTIC FUNCTION 9+3

UNIT IV COMPLEX INTEGRATION 9+3

UNIT V LAPLACE TRANSFORMS 9+3

TOTAL: 60 PERIODS

OUTCOMES:
The subject helps the students to develop the fundamentals and basic concepts in vector calculus, ODE, Laplace transform and complex functions. Students will be able to solve problems related to engineering applications by using these techniques.

TEXT BOOKS:
REFERENCES:

PH8253 PHYSICS FOR INFORMATION SCIENCE L T P C
(Common to Computer Science and Information Technology Branches) 3 0 0 3

OBJECTIVE:
To understand the essential principles of Physics of semiconductor device and Electron transport properties. Become proficient in magnetic and optical properties of materials and Nano electronic devices.

UNIT I ELECTRICAL PROPERTIES OF MATERIALS

UNIT II SEMICONDUCTORS AND TRANSPORT PHYSICS

UNIT III MAGNETIC PROPERTIES OF MATERIALS

Attested
S. Salim
DIRECTOR
Centre For Academic Courses
Anna University, Chennai-600 025.
UNIT IV          OPTICAL PROPERTIES OF MATERIALS  
Classification of optical materials – Absorption in metals, insulators & Semiconductors - LED’s – Organic LED’s – Polymer light emitting materials – Plasma light emitting devices – LCD’s – Laser diodes – Optical data storage techniques (including DVD, Blue-ray disc, Holographic data storage).

UNIT V          NANO DEVICES  

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course the students will be able to
- Understand the Electrical, Magnetic and Optical properties of semiconductor materials
- Understand the concepts and applications of semiconductor devices.

TEXT BOOKS:

REFERENCES:

CH8202       CHEMISTRY FOR INFORMATION SCIENCE  
(Common to Computer Science and Information Technology Branches)  

AIM:  
To impart knowledge in the Applied Chemistry topics relevant to computer science and engineering.

OBJECTIVE:
- To know about the conductivity in solids and insulating materials.
- To understand the importance of specialty polymers.
- Basic concepts of electrochemical energy systems.
- Familiarization of battery technology and alternate energy sources.
- Importance of metal finishing.

25
OUTCOMES:

Upon completion of the course the student will know about:

- Conductivity of solids, special polymers, Electrochemical cells, Battery Technology, and metal finishing
TEXT BOOKS:

REFERENCES:

IT8201 INFORMATION TECHNOLOGY ESSENTIALS

OBJECTIVE:
- To introduce the concept of Internet, Networks and its working principles.
- To know scripting languages.
- To understand various applications related to Information Technology.

UNIT I WEB ESSENTIALS
Creating a Website - Working principle of a Website - Parts of a Web address - Browser fundamentals - Authoring tools - Types of servers: Application Server - Web Server - Database Server - Social networks

UNIT II SCRIPTING ESSENTIALS
Need for Scripting languages - Types of scripting languages - Client side scripting - Server side scripting - PHP - Working principle of PHP - PHP Variables - Constants - Operators - Flow Control and Looping - Arrays - Strings - Functions - File Handling - PHP and MySQL - PHP and HTML - Cookies - Simple PHP scripts

UNIT III NETWORKING ESSENTIALS
Fundamental computer network concepts - Types of computer networks - Network equipments - Ethernet - Wireless Local Area Network - Internet Service - TCP/IP and other Internet protocols - Network Routing - Switching and Bridging

UNIT IV MOBILE COMMUNICATION ESSENTIALS
Cell phone working fundamentals - Cell phone frequencies - Cell phone channels - Cell phone codes - Digital cell phone components - Cell phone network technologies - Cell phone towers - Problems with cell phones and maintenance
UNIT V APPLICATION ESSENTIALS
Creation of simple interactive applications - Simple database applications - Multimedia applications - Design and development of information systems – Personal Information System – Information retrieval system – Social networking applications

TOTAL: 45 PERIODS

OUTCOMES:
Students who complete the course will have the ability to do the following:
- Create a website using basic HTML tags, different styles, links and with all basic control elements.
- Create client side and server side programs using scripts.
- Understand the fundamentals of computer networks.
- Understand the basic of mobile communication.
  Create simple applications connecting to database

TEXT BOOKS:

REFERENCE:

IT8202 PROGRAMMING AND DATA STRUCTURES I

AIM:
The aim is to review the basics of C programming and to introduce the concepts of Data Structures.

OBJECTIVES:
- To introduce the basics of C programming language.
- To introduce the advanced concepts of C programming language.
- To learn the concepts of Abstract Data Types
- To understand the operations of linear and nonlinear data structures.
- To provide the concepts of Hashing, Sorting and Searching.

UNIT I C PROGRAMMING FUNDAMENTALS
Data types – Variables – Operations - Expression and Statements – Conditional statements – Control statements – Functions – Arrays - Preprocessor

UNIT II C PROGRAMMING ADVANCED FEATURES
Pointers - Variation in pointer declarations – Function Pointers – Function with Variable number of arguments - Structures and Unions - File handling concepts

UNIT III LINEAR DATA STRUCTURES – LIST, STACK AND QUEUE
OUTCOMES:

- To explore the basics of C programming.
- To apply knowledge to solve computer science and information technology problems using the basics of C programming and the concepts of Data Structures.
- To describe and use the linear data structures.
- To examine and use the non-linear data structures.
- To apply different hashing, searching and sorting algorithms.

TEXT BOOKS:


REFERENCES:


IT8211 INFORMATION TECHNOLOGY ESSENTIALS LABORATORY

OBJECTIVE:

- To write simple scripts for the creation of web sites.
- To create various Information Technology enabled applications
1. Creation of interactive Web sites – Design using HTML and authoring tools
2. Creation of simple PHP scripts – Dynamism in Web sites
3. Handling Multimedia contents in the Web documents
4. Database applications using PHP and MySQL
5. Study of computer networking components
6. Study of technologies associated with mobile devices
7. Creation of Personal Information System
8. Creation of Information retrieval system using Web, PHP and MySQL

TOTAL: 45 PERIODS
OUTCOMES:
Students who complete the course will have the ability to do the following:

- Create interactive websites using basic HTML tags, different styles, links and with all basic control elements.
- Create client side and server side programs using scripts using PHP.
- Create dynamic web sites and handle multimedia components
- Create applications with PHP connected to database.
- Create Personal Information System
- Understand the technologies behind computer networks and mobile communication.

OBJECTIVES:

- To introduce the concepts of structured Programming language.
- To provide the concepts of pointers and files.
- To understand the concepts of primitive and advanced Data Structures.
- To learn to implement different hashing, searching and sorting algorithms.

1. C Programs using Conditional and Control Statements
2. C Programs using Arrays, Strings and Pointers and Functions
3. Representation of records using Structures in C – Creation of Linked List – Manipulation of records in a Linked List
4. File Handling in C – Sequential access – Random Access
5. Operations on a Stack and Queue – infix to postfix – simple expression evaluation using stacks - Linked Stack Implementation – Linked Queue Implementation
7. Implementation of Sorting algorithms
8. Implementation of Linear search – Binary Search – Indexed Search

TOTAL: 45 PERIODS

OUTCOMES:

- To solve simple problems using C programming concepts.
- To explore pointers and files in complex problems.
- To expose and implement the concept abstract data types.
- To develop real time applications using linear and nonlinear data structures.
- To implement hashing, sorting and searching algorithms.
OBJECTIVES:
- To provide the required fundamental concepts in probability and queueing models and apply these techniques in networks, image processing etc.
- Acquire skills in analyzing queueing models.

UNIT I  RANDOM VARIABLES  9+3
Discrete and Continuous random variables – Moments – Moment generating functions – Binomial, Poisson, Geometric, Uniform, Exponential, Gamma, Weibull and Normal distributions - Functions of a random variable.

UNIT II  TWO-DIMENSIONAL RANDOM VARIABLES  9+3
Joint distributions – Marginal and Conditional distributions – Covariance – Correlation and Linear regression – Transformation of random variables – Central limit theorem (for independent and identically distributed random variables).

UNIT III  RANDOM PROCESSES  9+3

UNIT IV  QUEUEING THEORY  9+3
Markovian queues – Birth and Death processes – Single and multiple server queueing models – Little’s formula - Queues with finite waiting rooms – Finite source models.

UNIT V  NON-MARKOVIAN QUEUES AND QUEUEING NETWORKS  9+3
M/G/1 queue – Pollaczek Khinchin formula - M/D/1 and M/E_k/1 as special cases – Series queues – Open and closed Jackson networks.

TOTAL : 60 PERIODS

OUTCOMES:
- The students will have a fundamental knowledge of the probability concepts.
- Acquire skills in analyzing queuing models.
- It also helps to understand and characterize phenomenon which evolve with respect to time in a probabilistic manner

TEXT BOOKS:
OBJECTIVES:
To the study of nature and the facts about environment.

- To find and implement scientific, technological, economic and political solutions to environmental problems.
- To study the interrelationship between living organism and environment.
- To appreciate the importance of environment by assessing its impact on the human world; envision the surrounding environment, its functions and its value.
- To study the dynamic processes and understand the features of the earth’s interior and surface.
- To study the integrated themes and biodiversity, natural resources, pollution control and waste management.

UNIT I  ENVIRONMENT, ECOSYSTEMS AND BIODIVERSITY
Definition, scope and importance of environment – need for public awareness - concept of an ecosystem – structure and function of an ecosystem – producers, consumers and decomposers – energy flow in the ecosystem – ecological succession – food chains, food webs and ecological pyramids – Introduction, types, characteristic features, structure and function of the (a) forest ecosystem (b) grassland ecosystem (c) desert ecosystem (d) aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries) – Introduction to biodiversity definition: genetic, species and ecosystem diversity – biogeographical classification of India – value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values – Biodiversity at global, national and local levels – India as a mega-diversity nation – hot-spots of biodiversity – threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts – endangered and endemic species of India – conservation of biodiversity: In-situ and ex-situ conservation of biodiversity.
Field study of common plants, insects, birds
Field study of simple ecosystems – pond, river, hill slopes, etc.
UNIT II  ENVIRONMENTAL POLLUTION
Definition – causes, effects and control measures of: (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards – soil waste management: causes, effects and control measures of municipal solid wastes – role of an individual in prevention of pollution – pollution case studies – disaster management: floods, earthquake, cyclone and landslides. Field study of local polluted site – Urban / Rural / Industrial / Agricultural.

UNIT III  NATURAL RESOURCES
Forest resources: Use and over-exploitation, deforestation, case studies- timber extraction, mining, dams and their effects on forests and tribal people – Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems – Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies – Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies – Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources, case studies – Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification – role of an individual in conservation of natural resources – Equitable use of resources for sustainable lifestyles. Field study of local area to document environmental assets – river / forest / grassland / hill / mountain.

UNIT IV  SOCIAL ISSUES AND THE ENVIRONMENT

UNIT V  HUMAN POPULATION AND THE ENVIRONMENT

TOTAL : 45 PERIODS
OUTCOMES:
Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course.
- Public awareness of environment at infant stage.
- Ignorance and incomplete knowledge has lead to misconceptions.
- Development and improvement in standard of living has lead to serious environmental disasters.

TEXT BOOKS:

REFERENCES:

OBJECTIVES:
- Perform arithmetic operations in any number system
- Use boolean simplification techniques to design a combinational hardware circuit
- Analyze a given digital circuit – combinational and sequential
- Identify different functional units in a digital computer system
- Trace execution of instruction sequence in a processor
- Explain the implementation of each functional unit

UNIT I  DIGITAL FUNDAMENTALS  9 + 3
Number systems and conversions – Boolean algebra and simplification – Minimization Of Boolean functions – Karnaugh map – Logic gates – NAND-NOR implementation

UNIT II  COMBINATIONAL AND SEQUENTIAL CIRCUITS  9 + 3
UNIT III BASIC STRUCTURE OF COMPUTERS
Functional units – Basic operational concepts – Instruction set architecture – Hardware/Software Interface – Addressing modes – RISC – CISC - Performance metrics - ALU design – multiplier and divider circuits

UNIT IV PROCESSOR DESIGN
Fundamental concepts – Execution of a complete instruction – Hardwired control – Micro programmed control -- Pipelining – Basic concepts – Data hazards – Instruction hazards – Control hazards

UNIT V MEMORY AND I/O SYSTEMS
Memory Technology – Memory hierarchy – Cache Memory – Design Methods – Virtual Memory – Input/output System – Programmed I/O – DMA and Interrupts – Functions of I/O devices and interfaces

Tutorial – 45 Practical – 15 TOTAL : 60 PERIODS

OUTCOMES:
- Understand the fundamentals of Boolean logic and functions.
- Apply the functions to design components with gates and combinational or sequential logic.
- Explain the basic structure of computers and processing unit.
- Identify the need for pipelining.
- Create memory and I/O devices.

TEXT BOOKS:

REFERENCES:
OUTCOMES:

- Understand data models, schemas, instances and entity-relationship (ER) model.
- Understand storage organizations concepts.
- Understand database languages and interfaces and the database system environment.
- Understand the concepts of constraints and relational algebra operations.
- Implement SQL: Data definition, constraints, schema, queries and operations in SQL
- Produce well structured database using functional dependencies and normalization.
- Build, design and tune databases while doing projects.
- Understand the fundamentals of database concepts, transaction processing, concurrency control, recovery procedure and applications.

**TEXT BOOKS:**


**REFERENCE S:**


**IT8303 PROGRAMMING AND DATA STRUCTURES II**

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>

**AIM:**
The aim is to introduce the concepts Object Oriented Programming and the implementation of Advanced Data Structures using Object Oriented Programming Language.

**OBJECTIVES:**

- To introduce the concepts of Object Oriented Programming language.
- To teach efficient storage mechanisms of data for an easy access.
- To design and implementation of various basic and advanced data structures.
- To introduce various techniques for representation of the data in the real world.
- To develop application using data structures.

**UNIT I OBJECT ORIENTED PROGRAMMING FUNDAMENTALS**

- C++ Programming features - Data Abstraction - Encapsulation - class - object - constructors - static members – constant members – member functions – pointers – references - Role of this pointer – Storage classes – function as arguments

**UNIT II OBJECT ORIENTED PROGRAMMING CONCEPTS**

- String Handling – Copy Constructor - Polymorphism – compile time and run time polymorphisms – function overloading – operators overloading – dynamic memory allocation - Nested classes - Inheritance – virtual functions
UNIT III  C++ PROGRAMMING ADVANCED FEATURES
Abstract class – Exception handling - Standard libraries - Generic Programming -
templates – class template - function template – STL – containers – iterators – function
adaptors – allocators - Parameterizing the class - File handling concepts

UNIT IV  ADVANCED NON-LINEAR DATA STRUCTURES
AVL trees – B-Trees – Red-Black trees – Splay trees - Binomial Heaps – Fibonacci
aggregate analysis

UNIT V  GRAPHS
Representation of Graphs – Breadth-first search – Depth-first search – Topological sort
Dijkstra’s algorithm – Bellman-Ford algorithm – Floyd-Warshall algorithm

TOTAL: 45 PERIODS

OUTCOMES:
At the end of the course, the student should be able to:
• Apply the concepts of data abstraction, encapsulation and inheritance for problem solutions.
• Use the control structures of C++ appropriately.
• Be fluent in the use of recursion and object oriented programming concepts (e.g. classes,
objects, inheritance, and interfaces).
• Identify, understand and determine the usage of various data structures, operations and
associated algorithms

TEXT BOOKS:
1. Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Clifford Stein,

REFERENCES:
1. Ira Pohl, "Object Oriented Programming using C++", 2nd edition, Pearson Education,
   1997.
2. Michael T Goodrich, Roberto Tamassia, David Mount, “Data Structures and
AIM:
The aim of this laboratory is to inculcate the abilities of applying the principles of the database management systems. The course aims to prepare the students for projects where a proper implementation of databases will be required.

OBJECTIVES:
The students will be able to create a database file
The students will be able to query a database file
The students will be able to append and update a database file
- Data Definition, Manipulation of Tables and Views
- Database Querying – Simple queries, Nested queries, Sub queries and Joins
- Triggers
- Transaction Control
- Embedded SQL
- Database Connectivity with Front End Tools
- Front End Tools / Programming Languages
- High level language extensions - PL/SQL Basics
- Procedures and Functions
- Database Design and Implementation (Case Study)

TOTAL: 45 PERIODS

OUTCOMES:
At the end of this course the student will be able to
- Demonstrate query facilities to formulate queries and manipulate the database e.g. Structured
- Query Language (SQL), Query by Example (QBE).
- Understand the usage of DBMS query language in embedded programming (SQL/PLSQL).
- Understand how to apply appropriate development methodologies of data analysis, design and use appropriate modelling techniques for databases.
- Understand the design of databases for applications and to develop projects.
OBJECTIVES:
At the end of this course, the student will be able to:
1. Identify the pin details, and internal logic of standards ICs and test ICs.
2. Construct digital circuits using standards ICs and testing boards
3. Design and implement combinational circuits.
4. Design and implement sequential circuits like shift registers and counters using Programmable Logic Devices.
5. Write and simulate HDL code for a given design.
6. Study the architectural variations of a processor using a simulator
3. Verification of Boolean Theorems using basic gates.
4. Design and implementation of combinational circuits using basic gates for arbitrary functions, code converters.
5. Design and implementation of combinational circuits using MSI devices:
   6. 4 – bit binary adder / subtractor
   7. Parity generator / checker
   8. Magnitude Comparator
   9. Application using multiplexers
10. Coding combinational / sequential circuits using HDL.
11. Design and implementation of sequential circuits using PLDs:
   12. Shift – registers
   13. Synchronous and asynchronous counters
6. Design and implementation of floating point arithmetic circuits
7. Use an architectural simulator and study execution of instruction sequence in various modes – pipelined, non-pipelined etc.

TOTAL: 45 PERIODS

OUTCOMES:
At the end of this course, the student will be able to:
- Implement digital circuits for arithmetic operations.
- Design the components of a computer.
- Use HDL simulators for complex designs.
OUTCOMES:
At the end of the course, the student should be able to:
- Explain the abstraction underlying structured and object-oriented programming.
- Design and implement basic and advanced data structures extensively using C++.
- Design and develop efficient algorithms for data structures with minimum complexity.

TOTAL: 45 PERIODS
OUTCOMES:

At the end of the course, students would:

- Have knowledge of the concepts needed to test the logic of a program.
- Have an understanding in identifying structures on many levels.
- Be aware of a class of functions which transform a finite set into another finite set which relates to input and output functions in computer science.
- Be aware of the counting principles.
- Be exposed to concepts and properties of algebraic structures such as groups, rings and fields.

TEXT BOOKS:


REFERENCES:

OBJECTIVES:
Gives an idea about process synchronization, inter-process communication, scheduling, deadlock handling, and memory management.

UNIT I OPERATING SYSTEMS OVERVIEW

UNIT II PROCESS MANAGEMENT

UNIT III STORAGE MANAGEMENT

UNIT IV I/O SYSTEMS

UNIT V CASE STUDY

OUTCOMES:
At the end of the course the student should be able to,
• Understand the basic concepts of operating system.
• Understand the structure of operating system, Inter process communication, and scheduling and deadlock characterization.
TEXT BOOK:

REFERENCES:

CS8452 SOFTWARE ENGINEERING L T P C 3 0 0 3

OBJECTIVE
This course is intended to provide the students with an overall view over Software Engineering discipline and with insight into the processes of software development.

UNIT I SOFTWARE PROCESS MODELS 9

UNIT II REQUIREMENT ENGINEERING 9

UNIT III ANALYSIS MODELLING 9
OUTCOMES:
At the end of the course, the student should be able to:

- Appreciate the wider engineering issues that form the background to developing complex and evolving software-intensive systems.
- Plan and deliver an effective software engineering process, based on knowledge of widely used development lifecycle models.
- Employ group working skills including general organization, planning and time management and inter-group negotiation.
- Capture, document and analyse requirements.
- Translate a requirements specification into an implementable design, following a structured and organised process.
- Formulate a testing strategy for a software system, employing techniques such as unit testing, test driven development and functional testing.
- Evaluate the quality of the requirements, analysis and design work done during the module.

TEXT BOOKS:

REFERENCES:
OBJECTIVES:
- To understand the problem solving process and writing algorithms
- To use algorithm design paradigms for algorithm design
- To analyse the algorithms for time/space complexity

UNIT I  ALGORITHM ANALYSIS  9

UNIT II  MATHEMATICAL FOUNDATIONS  9
Growth of Functions - Big Oh, Small Oh, Omega and Theta notations - Summations - Solving Recurrence equations - The Substitution Method - The Master Method - Generating function techniques - Constructive induction

UNIT III  DESIGN AND ANALYSIS TECHNIQUES  9

UNIT IV  APPLICATIONS  9

UNIT V  NP PROBLEMS  9

TOTAL: 45 PERIODS

OUTCOMES:
Students who complete the course will have the ability to do the following:
- Analyze average, best and worst-case running times of algorithms using asymptotic analysis.
- Describe the divide-and-conquer paradigm and explain when an algorithmic design situation calls for it. Solve a problem based on this approach. Derive and solve recurrences describing the performance of divide-and-conquer algorithms.
- Describe the dynamic-programming paradigm and explain when an algorithmic design situation calls for it. Synthesize and solve a problem based on this approach and analyze them.
- Describe the greedy paradigm and explain when an algorithmic design situation calls for it. Recite algorithms that employ this paradigm. Synthesize greedy algorithms, and analyze them.
- Explain the major matrix operations and their analyses.
- Explain the ways to solve linear equation and their analyses.
- Explain the different ways to analyze randomized algorithms (expected running time, probability of error). Recite algorithms that employ randomization. Explain the difference between a randomized algorithm and an algorithm with probabilistic inputs.
- Analyze randomized algorithms. Employ indicator random variables and linearity of expectation to perform the analyses. Recite analyses of algorithms that employ this method of analysis.
- Explain NP, NP hard and approximation problems and the benefit of using approximation algorithms. Analyze the approximation factor of an algorithm.

**TEXT BOOK:**

**IT8402 FORMAL LANGUAGES AND AUTOMATA**

**AIM:**
To get fundamental idea on Automata and Languages

**OBJECTIVES:**
A study of the formal relationships between machines, languages and grammar.
- To understand concept of regular languages to define the all possible tokens of given language.
- To understand concept of CFG and PDA to define and recognize all possible syntax structures of given language.
- To understand the TM for modeling the system.

**UNIT I REGULAR EXPRESSIONS AND LANGUAGES**
Introduction to Formal Proof – Additional Forms of proof – Inductive proofs – Regular Expressions – Regular and Non Regular Languages – Closure Properties of Regular Languages - Proving Languages Not to Be Regular - Decision Properties of Regular Languages

**UNIT II AUTOMATA**
UNIT III  CONTEXT-FREE GRAMMARS AND LANGUAGES  

UNIT IV  PUSHDOWN AUTOMATA AND TURING MACHINES  

UNIT V  UNDECIDABILITY  
Not Recursively Enumerable Language – Recursively Enumerable Undecidable problem– Undecidable Problems about Turing Machines – Post’s Correspondence Problem - The classes P and NP - NP-complete problems

TOTAL: 45 PERIODS

OUTCOME:
- Able to describe the RE, CFG and PDA of a particular language.
- Able to model Turing Machine to represent a language.

TEXT BOOKS

REFERENCE BOOKS

IT8451  WEB TECHNOLOGY  
L T P C  3 0 0 3

AIM:
To provide an introduction to Java and basic Web concepts and enable the student to create simple Web based applications.

OBJECTIVES:
- To introduce the features of object oriented programming languages using Java
- To design and create user interfaces using Java frames and applets
- To have a basic idea about network programming using Java
- To create simple Web pages and provide client side validation
- To create dynamic web pages using server side scripting
- To understand the MVC concept using Strut, Hibernate and Spring.
UNIT I  JAVA FUNDAMENTALS

UNIT II  JAVA NETWORKING FUNDAMENTALS

UNIT III  CLIENT SIDE TECHNOLOGIES

UNIT IV  SERVER SIDE TECHNOLOGIES

UNIT V  APPLICATION DEVELOPMENT ENVIRONMENT

TOTAL: 45 PERIODS

OUTCOMES:
Able to program in Java and create simple Web based applications.

TEXT BOOK:

REFERENCES:
OBJECTIVES:
- To learn the basic UNIX command, shell programming and system calls.
- To write the programs file oriented system calls and process oriented system calls
- To write the program IPC using pipes, shared memory, message queues.

LIST OF EXPERIMENTS:
1. Learn the use of basic UNIX commands.
2. Shell Programming.
3. Grep, sed, awk.
4. File system related system calls. (Learn to create, open, read, write, seek into, close files; open, read, write, search, close directories)
5. Process management – Fork, Exec (Learn to create a new process and to overlay an executable binary image on an existing process)
6. Inter-process communication between related processes using pipes.
7. Process synchronization using semaphores (Solutions to synchronization problems like producer consumer problem, dining philosophers’ problem etc...)
8. Inter-process communication unrelated processes using Shared memory
9. Inter-process communication unrelated processes using Message Queues

TOTAL: 45 PERIODS

LABORATORY REQUIREMENTS FOR BATCH OF 30 STUDENTS
1. Linux server
2. Terminals for 30 students

OUTCOMES:
At the end of the course the student should be able to,
- Understand the basic unix command, shell programming and system calls.
- Understand the file oriented system calls and process oriented system calls
- Understand the program IPC using pipes, shared memory, message queues.

AIM:
To enable the students to program in Java and to create simple Web based applications.

OBJECTIVES:
- To write simple programs using Java
- To design and create user interfaces using Java frames and applets
- To write I/O and network related programs using Java
- To create simple Web pages and provide client side validation
- To create dynamic web pages using server side scripting
4. Implementation of Servlets and JSPs – JDBC applications with JSPs – Session management – EJB implementation

OUTCOME:
Able to program in Java and create simple Web based applications.

CS8551 OBJECT ORIENTED ANALYSIS AND DESIGN L T P C
3 0 0 3

OBJECTIVE
Gives an understanding of OOAD basics, UML diagrams, system modeling, design based on requirements, converting design to code, and design patterns.

UNIT I OOAD BASICS 10

UNIT II REQUIREMENTS & MORE MODELING 7

UNIT III DESIGN AND PRINCIPLES OF DESIGN 10

UNIT IV MAPPING TO CODE 8
Mapping designs to code – Test Driven development and refactoring – UML Tools and UML as blueprint
UNIT V MORE PATTERNS


TOTAL: 45 PERIODS

OUTCOMES:
- Analyze and design with object-oriented method in UML
- Describe constraints and introduce OCL.
- Introduce design pattern technology
- Apply object-oriented technology to the practical system analysis and design

TEXT BOOKS:

REFERENCES:

IT8501 COMPUTER NETWORKS

OBJECTIVES:
- Trace the flow of information from one node to another node in the network
- Identify the component required to build different types of networks
- Understand the division of network functionalities into layers.
- Identify solution for each functionality at each layer
- Choose the required functionality at each layer for given application.

UNIT I FUNDAMENTALS

UNIT II TRANSPORT LAYER
Overview of Transport layer - UDP - TCP - Reliable byte stream - Connection management - Flow control - Retransmission - Congestion control - Congestion avoidance
UNIT III NETWORK AND ROUTING

UNIT IV DATA LINK LAYER AND LAN
Link layer services - Framing - Error control - Flow control - Media access control - Ethernet - CSMA/CD - Token Ring - FDDI - Wireless LANs - CSMA/CA

UNIT V DATA COMMUNICATION
Signal characteristics - Data transmission - Physical links and transmission media - Signal encoding techniques - Channel access techniques - TDM - FDM

TOTAL: 60 PERIODS

OUTCOMES:
At the end of the course, the students should be able to:
• Analyze the requirements for a given organizational structure and select the most appropriate networking architecture and technologies;
• Specify and identify deficiencies in existing protocols, and then go onto formulate new and better protocols;
• Analyze, specify and design the topological and routing strategies for an IP based networking infrastructure;
• Have a working knowledge of datagram and internet socket programming.

TEXT BOOKS:

REFERENCES:

IT8502 DISTRIBUTED SYSTEMS

AIM:
• To provide knowledge on principles and practice underlying the design of distributed systems and to explain the importance of the theory of distributed systems. It is intended to provide an understanding of the concepts of distributed systems, through several existing examples.
• The student will appreciate that the design and implementation of effective distributed systems is complex: issues related to “imperfect” computation and communication makes it substantially more difficult than designing centralized algorithms. These will be highlighted in specific distributed environments such as grid and cloud.

53
• The subject deals with IPC and Remote invocation in distributed environment, distributed objects, distributed file system, and Distributed operating system issues, distributed transactions and security in distributed environment.

OBJECTIVES:
• To lay the foundations of Distributed Systems.
• To introduce the idea of distributed architecture and related issues.
• To introduce the idea of distributed operating system and related issues.
• To understand in detail the system level and support required.
• To study and learn how the principles are applied in grid and cloud environment.

UNIT I  COMMUNICATION IN DISTRIBUTED ENVIRONMENT  8

UNIT II  DISTRIBUTED OPERATING SYSTEMS  10

UNIT IV  FAULT TOLERANCE AND CONSENSUS  8

UNIT V  CASE STUDIES  9
Distributed Object Based System – CORBA – Distributed Virtualization System – VMWare

TOTAL: 45 PERIODS

OUTCOMES:
Upon Completion of the course, the students will be able to:
• Understand the concepts of distributed systems, through several existing examples
• Understand the complete overview of process management, memory management, database management, distributed file system, distributed objects in Distributed system.
• Ability to understand and demonstrate the Mutual exclusion, Deadlock detection and agreement protocols, security of Distributed operating system.
• Develop projects and applications in distributed environments such as grid and cloud.

TEXT BOOKS:
OBJECTIVES:
- To develop, design and implement two and three dimensional graphical structures
- To enable students to acquire knowledge in animations
- To learn Creation, Management and Transmission of Multimedia objects.
- To learn basics of multimedia
- To study authoring system and application

UNIT I 2D PRIMITIVES

UNIT II 2D GEOMETRIC TRANSFORMATIONS
2D Viewing – Window-Viewport Transformation - Two dimensional Geometric transformations – Line, Polygon, Curve and Text clipping algorithms – 2D Geometric Transformations using OpenGL

UNIT III 3D CONCEPTS
Parallel and Perspective projections - Three dimensional object representation – Polygons, Curved lines, Splines, Quadric Surfaces - Visualization of data sets - 3D affine transformations – Viewing – Visible surface identification – Color Models

UNIT IV MULTIMEDIA BASICS

UNIT V MULTIMEDIA AUTHORING AND APPLICATIONS

TOTAL: 45 PERIODS
OUTCOMES:
Upon completion of the course, students will be able to
- Understand algorithms of different graphic primitives
- Know the basic operation in 2-D and 3-D graphics
- Comprehend fundamentals of multimedia
- Analyze the multimedia systems
- Implement some graphics/multimedia applications.

TEXT BOOKS:

REFERENCES:

IT8504 INTEGRATED PROGRAMMING

OBJECTIVE:
- To know the essentials of XML Programming
- To understand programming concepts of distributed and wireless environments
- To understand the programming practices behind coordinating Distributed Architecture

UNIT I INTRODUCTION
Overview of Middleware Components - Distributed programming - XML in Web Programming - JINI fundamentals

UNIT II WORKING WITH XML
XML annotations - Custom annotations - Functions to Control XML - XML parsers - XML data sources - XML Validation - XSLT transformation and programming - XML processing using PHP

UNIT III DISTRIBUTED PROGRAMMING
Multithreaded Programming - Synchronization techniques - Java Threading model - Multiple process programming: Sockets - Messaging - Client-Server model - RPC - CORBA and DCOM models of RPC - Reusable Programming Techniques

UNIT IV PROGRAMMING THE WIRELESS DEVICES
J2ME - Connected Limited Device Configuration - Mobile Information Device Profile - UI controls - Event Handling - Persistent Storage - Network Midlets - Wireless Messaging
UNIT V   JINI PROGRAMMING
Plug-and-Work model - Lookup Services - Discovery Protocol - Proxy Objects - Leases - Attributes - Groups - JINI with RMI - JINI with J2ME

TOTAL: 45 PERIODS

OUTCOMES:
On completion of this course the student should be able to:

- Validate XML documents with the use of Document Type Definitions and schemas according to industry standards.
- Work on Java Messaging Service
- Develop mobile applications using J2ME, CLDC and MIDP
- Understand the basic principles of Jini programming and able to create a simple application in JINI.

TEXT BOOKS:

REFERENCES:

IT8511 COMPUTER NETWORKS LABORATORY

AIM:
To understand the low-level network programming concepts using APIs and Simulation tools.

OBJECTIVES:

- Write a network application program
- Exercise all options of TCP/UDP sockets
- Use tools to visualize packet flow
- To analyze the performance of protocols in different layers using simulation tools
- Configure Router/Switch to set up network (network administration)
- Simple Chat Program using TCP Sockets
- Simulation of HTTP Protocol using TCP Sockets
- Simulation of Sliding Window Protocol using TCP Sockets
- Simulation of DNS using UDP Sockets
- Simulation of Ping using Raw Sockets
Outcomes:

At the end of the course the student should be able to,

- Understand and implement the network application programs
- Understand and implement the TCP/UDP sockets.
- Understand the configuration of Router/Switches.

Objectives:

- To make the students understand graphics programming
- To create 3D graphical scenes using open graphics library suits
- To perform image manipulation enhancement
- To create animations
- To create a multimedia presentation/Game/Project

Implement the exercises from 1 to 4 using C / OpenGL / Java

1. Implementation of Algorithms for drawing 2D Primitives –
   Line (DDA, Bresenham) – all slopes
   Circle (Midpoint)
2. 2D Geometric transformations –
   Translation
   Rotation
   Scaling
   Reflection
   Shear
   Window-Viewport
3. Composite 2D Transformations
4. Lianq - Barsky Line Clipping

Implement the exercises from 5 to 7 using OpenGL

5. 3D Transformations - Translation, Rotation, Scaling
6. 3D Projections – Parallel, Perspective
7. Creating 3D Scenes
8. Compression Algorithms - To implement text and image compression algorithms.
9. Image Editing and Manipulation - Basic Operations on image using any image editing software, Creating gif animated images, Image optimization
10. 2D Animation – To create Interactive animation using any authoring tool

Total: 45 Periods
OUTCOMES:
Upon completion of the course, students will be able to
- Implement basic graphics algorithms
- Understand transformations in graphics
- Learn and implement graphic functions in OpenGL
- Implement editing and manipulation of images.

IT8513  SOCIALLY RELEVANT PROJECT  L T P C
0 0 0 2

Students are expected to take up problems that would directly benefit the society, and design and implement an IT based solution for the problem, based on the courses undertaken up to that semester. The evaluation of the project would be based on the formulation of the problem, and the technical merit of the solution.

OUTCOMES:
- Students would directly benefit the society by taking society needed problem, and design and implement it based on IT based solution for the problem

IT8601  EMBEDDED SYSTEMS  L T P C
3 0 0 3

OBJECTIVES:
- To learn the internal architecture of an embedded processor including timers and interrupts
- To quantize the core specifications of an embedded processor
- To introduce interfacing I/O devices to the processor
- To learn programming on a processor
- To run and debug programs in an IDE
- To design an embedded processor based system for a real-time application

UNIT I  8-BIT EMBEDDED PROCESSOR  9

UNIT II  LOW-POWER EMBEDDED PROCESSORS  9
ARM7 TDMI processing core - instruction sets and programming – Intel ATOM Processor – Architecture – Programming

UNIT III  RTOS  9
Multiple tasks and processes – Context switching – Scheduling policies – Interprocess communication mechanisms – Performance issues - Need for RTOS - Introduction to \( \mu \)C/OS II
OUTCOMES:
• Apply the knowledge of the architecture of processors and microcontrollers in designing embedded systems.
• Interface the peripheral devices to the processor.
• Design an embedded system to run specific applications.
• Assess the challenges in developing operating systems for embedded systems.
• Analyze the constraints behind the development of real time embedded systems.
• Identify the challenges and design processes of embedded system.

TEXT BOOKS:

REFERENCES:

AIM:
To provide an insight in the management of information in the corporate.

OBJECTIVES
• To aware the significant of information in the business scenario
• To familiarize method of restoring, retrieving and presenting the information.
• To study the basics of business process modeling
UNIT I INTRODUCTION
Data, information, knowledge and wisdom; characteristics of information, quality of information, value of information in decision making in various levels of the organization. Role of information in Business scenario-functional and process approach in the organization; Source and supply of information and content to employees, shareholders and customers.

UNIT II INFORMATION CAPTURING AND MIGRATION MECHANISMS
Data management and system integration; Content management—text, imaging, records, workflow, web content management; Distributed databases, Object oriented databases-object life cycle modeling visual databases and knowledge based databases and business impacts, ETL on data warehouse, Meta data and indexing.

UNIT III BUSINESS PROCESS MANAGEMENT
Practices of BPM, role of Information in BPM, Business Analysis-relationship between information and organization; Critical success factors, Enterprise analysis—framework and tools, Process design and modeling-process improvements, process modeling, business process reengineering, SOA, Six Sigma and continuous improvement, ERP.

UNIT IV INFORMATION PRESENTATION
Enterprise wide search-DSS, EIS, ES, Fact and entity extraction-OLAP, Data mining algorithm-classification and clustering of information, information governance, BI.

UNIT V INFORMATION IN BUSINESS SCENARIO AND BUSINESS TRENDS
Information in management application: Functional areas of management, roles and responsibilities of Information resource manager, E business models, Value of information in E-CRM - Social marketing—social and ethical issues in handling information management.

TOTAL: 45 PERIODS

OUTCOMES:
- Demonstrate the structure and principles of organization
- Develop and analyze the business process modeling
- Use the data mining techniques to classify and cluster the business information.
REFERENCES

IT8603  MOBILE COMPUTING

AIM:
• To give a comprehensive exposure to the developments taking place in the areas of wireless networks and mobile computing

OBJECTIVES:
• To understand the challenges of wireless communication and the solutions that are in use
• To study about various types of wireless data networks and wireless voice networks
• To realize the role of wireless protocols in shaping the future Internet
• To design and implement mobile applications
• To give an introduction to the enabling technologies of pervasive computing

UNIT I  WIRELESS COMMUNICATION
OUTCOMES:
Upon completion of the course, students will be able to
- To understand basics of modulation and multiplexing techniques
- To comprehend wireless LAN and cellular systems
- To understand protocols at network and transport layer
- To learn development of applications in mobile computing platform
- To understand internet & pervasive computing over mobile devices

TEXT BOOKS:

REFERENCE BOOKS:
OUTCOMES:
At the end of the course, learners should be able to
- Take international examination such as IELTS and TOEFL
- Make presentations and Participate in Group Discussions.
- Successfully answer questions in interviews.
REFERENCES:

EXTENSIVE READERS

WEB RESOURCES
1. www.humanresources.about.com
2. www.careerride.com

IT8611 CREATIVE AND INNOVATIVE PROJECT

The goal of this course is to encourage the students to identify innovative projects that help in exploring variables that promote creativity and innovation. Each student is expected to choose a real life or socially relevant problem. At the end of the project, students should be familiar with the state of art in their respective fields. They would be able to apply the concepts learnt to relevant research problems or practical applications.

The goal of this course is to motivate them to learn concepts, models, frameworks, and tools that engineering graduates’ need in a world where creativity and innovation is fast becoming a pre-condition for competitive advantage.

TOTAL: 45 PERIODS

IT8612 EMBEDDED SYSTEMS LABORATORY

OBJECTIVES:
At the end of this course the student will be able to
- Develop Applications based on Embedded Systems
- Write an Embedded C Program, Debug and interpret the Results
- Write and implement simple assembly programs that use various features of the processor.
- Able to do an experiment that senses an analog signal, process and control [e.g., Keypad, Display].
1. **8051 Assembly Language Experiments based on:**
   - Data transfer programs
   - Arithmetic and logical programs
   - Conversions and sorting
   - Timers and Interrupts
   - Serial Communication
   - I/O interfacing: Traffic Generator, DAC, ADC, Stepper Motor
2. **Basic and Interfacing Programs Using Embedded C**
3. **Real time system programs (Embedded C)**
4. **KEIL software example programs**

2. **ARM/Atom based Application Development:**
   1. Programs to practice data processing instructions.
   2. Interfacing programs
   3. Program that uses combination of C and ARM/Atom assembly code.

**OUTCOMES:**
- Develop an embedded system to run specific applications.
- Write Embedded C programs for specific applications and debug them in IDE environment and run them.
- Appreciate the advantages of microcontrollers in Embedded system design.

**TOTAL: 45 PERIODS**

**OBJECTIVE:**
- To understand and use the fundamentals of programming for mobile devices.
- To apply event-driven programming and graphical user interfaces for mobile devices.

1. GSM modem study (Nokia 30) and SMS client-server application
2. Implementation of Mobile Network using Network Simulator (NS2)
3. GUI APIs for high-level and low level programming
4. To store and access information stored in a mobile device (persistence and record management)
5. Usage of HTTP and sockets for communication between mobile devices and remote servers.
6. Mobile Internet and WML
7. J2ME Program for Mobile Node Discovery
8. Mobile protocol study using simulator
9. To design sample programs for Mobile Phones (Android, iPhone etc)
10. Bluetooth Integration

**TOTAL: 45 PERIODS**

**OUTCOMES:**
Upon completion of the course, students will be able to
- Simulate mobile network using NS-2
- Develop GUI APIs
- Program using J2ME
- Develop application for mobile devices
OBJECTIVES:

- To deal with evolving multidimensional massive data sets and the various analysis which may be performed on it.
- To know the fundamental concepts of big data and analytics.
- To learn various techniques for mining data streams.
- To understand the data mining techniques for frequent item set and clustering.
- To learn Event Modeling for different applications using the framework of big data and visualization data analysis techniques.

OUTCOMES:

- To apply the various statistical analysis methods on multidimensional massive data sets.
- To design efficient algorithms for mining the data from large volumes.
- To develop data stream model for mining data streams.
- To work with big data platform and its analysis techniques.
- To model a framework for Human Activity Recognition and many applications.
TEXT BOOKS:

REFERENCES:

IT8702 INFORMATION SECURITY

AIM:
- To give an overview about the basics of security and cryptography.
- To give an exposure to the security standards and security practices followed in IT industries

OBJECTIVES:
- To introduce the concepts and models of security in computing
- To design and implement symmetric and asymmetric cryptosystems
- To explain the security standards followed at the network level and at the application level
- To estimate the level of security risk faced by an organization and the counter measures to handle the risk
- To learn secured software development

UNIT I SECURITY - AN OVERVIEW

UNIT II CRYPTOGRAPHY
Classical Cryptosystems - Substitution and Transposition - Blowfish and AES - Public Key Cryptography - RSA and ElGamal algorithms - Authentication and Key Exchange - Biometric authentication - Diffie Hellman and Needem Schroeder algorithms - Digital Signatures - Message Digest - Certificates - Directories and Revocation of keys and certificates
OUTCOMES:
Upon the completion of this course, students will be able
- To master information security governance, and related legal and regulatory issues.
- To master understanding external and internal threats to an organization.
- To be familiarity with information security awareness and a clear understanding of its importance.
- To be familiar with how threats to an organization are discovered, analyzed, and dealt with.
- To master fundamentals of secret and public cryptography.
- To master protocols for security services.
- To be familiar with network security threats and countermeasures.
- To be familiar with network security designs using available secure solutions (such as PGP, SSL, IPSec, etc).

TEXT BOOKS:

REFERENCES:
OBJECTIVES:
- To study about the design, implementation and evaluation of effective and usable graphical computer interfaces.
- To describe and apply core theories, models and methodologies from the field of HCI.
- To learn various case studies in HCI

UNIT I  FOUNDATIONS FOR INTERACTION DESIGN  9

UNIT II  MODELS AND THEORIES  9

UNIT III  DESIGN PROCESS  9
COURSE OUTCOMES:
Upon completion of this course, the student will be able to:

- Appreciate the importance of the user interface in software development.
- Understand key aspects of human psychology which can determine user actions at and satisfaction of the interface.
- Describe the key design principles for user interfaces.
- Set up and carry out a process to gather requirements for, engage in iterative design of, and evaluate the usability of a user interface.
- Describe how user interface development can be integrated into an overall software development process.
- Understand sufficient theory of human computer interaction, experimental methodology and inferential statistics to engage with the contemporary research literature in interface technology and design.
- Identify key design errors in simple interfaces and suggest alternative designs.
- Discuss ethical issues involved in testing user interfaces.

TEXT BOOK:

REFERENCES:
OBJECTIVE:

- To design and create effective user interfaces for various applications.
- To create interactive animated displays using various interactive devices.

2. Modifying the user interfaces of text processor, Excel, Powerpoint builder.
3. Designing interfaces for health care, telephone directory and collaborative applications using tools like Cog tool, Flash builder.
4. Creating user interfaces for disabled people using speech engines, translators and sign language.
6. Design of interactive devices like cell phones and video controllers, household appliances and smart cars.
7. Drag and Drop an application instance from server to client and then automate the execution of the application on the client side (JAVA / VC++)
8. Simulate the Smart Car display to view the availability of petrol in the tank, distance travelled and a graphic display (continuous monitoring) with different colors about the level of petrol in the tank.
9. To drag the magnifying lens on the world map just to zoom the region of interest and to collect the retrieve the relevant information about that region.

TOTAL: 45 PERIODS

OUTCOMES:

Upon the completion of the lab course, the student will be able to

- Perform design and evaluation of interactive systems with a strong emphasis on user-centred design techniques.
- Understand the human capacities and consequences of using information technology as a tool for solving work-related tasks.
- Develop and evaluate the system by putting the user at the centre of the design process.

MA 8351 ALGEBRA AND NUMBER THEORY (Branch specific course) 3104

OBJECTIVES:

- To introduce the basic notions of groups, rings, fields which will then be used to solve related problems.
- To examine the key questions in the Theory of Numbers.
- To give an integrated approach to number theory and abstract algebra, and provide a firm basis for further reading and study in the subject.
UNIT I FIELDS
Group Theory - Rings and Polynomials – Fields.

UNIT II FINITE FIELDS AND POLYNOMIALS
Finite Fields – Irreducible Polynomials over Finite fields – Factorization of Polynomials over Finite Fields.

UNIT III DIVISIBILITY THEORY AND CANONICAL DECOMPOSITIONS

UNIT IV DIOPHANTINE EQUATIONS AND CONGRUENCES
Linear Diophantine equations – Congruence’s – Linear Congruence’s - Applications: Divisibility tests – Modular Designs – Chinese remainder theorem – 2x2 linear systems.

UNIT V CLASSICAL THEOREMS AND MULTIPlicative FUNCTIONS

TOTAL: 60 PERIODS

OUTCOMES:
At the end of the course the student is able to:
- Solve problems related to finite fields and Polynomials
- Understand the applications of division and Euclidean Algorithm
- Understand the classical theorems and multiplicative functions

TEXT BOOKS:

REFERENCES:
OBJECTIVE

This course provides the idea on design of analog and digital filters, and their classifications. Also, it provides a good knowledge of error correction in signal processing systems, which is then enriched with the applications to the image and speech processing.

UNIT I  SIGNALS AND SYSTEMS

UNIT II  FREQUENCY TRANSFORMATIONS

UNIT III  IIR FILTER DESIGN
Structures of IIR – Analog filter design – Discrete time IIR filter from analog filter – IIR filter design by Impulse Invariance, Bilinear transformation, Approximation of derivatives – (LPF, HPF, BPF, BRF) filter design using frequency translation

UNIT IV  FIR FILTER DESIGN

UNIT V  APPLICATIONS

OUTCOMES:

Upon completion of the course, students will be able to
- Perform frequency transforms for the signals.
- Design IIR and FIR filters.
- Finite word length effects in digital filters

TOTAL: 45 PERIODS
TEXT BOOKS:

REFERENCES:

IT8001 ADVANCED DATABASE TECHNOLOGY

OBJECTIVE:
- To know advanced concepts of database in large scale analytics
- To derive data maintenance, change schema, database update and Benchmark
- To understand Object Databases and to deal with uncertainties in advanced concepts of database, and open issues in database technologies.

UNIT I  PARALLEL AND DISTRIBUTED DATABASES
Database System Architectures: Centralized and Client-Server Architectures - Server system architectures - Parallel systems - Distributed systems - Parallel databases: I/O Parallelism - Inter and Intra query parallelism - Inter and Intra operation parallelism - Distributed database concepts - Distributed data storage - Distributed transactions - Commit protocols - Concurrency control - Distributed query processing - Three tier client server architecture - Case studies

UNIT II  OBJECT AND OBJECT RELATIONAL DATABASES
UNIT III  XML DATABASES
XML Databases: XML data model - DTD - XML Schema - XML querying - Web databases - JDBC - Information retrieval - Data warehousing - Data mining

UNIT IV  MOBILE DATABASES
Mobile Databases: Location and Handoff Management - Effect of mobility on data management - Location dependent data distribution - Mobile transaction models - Concurrency control - Transaction commit protocols - Mobile database recovery schemes

UNIT V  INTELLIGENT DATABASES
Active databases - Deductive databases - Knowledge databases - Multimedia databases - Multidimensional data structures - Image databases - Multimedia database design - Text/Document databases - Audio databases - Video databases

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of the course, the student should be able to:

- Apply query evaluation techniques and query optimization techniques.
- Develop transaction processing systems with concurrency control.
- Design and develop a database application system as part of a team.

TEXT BOOKS:

REFERENCES:

IT8002        ADVANCED NETWORKS        L T P C
                                      3 0 0 3

OBJECTIVES:

- To explain QoS requirements and compare different approaches to QoS.
- To appreciate need for high speed networks
- To identify reliability issues and provide solutions
UNIT I  INTERNETWORKING

UNIT II  MPLS AND VPN

UNIT III  QUALITY OF SERVICE
Application requirements - VOIP - RT video conferencing - Entertainment video - QoS taxonomy - Resource allocation - Scheduling - Queuing disciplines - Integrated services - Differentiated services - RSVP

UNIT IV  OPTICAL NETWORKS
Optical network architecture: Next Generation optical networks - Regional optical metro networks – Switching: MPLS controlling optical switches - Optical packet switching - Signaling protocols and network operation

UNIT V  WDM NETWORKS
WDM: Traffic grooming in WDM - Network survivability - Survivability techniques for optical WDM Networks - Restoration Strategies in optical WDM networks - Network provisioning services

TOTAL: 45 PERIODS

OUTCOMES:
- Understand the QoS requirements and compare different approaches to QoS.
- Understand the appreciate need for high speed networks.
- Understand and identify reliability issues and provide solutions.

TEXT BOOKS

REFERENCES:
OUTCOMES:
Students who complete the course will be able to:

- Understand the different agent programs
- Familiarize with propositional and predicate logic and their roles in logic programming;
- Learn the different knowledge representation and reasoning techniques
- Appreciate how uncertainty is being tackled in the knowledge representation and reasoning process
- Master the skills and techniques in machine learning such as artificial neural networks and fuzzy logic.
TEXT BOOKS

REFERENCES

IT8004 C# AND .NET PROGRAMMING

OBJECTIVE:
Understand the concept of .NET framework, study the different techniques of security, introduce web services with ASP.NET, and explore window based applications.

UNIT I C# LANGUAGE BASICS
C# and the .NET framework - C# basics - Objects and types - Inheritance - Arrays - Operators and casts - Indexes

UNIT II C# ADVANCED FEATURES
Delegates and events - Strings and regular expressions - Generics - Collections - Memory management and pointers - Errors and exceptions

UNIT III BASE CLASS LIBRARIES AND DATA MANIPULATION
Tracing and events - Threading and synchronization - .Net security - Localization - Manipulating XML - Managing the file system - Basic network programming

UNIT IV DATABASE AND WEB SERVICES
Window based applications - Data access with .NET - basics of ASP.NET - Introduction to web services

UNIT V .NET FRAMEWORK
Architecture - Assemblies - Shared assemblies - CLR hosting - Appdomains - Reflection

TOTAL: 45 PERIODS
OUTCOMES:
Upon successful course completion, students will be able to
- Design, document, code and test small C# console and GUI applications.
- Design, document, code and unit test class libraries as part of a larger project.
- Use an object browser and .NET documentation to examine C# and the .NET framework namespace contents.
- Use the Visual Studio IDE to create and debug application and class library solutions and projects.
- Interpret UML class diagrams to create C# classes and applications

TEXT BOOK:

REFERENCES:

IT8005 CLOUD COMPUTING L T P C
3 0 0 3

OBJECTIVE:
- To understand the concept of cloud and utility computing
- To understand the various issues in cloud computing
- To familiarise themselves with the lead players in cloud
- To appreciate the emergence of cloud as the next generation computing paradigm
- To be able to set up a private cloud
  At the end of this course the student should be able to
- Appreciate the new computing model called cloud computing and why its creating such a hype in the 21st century;
- Use the open source cloud services;
- Understand that one of the major issues in usage of public cloud is security;
- Is expected to deploy a private cloud and understand the issues currently prevailing.

UNIT I INTRODUCTION
Evolution of cloud computing – Need for cloud computing - Benefits - Limitations - Migration into Cloud - Basics of virtualization - Desktop virtualization - Server virtualization - Case study: VMware - Basics of web services - Key concepts

UNIT II CLOUD ARCHITECTURE
Three-layer cloud computing architecture - On-demand provisioning - Elasticity in cloud
OUTCOMES:
At the end of course student will be able to
- Understand the systems, protocols and mechanisms to support cloud computing.
- Develop applications for cloud computing.
- Understand the hardware necessary for cloud computing.
- Design and implement a novel cloud computing application

UNIT III   ISSUES IN CLOUD
Federation in cloud - Four levels of federation - Privacy in cloud - Security in cloud - Software-as-a-Service security - Case study: Aneka - Service level agreements

UNIT IV   CLOUD STORAGE
Overview of cloud storage - Cloud storage providers - Case studies: Walrus - Amazon S3 - Cloud file system – Map Reduce - Case study: Hadoop

UNIT V   CLOUD DEPLOYMENT TOOLS
Study of open source cloud platforms - Eucalyptus - Nimbus - Open Nebula

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCES:
7. www.open.eucalyptus.com/
9. www.nimbusproject.org
AIM:
- The aim of this course is to provide an introduction to some basic Language Technologies. The course also provides an overview of Text mining and applications of language processing.

OBJECTIVES:
1. To understand the statistical modeling and classification for NLP.
2. To understand the basic techniques of Information Retrieval.
3. To understand the basic of Text mining and techniques of text mining.
4. To know about the generic issues in speech processing and application relevant to Natural Language Generation.

UNIT I  NATURAL LANGUAGE PROCESSING
Linguistic background - Spoken language input and output technologies - Written language input - Mathematical methods - Statistical modeling and classification - Finite state methods: Grammar for natural language processing - Parsing - Semantic interpretation: Semantics and logical form - Ambiguity resolution – Other strategies for semantic interpretation

UNIT II  INFORMATION RETRIEVAL
Information Retrieval architecture - Indexing - Storage - Compression techniques - Retrieval approaches - Evaluation - Search engines - commercial search engine features – comparison - performance measures - Document processing - NLP based Information Retrieval - Information extraction

UNIT III  TEXT MINING
Categorization: Extraction based Categorization - Clustering - Hierarchical clustering - Document classification and routing - Finding and organizing answers from Text search - Categories and clusters for organizing retrieval results - Text Categorization - Efficient summarization using lexical chains - Pattern extraction

UNIT IV  GENERIC ISSUES

UNIT V  APPLICATIONS
Machine translation - Transfer metaphor - Interlingua and statistical approaches - Discourse processing - Dialog and conversational agents - Natural language generation - Surface realization and discourse planning

TOTAL: 45 PERIODS
OUTCOME:  
Understand the issues present in information as text, apply various information retrieval techniques and text mining techniques to improvise the various operations performed over the information.

TEXT BOOKS:  

REFERENCES:  

IT8007  
GRAPH THEORY  
L T P C  
3 0 0 3

OBJECTIVES:  
The student should be made to:  
• To acquire knowledge of the basics in graph theory  
• To develop the skills in problem solving using graph theory  
• To develop the algorithms for solving graph theoretic problems  
• To use techniques of permutations and combinations in network security studies  
• To use generating functions to simplify recurrence relations
OUTCOMES:

Upon Completion of the course, the students should be able to:

- Write precise and accurate mathematical definitions of objects in graph theory.
- Use mathematical definitions to identify and construct examples and to distinguish examples from non-examples.
- Validate and critically assess a mathematical proof.
- Use a combination of theoretical knowledge and independent mathematical thinking in creative investigation of questions in graph theory.
- Reason from definitions to construct mathematical proofs.
TEXT BOOKS:

REFERENCES:

IT8008  HETEROGENEOUS COMPUTING  L T P C
                 3 0 0 3

OBJECTIVE:
At the end of this course, the student will be able to:
- Identify parallelism in an application
- Choose the right parallel processing paradigm and solution for a heterogeneous multi-core platform
- Program using OpenMP and OpenCL

UNIT I  MULTI-CORE PROCESSOR FUNDAMENTALS
Multi-core Processors and Need for Parallel Computing - ILP, TLP and Data Parallelism - Chip Multiprocessing, SMP, Homogeneous Vs Heterogeneous Processors - GPUs - GPGPUs - Shared memory architectures - Cache Memory - Cache Coherency Protocols.

UNIT II  MULTICORE PROGRAMMING
Parallel Programming Overview - Processes, Tasks and Threads - Parallel Programming Models - Techniques for Parallelizing Programs - Shared Memory Programming - Message Passing Paradigm - Memory Consistency Models - Synchronization Issues.
UNIT III OPENMP PROGRAMMING

UNIT IV OPENCL FUNDAMENTALS
Open CL Architecture – Platform model – Kernels – Execution Model - Memory model - Programming model - Task and data decomposition - CPU-GPU communication

UNIT V OPENCL ADVANCED FEATURES
GPU Memory - Coalescing - Conflicts - Event timing and profiling - Threading and Scheduling - Programming multi devices - Applications

TOTAL: 45 PERIODS

OUTCOMES:
- Understanding of language design issues related to parallel programming.
- Understanding of Operating System support for parallel computing.
- Ability to use OpenMP and OpenCL.

TEXT BOOKS:

REFERENCES:
OBJECTIVES

- Get a understanding of the complexities involved in the process of attributing intellectual property rights to people.
- Learn the legalities of intellectual property to avoid plagiarism and other IPR relates crimes like copyright infringements,
- To understand patents, copyrights and IPR related issues.

OUTCOMES:
At the end of the course, the student should be able to:
- understand the principles, functions and basic legal rules of IP law
- Recognize the relevant criteria for generating and protecting intellectual work.
TEXT BOOKS:

REFERENCES:

IT8010 KNOWLEDGE ENGINEERING

OBJECTIVE
- To understand knowledge representation and reasoning techniques
- To understand logics and planning

UNIT I INTRODUCTION
Key concepts - Knowledge representation and reasoning - Language of first order logic - Syntax, Semantics, Pragmatics - Expressing Knowledge - Levels of representation - Knowledge acquisition and sharing - Sharing Ontologies - Language Ontologies - Language patterns - Tools for knowledge acquisition

UNIT II RESOLUTION AND REASONING
Proportional case - Handling variables and qualifiers - Dealing with intractability - Reasoning with horn clauses - Procedural control of reasoning - Rules in production - Description logic

UNIT III REPRESENTATION
Semantic networks - Object Oriented representations - Frame formalism - Structured descriptions - Meaning and Entailment - Taxonomies and Classification - Inheritance - Networks - Strategies for defensible inheritance - Formal account of Inheritance networks - Conceptual dependency - Scripts

Attended

DIRECTOR
Centre For Academic Courses
Anna University, Chennai-600 025.
OUTCOMES:
Upon Completion of the course, the students will be able to:
- Understand knowledge representation and reasoning techniques.
- Understand logics and planning for complex actions.

TEXT BOOK:

REFERENCES:

IT8011 MOBILE APPLICATION DEVELOPMENT

OBJECTIVE
- To know the mobile architecture and its standards
- To develop various applications using mobile devices

UNIT I INTRODUCTION
Mobile application fundamentals - Characteristics - Benefits - History of mobiles - Mobile framework - Devices – Platform - Operating systems - Application framework - Overview of types of mobile applications
UNIT II APPLICATION DESIGN
Mobile Information Architecture: Click streams - Wireframes - Prototyping – Mobile design - Design elements - Design tools - Design principles - Mobile Web Vs Native applications - Device testing - Desktop testing - Usability testing

UNIT III WEB STANDARDS
Overview of Mobile 2.0 - Web Standards - Designing for multiple mobile browsers - Markup languages - Cascading Style Sheets - JavaScript for mobile application development

UNIT IV APPLICATION DEVELOPMENT IN MOBILE DEVICES
Native Android and iPhone applications - Android Vs iPhone SDK features - Open handset alliance - Development framework - Android Vs iPhone development tools - Creating applications and activities - Creating user interfaces

UNIT V ADVANCED APPLICATION DEVELOPMENT IN MOBILE DEVICES
Internets - Broadcast Receivers - Adapters - Internet - Data Storage - Retrieval and Sharing - Working in the background - Peer to Peer communication - Accessing Android hardware

TOTAL : 45 PERIODS

OUTCOMES:
At the end of the course the student should be able to,
- Understand the mobile architecture and its standards.
- Understand and develop the various applications using mobile devices

TEXT BOOKS:
OUTCOMES:
Upon completion of the course, the student should be able to:
- Develop programs using TCP Sockets.
- Use Socket Options.
- Develop Macros for including Objects In MIB Structure.
- Use SNMPv1, v2 and v3 protocols.
TEXT BOOKS

REFERENCE BOOK

IT8013 PRINCIPLES OF COMPILER DESIGN L T P C
3 0 0 3

OBJECTIVE:
To design the front end of the compiler, scanner, parser, intermediate code generator, object code generator, and the parallel compilation strategies

UNIT I LEXICAL ANALYSIS 9
Introduction to Compiler: Compilers - Analysis of the Source Program -The phases of compiler - Compiler construction tools - Lexical analyzer - Input buffering - Specification of tokens - Recognition of tokens - A language for specifying lexical analyzer

UNIT II SYNTAX ANALYSIS AND RUN-TIME ENVIRONMENTS 9
Syntax Analysis: The role of the parser - Context-free grammars - Writing a grammar - Top down parsing - Bottom-up parsing - LR parsers - Constructing SLR parsing table - Type checking - Type systems - Specification of a simple type checker - Run-time Environments - Source language issues - Storage organization - Storage-allocation strategies.

UNIT III INTERMEDIATE CODE GENERATION 9
Intermediate languages – Declarations - Assignment statements - Boolean expressions – Flow of Control statements - Back patching - Procedure calls

UNIT IV CODE GENERATION 9
Issues in the design of a code generator - Target machine - Run-time storage management - Basic blocks and flow graphs - Next-use information - Simple code generator - Register allocation and assignment -The DAG representation of basic blocks - Generating code from DAGs

UNIT V CODE OPTIMIZATION 9
Principle sources of optimization - Peephole optimization - Optimization of basic blocks - Loops in flow graphs - Introduction to global data-flow analysis - Code improving transformations

TOTAL: 45 PERIODS
OUTCOME:
Able to design and implement a compiler for a given language

TEXT BOOK:

REFERENCES:

IT8014 SERVICE ORIENTED ARCHITECTURE

AIM
To provide an overview of Service Oriented Architecture and enable the student to create applications in a collaborative environment.

OBJECTIVE
• To study the importance of Service Oriented Architecture
• Implementation of SOA in the Java and .Net frameworks
• To study the advanced features of SOA

UNIT I SOA FUNDAMENTALS

UNIT II SOA AND WEB SERVICES
UNIT III SERVICE ORIENTED ANALYSIS AND DESIGN
Design principles - Business Centric SOA - Deriving Business services - Service Modeling - Coordination - Atomic Transaction - Business activities - Web Service Orchestration - Choreography - Entity centric business service design - Application Service design - Task centric business service design

UNIT IV WEB SERVICES DEVELOPMENT AND DEPLOYMENT
XML and Web Services - WSDL basics - SOA support in J2EE - Java API for XML-based Web Services (JAX-WS) - Java Architecture for XML Binding (JAXB) - Java API for XML Registries (JAXR) - Web Services Interoperability Technologies - SOA support in .NET - Common Language Runtime - ASP.NET - Web forms - ASP.NET Web Services - Web Services Enhancements

UNIT V SOA APPLICATIONS AND SECURITY

OUTCOMES:
The course aims to give the student an understanding of the strengths and weaknesses of a service-based architecture, informed by an ability to implement and deploy simple web services using a java and .net framework. They will also learn to define and design applications as combinations of services, and be able to discuss the emergent properties of those compositions; and to understand the security and research context and potential future directions for these technologies.

REFERENCES:

IT8015 SOCIAL NETWORK ANALYSIS

OBJECTIVE
- To introduce the concept of semantic web and related applications
- To represent knowledge using ontology
- To understand human behaviour in social web and related communities
- To visualize social networks

TOTAL : 45 PERIODS
UNIT I INTRODUCTION

UNIT II MODELLING, AGGREGATING AND KNOWLEDGE REPRESENTATION

UNIT III EXTRACTION AND MINING COMMUNITIES IN WEB SOCIAL NETWORKS

UNIT IV PREDICTING HUMAN BEHAVIOUR AND PRIVACY ISSUES
OUTCOMES:
Upon completion of the course, the student should be able to:
- Develop semantic web related applications.
- Represent knowledge using ontology.
- Predict human behavior in social web and related communities.
- Visualize social networks.

TEXT BOOKS:

REFERENCES:

OBJECTIVES
- To teach basic neural networks, fuzzy system and genetic algorithm concepts and their relations.
- To develop skills in supervised, unsupervised and reinforcement learning networks.
- Comprehend neuro fuzzy modeling.
OUTCOMES:
Upon completion of the course, the student should be able to:

- Identify and describe soft computing techniques and their roles in building intelligent machines.
- Recognize the feasibility of applying a soft computing methodology for a particular problem.
- Apply fuzzy logic and reasoning to handle uncertainty and solve engineering problems.
- Apply genetic algorithms to optimization problems.
- Apply neural networks to pattern classification and regression problems using soft computing approach.

TEXT BOOKS:
REFERENCES:

OBJECTIVES:
- To develop an awareness of the need for project planning and management
- To apply professional attitudes and techniques to managing a project
- Explain the stages in the system development lifecycle and the activities that are carried out to implement an IT application;
- Demonstrate an understanding of steps needed to build and maintain effective development teams;
- Explain the procedures needed to monitor, control and report upon an IT development project;
- Discuss and where appropriate apply the principles of project risk management.
- Explain the ways in which appropriate quality attributes of the products of an IT development project can be assessed and assured.

UNIT I  FUNDAMENTALS
Conventional software management - Evolution of software economics - Improving software economics - Conventional Vs Modern software project management.

UNIT II  SOFTWARE MANAGEMENT PROCESS FRAMEWORK
Lifecycle phases - Artifacts of the process - Model based software architectures - Workflows of the process - Checkpoints of the process.

UNIT III  SOFTWARE MANAGEMENT DISCIPLINES
Iterative process planning - Organization and Responsibilities - Process automation - Process control and process instrumentation - Tailoring the process. Project planning - Scheduling - Tracking and Control - Time and Cost overruns - Project organization - Staffing - Group working - Team dynamics.

Attended

DIRECTOR
Centre For Academic Courses
Anna University, Chennai-600 025
UNIT IV  MANAGED AND OPTIMIZED PROCESSES  
Quality management and ISO 9000 quality assurance method - Configuration management - Quality reviews - Software standards - Tracking of defects - Process improvements - SCI/CMM models - Other process models - Data gathering and analysis Principles of data gathering - Data gathering process - Software measures - Data analysis - Managing software quality - Defect prevention.

UNIT V  CASE STUDIES  
COCOMO Cost estimation model - Change metrics -Case studies

OUTCOMES:
- Understand the fundamentals of Software Project process framework
- Understand project planning, scheduling, tracking, organizing and controlling
- Deeper understanding of the quality management and tools used
- Will be able to estimate cost and evaluate the project.

TEXT BOOKS:

REFERENCES:

IT8018  SOFTWARE TESTING  
L T P C  3 0 0 3

OBJECTIVES:
- To determine software testing objectives and criteria.
- To select and prepare test cases using testing strategies.
- To develop and validate a test plan.
- To prepare testing policies and standards.
- To use testing aids and tools.
- To test before buying a software package and after maintenance and enhancement changes.
- To measure the success of testing efforts.
- To extend understanding of software testing applications, management and key disciplines and also to enhance awareness of issues and constraints around testing.
UNIT I  BASICS OF SOFTWARE TESTING
Human errors and testing - Software quality- Requirements - Behavior and Correctness - Correctness Vs Reliability- Testing and Debugging - Test metrics - Software and Hardware testing - Testing and Verification - Defect management - Execution history - Test-generation strategies - Static testing - Model based testing and Model checking - Control flow Graph - Types of testing - Saturation effect - Testing axioms - Origins of defects - Cost of defects - Defect classes - Defect repository and Test design - Defect examples - Developer / Tester support - Defect prevention strategies

UNIT I  BASICS OF SOFTWARE TESTING
Human errors and testing - Software quality- Requirements - Behavior and Correctness - Correctness Vs Reliability- Testing and Debugging - Test metrics - Software and Hardware testing - Testing and Verification - Defect management - Execution history - Test-generation strategies - Static testing - Model based testing and Model checking - Control flow Graph - Types of testing - Saturation effect - Testing axioms - Origins of defects - Cost of defects - Defect classes - Defect repository and Test design - Defect examples - Developer / Tester support - Defect prevention strategies

UNIT III  TEST CASE SELECTION AND ADEQUACY TEST EXECUTION
Overview - Test specification and cases - Adequacy criteria- Comparing criteria- Overview of test execution - Test case specification to test cases - Scaffolding - Generic Vs specific scaffolding - Test Oracles - Self-checks as Oracles - Capture and replay - Process: Test and analysis activities - Quality process - Planning and Monitoring - Quality goals - Dependability properties - Analysis -Testing - Improving the process - Organizational factors - Integration testing strategies - Testing components and assemblies - System testing - Acceptance testing - Usability - Regression testing - Regression test selection techniques - Test case prioritization and selective execution

UNIT IV  TEST MANAGEMENT
People and organizational issues in testing - Organization structures for testing teams - Testing services - Test planning - Test plan components - Test plan attachments - Locating test items - Test management - Test process - Reporting test results - Role of three groups in test planning and policy development - Test specialist - Skills - Building a testing group.

UNIT V  TEST AUTOMATION
Software test automation - Skills - Scope - Design and architecture for automation - Requirements for a test tool - Challenges in automation - Test metrics and measurements - Project progress and productivity metrics

TOTAL  45 PERIODS

OUTCOMES:
- Understand the basic principles and techniques of software testing.
- Develop the test plan and execute that plan to detect the defects in the software.
- Automate the testing process using appropriate tools.
- Apply the testing metrics to evaluate the test results.
- Implement many real time applications with various software testing tools.
TEXT BOOKS

REFERENCES:

IT8019 WIRELESS SENSOR AND MESH NETWORKS L T P C 3 0 0 3

OBJECTIVES:
At the end of this course the student will be able to
- Explore the state-of-art in sensor and mesh networks
- Understand the specific design challenges for sensors and mesh
- Identify solution for each applications such as environmental monitoring, home automation
- List protocols suitable for a given task satisfying the performance metric

UNIT I INTRODUCTION AND NETWORKING SENSORS 9
Challenges for WSN - Single node architecture - Energy consumption - Energy scavenging techniques - Operating systems - TinyOS network architecture - Network scenarios - Adaptation of MAC protocols - SMAC - Low duty Cycle Protocols and Wakeup Concepts - SMAC 802.15.4 MAC - Zigbee

UNIT II SYNCHRONIZATION AND LOCALIZATION 9

UNIT III ROUTING AND QUERYING 9
Routing Protocols - Energy-Efficient Routing - Geographic Routing - Data Centric Routing - In-Network Aggregation - Storage and Retrieval - Range Query - KD Tree - Range Tree - Location Service
OUTCOMES:
At the end of this course the student should be able to

- Understand and explore the state-of-art in sensor and mesh networks
- Understand the specific design challenges for sensors and mesh.
- Understand and identify solution for each application such as environmental monitoring, home automation.

TEXT BOOKS:

REFERENCES:

OBJECTIVES:
The student should be made to:

- Understand the techniques for processing images including the File formats
- Be exposed different image enhancement techniques
- Learn about image segmentation and feature analysis
- Understand the role of multi resolution helps
OUTCOMES:
At the end of this course, the student will be able to:

- Confirm the various steps in image processing
- Compare and Contrast different image enhancement
- Critically analyze various image segmentation and feature analysis
- Apply multi technology restoration analysis to image processing
- Design various application using image processing

UNIT I FUNDAMENTALS OF IMAGE PROCESSING
Introduction - Steps in image processing systems - Image acquisition - Sampling and Quantization - Pixel relationships - Color fundamentals and models - File Formats, Image operations: Arithmetic, Geometric and Morphological.

UNIT II IMAGE ENHANCEMENT
Spatial Domain - Gray level transformations - Histogram processing - Spatial filtering - Smoothing and sharpening - Frequency domain: Filtering in frequency domain - DFT, FFT, DCT - Smoothing and sharpening filters - Homomorphic filtering

UNIT III IMAGE SEGMENTATION AND FEATURE ANALYSIS
Detection of discontinuities - Edge operators - Edge linking and boundary Detection - Thresholding - Region based segmentation - Morphological Watersheds - Motion segmentation, Feature analysis and extraction

UNIT IV MULTI RESOLUTION ANALYSIS AND COMPRESSIONS

UNIT V APPLICATIONS OF IMAGE PROCESSING
Image classification - Image recognition - Image understanding - Video motion analysis - Image fusion - Steganography - Digital compositing - Mosaics - Color image processing

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCES:
OBJECTIVES:
The student should be made to:
- Be exposed to the context and operation of free and open source software (FOSS) communities and associated software projects.
- Be familiar with participating in a FOSS project
- Learn scripting language like Python or Perl
- Learn programming language like Ruby
- Learn some important FOSS tools and techniques

TOTAL : 45 PERIODS

OUTCOMES:
Upon completion of the course, the student should be able to:
- Install and run open-source operating systems.
- Gather information about Free and Open Source Software projects from software releases and from sites on the internet.
- Build and modify one or more Free and Open Source Software packages.
- Use a version control system.
- Contribute software to and interact with Free and Open Source Software development projects.
OBJECTIVES:
- To learn the basics of socket programming using TCP Sockets.
- To learn about Socket Options
- To learn to develop Macros for including Objects In MIB Structure
- To understand SNMPv1, v2 and v3 protocols & practical issues.

UNIT I  FUNDAMENTALS
Internetworking concepts - IP and datagram forwarding - TCP services - Interactive data flow - Timeout and retransmission - Bulk data flow - Persist timer – Keep-alive timer

UNIT II  ARP AND IP
Structure of TCP/IP in OS - Data structures for ARP - Cache design and management - IP software design and organization - Sending a datagram to IP

UNIT III  IP ROUTING IMPLEMENTATION
Routing table - Routing algorithms - Fragmentation and reassembly - Error processing (ICMP) - Multicast Processing (IGMP)
OUTCOMES:
At the end of this course the student should be able to
- Understand the internals of the TCP/IP protocols
- Understand how TCP/IP is actually implemented
- Understand the interaction among the protocols in a protocol stack

TEXT BOOKS:

REFERENCE:
UNIT III NUMERICAL DIFFERENTIATION AND INTEGRATION 9+3

UNIT IV INITIAL VALUE PROBLEMS FOR ORDINARY DIFFERENTIAL EQUATIONS 9+3

UNIT V BOUNDARY VALUE PROBLEMS IN ORDINARY AND PARTIAL DIFFERENTIAL EQUATIONS 9+3
Finite difference methods for solving two-point linear boundary value problems. Finite difference techniques for the solution of two dimensional Laplace’s and Poisson’s equations on rectangular domain – One dimensional heat-flow equation by explicit and implicit (Crank-Nicholson) methods - One dimensional wave equation by explicit method.

OUTCOMES:
• The students will have a clear perception of the power of numerical techniques, ideas and would be able to demonstrate the applications of these techniques to problems drawn from industry, management and other engineering fields.

TEXT BOOKS:

REFERENCES:
OUTCOMES:
- The student would be able to apply the tools and techniques of quality management to manufacturing and services processes.

TEXT BOOK:
REFERENCES:

CS8071

CYBER FORENSICS

L T P C

3 0 0 3

OBJECTIVE:
To understand Computer Forensics, Computing Investigations, Enforcement Agency Investigations, Corporate Investigations, forensically sound principles and practices related to digital evidence collection, management, and handling.

UNIT I TYPES OF COMPUTER FORENSICS 9

UNIT II DATA RECOVERY 9

UNIT III ELECTRONIC EVIDENCE 9

UNIT IV THREATS 9

UNIT V SURVEILLANCE 9

TOTAL: 45 PERIODS

Attended

DIRECTOR
Centre For Academic Courses
Anna University, Chennai-600 025.
OUTCOMES:
- Understands the fundamentals and types of computer forensics
- Understands how evidence is identified, collected and preserved.
- Will know the techniques of recovering past evidences.
- Understand various threats, tactics used and understanding of surveillance tools in computer forensics.

TEXT BOOK:

REFERENCES:

CS8072                GAME PROGRAMMING                L T P C
                        3  0  0  3

OBJECTIVE
To get subsequent understanding of game design and development, which includes the processes, mechanics, issues in game design, game engine development, modeling, techniques, handling situations, and logic. At the end, the student will be in a position to create interactive games. To learn this course an exposure to 3D graphics principles and animation techniques are the prerequisite.

UNIT I     3D GRAPHICS FOR GAME PROGRAMMING     9
Coordinate Systems, Ray Tracing, Modeling in Game Production, Vertex Processing, Rasterization, Fragment Processing and Output Merging, Illumination and Shaders, Parametric Curves and Surfaces, Shader Models, Image Texturing, Bump Mapping, Advanced Texturing, Character Animation, Physics-based Simulation

UNIT II    GAME DESIGN PRINCIPLES          9
Character development, Story Telling, Narration, Game Balancing, Core mechanics, Principles of level design, Genres of Games, Collision Detection, Game Logic, Game AI, Path Finding

UNIT III   GAMING ENGINE DESIGN          9
Renderers, Software Rendering, Hardware Rendering, and Controller based animation, Spatial Sorting, Level of detail, collision detection, standard objects, and physics

UNIT IV    GAMING PLATFORMS AND FRAMEWORKS     9
Flash, DirectX, OpenGL, Java, Python, XNA with Visual Studio, Mobile Gaming for the Android, iOS, Game engines - Adventure Game Studio, DXStudio, Unity
UNIT V  GAME DEVELOPMENT

Developing 2D and 3D interactive games using OpenGL, DirectX – Isometric and Tile Based Games, Puzzle games, Single Player games, Multi Player games.

TOTAL : 45 PERIODS

OUTCOMES:
Upon completion of this course students will be able to

- Evaluate various approaches to game design and identify the elements which are likely to make for effective games.
- Be able to develop design game engines
- Be able to integrate development with third party game engines.
- Code and develop prototypes of computer games for a variety of platforms and frameworks

TEXT BOOKS:

REFERENCES:
6. Andy Harris, “Beginning Flash Game Programming For Dummies”, For Dummies; Updated edition, 2005.
OBJECTIVE:
To build and implement a small ontology that is semantically descriptive of your chosen problem domain, implement applications that can access, use and manipulate the ontology, represent data from a chosen problem in XML with appropriate semantic tags obtained or derived from the ontology, depict the semantic relationships among these data elements using Resource Description Framework (RDF), design and implement a web services application that "discovers" the data and/or other web services via the semantic web (which includes the RDF, data elements in properly tagged XML, and the ontology), discover the capabilities and limitations of semantic web technology for different applications.

UNIT I  INTRODUCTION

UNIT II  ONTOLOGICAL ENGINEERING
Ontologies – Taxonomies –Topic Maps – Classifying Ontologies - Terminological aspects: concepts, terms, relations between them – Complex Objects -Subclasses and Sub-properties definitions –Upper Ontologies – Quality – Uses - Types of terminological resources for ontology building – Methods and methodologies for building ontologies – Multilingual Ontologies -Ontology Development process and Life cycle – Methods for Ontology Learning – Ontology Evolution – Versioning

UNIT III  STRUCTURING AND DESCRIBING WEB RESOURCES

UNIT IV  WEB ONTOLOGY LANGUAGE

UNIT V  SEMANTIC WEB TOOLS AND APPLICATIONS

TOTAL: 45 PERIODS
OUTCOMES:
Students who have successfully completed this course will be able
- To give RDF, RDFS & OWL description to objects
- To use Semantic Web search engines and to use semantic markup of web pages
- To integrate web services using semantic technologies.
- To implement a semantic agent using the features of semantic web.

TEXT BOOKS:

REFERENCES:
OBJECTIVE

- Understanding of the fundamentals of operating system design
- To provide knowledge about Unix operating system working principles, its file system and programming for interprocess communication.
- To acquaint student with the description of various system calls.
- To expose the students to the concepts of Memory Management and I/O Subsystem Implementation.

UNIT I OVERVIEW

UNIT II FILE SUBSYSTEM
Internal representation of files: Inodes – Structure of a regular file – Directories – Conversion of a path name to an inode – Super block – Inode assignment to a new file – Allocation of disk blocks

UNIT III SYSTEM CALLS FOR THE FILE SYSTEM

UNIT IV PROCESSES

UNIT V MEMORY MANAGEMENT AND I/O

TOTAL: 45 PERIODS

OUTCOMES:
Upon completion of the course, the student should be able to:
- describe the component of operating system
- explain how they interact with computer hardware
- apply the concepts of operating systems design to practical problems.
- A deeper understanding of system calls in Unix operating system.
TEXT BOOK:

REFERENCES:

CS8075 FOUNDATION SKILLS IN INTEGRATED PRODUCT DEVELOPMENT  L T P C
3 0 0 3

OBJECTIVE:
This program can be offered with all Undergraduate programs/courses for all engineering streams. The FSIPD program aims to improve student's awareness and understanding of the basic concepts involved in Integrated product Development (IPD) by providing exposure to the key product development concepts. Students, who complete this program, will stand a better chance to be considered for jobs in the Engineering industry.

OBJECTIVES:
After completing this program, the student will be able to obtain the technical skills needed to effectively play the entry level design engineer role in an engineering organization.

The student will be able to:
- Understand the global trends and development methodologies of various types of products and services
- Conceptualize, prototype and develop product management plan for a new product based on the type of the new product and development methodology integrating the hardware, software, controls, electronics and mechanical systems
- Understand requirement engineering and know how to collect, analyze and arrive at requirements for new product development and convert them in to design specification
- Understand system modeling for system, sub-system and their interfaces and arrive at the optimum system specification and characteristics
- Gain knowledge of the Innovation & Product Development process in the Business Context

UNIT I FUNDAMENTALS OF PRODUCT DEVELOPMENT  9
UNIT II REQUIREMENTS AND SYSTEM DESIGN 9

UNIT III DESIGN AND TESTING 9

UNIT IV SUSTENANCE ENGINEERING AND END-OF-LIFE (EOL) SUPPORT 9

UNIT V BUSINESS DYNAMICS ENGINEERING SERVICES INDUSTRY 9

TOTAL: 45 PERIODS

OUTCOMES:
The students will be able to
- Define, formulate and analyze a problem
- Solve specific problems independently or as part of a team
- Develop documentation, test specifications and coordinate with various teams to validate and sustain up to the EoL (End of Life) support activities for engineering customer
- Work independently as well as in teams
- Manage a project from start to finish

COURSE MATERIAL AND PEDAGOGY:
- NASSCOM has agreed to prepare / revise the course materials [selected teachers Anna University from major disciplines will be included in the process] as PPT slides for all the UNITS. The PPTs can be printed and given to each student if necessary at a Nominal Fee. This is the best possible material for this special course.
- NASSCOM will train the teachers of Anna University to enable them to teach this course. A training programme for nearly 3500 teachers needs to be organized. The team is exploring use of technology including the EDUSAT facility at Anna University.
- The course is to be offered as an elective to all UG Students both in the Constituent Colleges and Affiliated colleges of Anna University.

TOTAL: 45 PERIODS

OUTCOMES:
The students will be able to
- Define, formulate and analyze a problem
- Solve specific problems independently or as part of a team
- Develop documentation, test specifications and coordinate with various teams to validate and sustain up to the EoL (End of Life) support activities for engineering customer
- Work independently as well as in teams
- Manage a project from start to finish

COURSE MATERIAL AND PEDAGOGY:
- NASSCOM has agreed to prepare / revise the course materials [selected teachers Anna University from major disciplines will be included in the process] as PPT slides for all the UNITS. The PPTs can be printed and given to each student if necessary at a Nominal Fee. This is the best possible material for this special course.
- NASSCOM will train the teachers of Anna University to enable them to teach this course. A training programme for nearly 3500 teachers needs to be organized. The team is exploring use of technology including the EDUSAT facility at Anna University.
- The course is to be offered as an elective to all UG Students both in the Constituent Colleges and Affiliated colleges of Anna University.
TEXT BOOKS [INDIAN ECONOMY EDITIONS]:

REFERENCES:

GE8072 DISASTER MANAGEMENT

OBJECTIVES:
- To provide students an exposure to disasters, their significance and types.
- To ensure that students begin to understand the relationship between vulnerability, disasters, disaster prevention and risk reduction
- To gain a preliminary understanding of approaches of Disaster Risk Reduction (DRR)
- To enhance awareness of institutional processes in the country and
- To develop rudimentary ability to respond to their surroundings with potential disaster response in areas where they live, with due sensitivity

UNIT I INTRODUCTION TO DISASTERS
Definition: Disaster, Hazard, Vulnerability, Resilience, Risks – Disasters: Types of disasters – Earthquake, Landslide, Flood, Drought, Fire etc - Classification, Causes, Impacts including social, economic, political, environmental, health, psychosocial, etc.- Differential impacts- in terms of caste, class, gender, age, location, disability - Global trends in disasters: urban disasters, pandemics, complex emergencies, Climate change- Dos and Don’ts during various types of Disasters.

UNIT II APPROACHES TO DISASTER RISK REDUCTION (DRR)
Disaster cycle - Phases, Culture of safety, prevention, mitigation and preparedness community based DRR, Structural- nonstructural measures, Roles and responsibilities of- community, Panchayati Raj Institutions/Urban Local Bodies (PRIs/ULBs), States, Centre, and other stakeholders- Institutional Processess and Framework at State and Central Level- State Disaster Management Authority(SDMA) – Early Warning System – Advisories from Appropriate Agencies.

UNIT III INTER-RELATIONSHIP BETWEEN DISASTERS AND DEVELOPMENT
Factors affecting Vulnerabilities, differential impacts, impact of Development projects such as dams, embankments, changes in Land-use etc.- Climate Change Adaptation- IPCC Scenario and Scenarios in the context of India - Relevance of indigenous knowledge, appropriate technology and local resources.

Attested
DIRECTOR
Centre For Academic Courses
Anna University, Chennai-600 025
UNIT IV DISASTER RISK MANAGEMENT IN INDIA
Hazard and Vulnerability profile of India, Components of Disaster Relief: Water, Food, Sanitation, Shelter, Health, Waste Management, Institutional arrangements (Mitigation, Response and Preparedness, Disaster Management Act and Policy - Other related policies, plans, programmes and legislation – Role of GIS and Information Technology Components in Preparedness, Risk Assessment, Response and Recovery Phases of Disaster – Disaster Damage Assessment.

UNIT V DISASTER MANAGEMENT: APPLICATIONS AND CASE STUDIES AND FIELD WORKS
Landslide Hazard Zonation: Case Studies, Earthquake Vulnerability Assessment of Buildings and Infrastructure: Case Studies, Drought Assessment: Case Studies, Coastal Flooding: Storm Surge Assessment, Floods: Fluvial and Pluvial Flooding: Case Studies; Forest Fire: Case Studies, Man Made disasters: Case Studies, Space Based Inputs for Disaster Mitigation and Management and field works related to disaster management.

TOTAL: 45 PERIODS

OUTCOMES:
The students will be able to
• Differentiate the types of disasters, causes and their impact on environment and society
• Assess vulnerability and various methods of risk reduction measures as well as mitigation.
• Draw the hazard and vulnerability profile of India, Scenarios in the Indian context, Disaster damage assessment and management.

TEXTBOOK:

REFERENCES
1. Govt. of India: Disaster Management Act, Government of India, New Delhi, 2005

GE8073 HUMAN RIGHTS

OBJECTIVES:
• To sensitize the Engineering students to various aspects of Human Rights.

UNIT I

UNIT II
UNIT III
Theories and perspectives of UN Laws – UN Agencies to monitor and compliance.

UNIT IV
Human Rights in India – Constitutional Provisions / Guarantees.

UNIT V

TOTAL : 45 PERIODS

OUTCOMES:
• Engineering students will acquire the basic knowledge of human rights.

REFERENCES: